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Analysis of the Accuracy of the Springate and Fulmer Methods in Predicting Bankruptcy in Tourism, Restaurant and Hotel Subsector Companies in Indonesia

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Abstract

The present investigation used the Springate and Fulmer methodologies to ascertain the bankruptcy rate of companies in the tourism, restaurant, and hotel industries that are listed on the Indonesia Stock Exchange (IDX) between 2017 and 2021. It is intended to be examined closely. The secondary data used in this study was gathered from the websites and financial statements of the companies listed in IDX. The Kolmogorov-Smirnov test, independent samples t-test, and inferential statistics were the data analysis methods employed. With an accuracy of 84 percent, Fulmer's method was found to be the most effective in forecasting bankruptcy, followed by his Springate method at 20 percent, according to the study's findings. We recommend that more researchers employ different bankruptcy procedures, look at businesses in diverse industries, and lengthen the study term.

Analisis Keakuratan Metode Springate Dan Fulmer Dalam Prediksi Kebangkutan Pada Perusahaan Subsektor Pariwisata, Restoran Dan Hotel Di Indonesia

Kata Kunci:
(1) Kebangkrutan, (2) Springate, (3) Fulmer, (4) Akurasi

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None

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Abstract

Dengan menggunakan metode Springate dan Fulmer, penelitian ini dirancang untuk menganalisis metode kebangkrutan pada perusahaan pariwisata, restoran dan hotel yang terdaftar di Bursa Efek Indonesia (BEI) pada tahun 2017 hingga 2021. Data sekunder yang digunakan dalam penelitian ini diperoleh dari laporan sekuritas yang diterbitkan pada tahun 2021. Bursa Efek Indonesia (BEI) dan di website perseroan. Analisis data menggunakan statistik inferensial, uji t sampel independen, dan Kolmogorov-Smirnov. Studi tersebut menemukan bahwa metode Fulmer merupakan prediktor kebangkrutan terbaik dengan akurasi 84 persen, disusul metode Springate dengan akurasi 20 persen. Rekomendasi penelitian tambahan antara lain melakukan penelitian terhadap perusahaan di sektor lain, menggunakan teknik kebangkrutan lain dan memperpanjang periode penelitian.

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1. Introduction

Tourism is an important sector for the Indonesian economy. According to the Finnish the BPS (Central Bureau of Statistics), the number of foreign tourists to Indonesia has continued to increase in the last five years, namely. Between 2015 and 2019, the number of tourist visits increased by an average of 15.4% per year (kemenparekraf.go. .id). The increasing number of foreign tourists means that the tourism sector's contribution to the country's exchange rate and gross domestic product (GDP) also increases.

However, the outbreak of the new corona virus (Covid-19) pandemic at the beginning of 2020 dealt a serious blow to the Indonesian economy, especially the tourism industry. The impact of the COVID-19 pandemic has reduced the importance of the tourism sector to gross national product and exchange rates, as well as the profitability of companies operating in the tourism sector. The country's exchange rate appears to be declining, according to Menparekraf, Minister of Tourism and Creative Economy, and the tourism sector's contribution to GDP. The tourism industry's share of gross domestic product in 2020 was only 4.05%, lower than the previous year which was 4.70%. At the same time, the tourism industry's foreign exchange earnings are estimated at only 360 million USD in 2021, compared to 3.3 billion USD in 2020 and 16.9 billion USD in 2019 (alinea.id, 2022). in the tourism sector weakened significantly. PT Pembangunan Jaya Ancol Tbk (PJAA) is one of the companies in the recreation industry that has been affected by the Covid-19 pandemic. In 2020, tourist visits to the Ancol tourist destination decreased by 76% from 18 million to 4.5 million (Ancol Corporation, 2021).

The number of hotels occupied in Indonesia is also impacted by the drop in foreign visitors. Sutrisno Iwantono, the president of the Indonesian Hotel and Restaurant Association (PHRI), stated that 1,033 hotels and restaurants in Indonesia would close their doors forever in 2020. Mr. Strisno also said that it is estimated that around 125 hotels and 150 restaurants will close every month starting October 2020. (Kumparan Tourism , 2021). A situation where the company's operations continue to decline can cause financial disruption and financial difficulties for the company. Financial difficulties are the initial stage of a company before bankruptcy. According to Masdiantin and Ni Made (2022), bankruptcy refers to a situation where a company is in very serious financial difficulties so that it can no longer manage its operations properly.

To detect bankruptcy in a company, a bankruptcy prediction tool or method is needed. The bankruptcy prediction method in question is in the form of certain formulas in the field of accounting that have been developed by experts. Various types of bankruptcy prediction methods are widely used by researchers, namely the Alman Z-Score, Springate, Zmijewski, Fulmer, Ohlson, and Grover methods. Based on previous research, each prediction method has different calculation results and levels of accuracy. In this research, there are two bankruptcy prediction methods that will be compared, namely the Springate and Fulmer methods.

The researcher selected the Fulmer and Springate methods based on the findings of earlier studies, namely. Norita (2016), Laksmana and Ayu (2019), Putri and Desaki (2020) and Isykharma et al. (2021). The Springate method and Fulmer method provide high accuracy, namely the highest in predicting bankruptcy compared to the Altman, Ohlson, Grover and Zmijewski methods. The Springate method and Fulmer method have differences in the use of economic indicators in their calculations. The Springate method emphasizes the company's profitability ratio in its calculations, low profitability can result in the company being unable to survive and at risk of bankruptcy. Meanwhile, in the Fulmer method calculations more emphasis is placed on the company's operational costs so that they are not greater than the amount of accumulated income (Hernadianto et al., 2020).

The Springate (1978) method uses stepwise multiple discriminant analysis (MDA) to select four indicators from 19 main financial indicators to distinguish whether a company is bankrupt or not. You can use a method related to the Altman Z-score method. or not. The research results of this method show high accuracy in predicting bankruptcy, namely 92.5% (Fahma and Nina, 2019). The Springate method uses four financial ratios: working capital on the balance sheet, sales to total assets, profits before tax (EBT) to current liabilities, and earnings before interest and tax (EBIT) to total assets.

Fulmer's method employs stepwise multiple discriminant analysis (MDA) to examine 40 financial statements from 60 businesses, 30 of which are successful and the remaining 30 of which are unsuccessful, with an average asset value of $455,000. This approach of bankruptcy analysis makes estimates of important numbers. Fulmer's research indicates that 98% of companies evaluated within a year before filing for bankruptcy were accurate, whereas 81% of companies tested more than a year prior to filing for bankruptcy (Parquinda, 2019). Nine financial ratios are used in the Fulmer method: operating cash flow, earnings as a proportion of equity, retained earnings as a percentage of total assets, and earnings before taxes (EBT) as a percentage of equity. Total debt to total assets, including debt to total assets, current liabilities to total assets, and so on, log/interest ratio (EBIT).

2. Literature Review and Hypothesis

Bankruptcy

According to Prihad (2013:332), bankruptcy is when a company cannot fulfill its responsibilities. By conducting ratio analysis on financial statements, you can find early signs of bankruptcy. A company declared bankrupt is legally called bankruptcy (Kristanti, 2019:12). According to Hanaf and Halim (2018: 261 and 259), there are several indicators to determine the possibility of bankruptcy. namely current and future cash flow analysis, company strategy analysis that focuses on: capacity management to control costs and quality. Information from external credit rating agencies that can be used for profitability analysis, financial distress assessment and estimating the likelihood of financial distress. Bankruptcy information that can be useful for several parties is:

Lender

Bankruptcy information helps creditors decide where to make loans and also informs policies that monitor existing loans.

Investors

There is no doubt that stock and corporate bond investors want to know whether the company selling those securities is bankrupt. Investors who use active strategies create bankruptcy forecasting methods to spot signs of bankruptcy as quickly as possible and create plans to predict possible bankruptcy.

Government Party.

In several economic sectors, the government is responsible for monitoring the progress of the business world. Government agencies are interested in identifying early signs of bankruptcy in order to act early.

Accountant

Company bankruptcy information is useful for auditors because auditors assess the continuity of company operations.

Management
Bankruptcy means there are costs associated with bankruptcy, and those costs can be very high. If managers recognize these costs early, they can take cost actions such as mergers or financial restructuring to avoid bankruptcy costs.

Bankruptcy Prediction Method
Springate Method
Springate's (1978) forecasting method is similar to Altman's approach; Sringate uses Four indicators were chosen from a set of nineteen financial metrics using multiple discriminant analysis (MDA). This method predicts bankruptcy for 40 companies with an accuracy of 92.5.
The Springate method equation function (S-Score) is as follows:
S-Score = 1.03(A) + 3.07(B) + 0.66(C) + 0.4(D)

Information:
A= Working Capital / Total Assets
B= EBIT / Total Assets
C= EBT / Current Liabilities
D= Sales / Total Assets

If the amount is less than, the Springate method's cut-off point criteria indicates that the company's situation is included in the bankruptcy category 0.862 (S < 0.862) and if the value is more than 0.862 (S > 0.862).

Fulmer Method
Mr. Fulmer examined forty financial ratios on a sample of 60 companies with the same multiple discriminant analysis (MDA) method used by Springate. Fulmer's method showed 98% accuracy for companies tested one year before bankruptcy and 81% accuracy for companies tested more than one year before bankruptcy. The function of the Fulmer model equation (H-Score) is as follows:

H-Score = 5.528(V1) + 0.212(V2) + 0.073(V3) + 1.270(V4) – 0.120(V5) + 2.335(V6) + 0.575(V7) +1.083(V8) + 0.894(V9) – 6.075

Note:
V1 = Retained Earnings / Total Assets
V2 = Sales / Total Assets
V3 = EBT / Total Equity
V4 = Cash Flow from Operations / Total Liabilities
V5 = Total Liabilities / Total Assets
V6 = Current Liabilities / Total Assets
V7 = Log (Total Fixed Assets)
V8 = Working Capital / Total Liabilities
V9 = Log EBIT / Interest Expense

In the Fulmer method, the cut-off point criterion shows that a company is in the bankruptcy category if the value is less than zero (H < 0), and if the value is more than zero (H > 0), then the business does not qualify as bankrupt.

Differences in Prediction Results of the Springate and Fulmer Methods

Mohammad's (2016) research results show that the Springate, Fulmer, and Zavgren models are very different in predicting bankruptcy. Masdiantin and Ni Made's (2020) study using the Altman, Springate, Zmijewski, Taffler, and Fulmer model shows the difference between this model and real estate company bankruptcy predictions using Altman (Ambarsari, 2020). The accuracy of financial crisis forecasts differs between models, according to Value Z, Springate, Zmijewski, Fulmer, and Grover. Kusmaningrum's (2021) study investigated the Altman, Fulmer, Grover, Springate, Taffler, and Zmijewski model for estimating the probability of a financial crisis. The results of each prediction model turned out to be inconsistent and inconsistent. The first hypothesis of this research is as follows based on the information above.

H1: When it comes to forecasting the likelihood of bankruptcy for travel, dining, and lodging subsidiaries listed on the IDX between 2017 and 2021, the analysis outcomes from the Fulmer and Springate methods differ significantly.

Accuracy of the Springate Method

A study conducted by Laksmana and Ayu (2019) shows that the Springate model has 100% accuracy in predicting bankruptcy. Cason et al. (2020) found that the Springate model was the most accurate for predicting the financial condition of mining companies listed on the IDX. Isykharma et al. (2021) found that the Springate model provided financial distress predictions with one hundred percent accuracy. According to a study conducted by Ulfah and Abdul (2022) on tobacco companies, the Springate model showed the most accurate predictions of the financial crisis with an accuracy rate of 80%. Based on the previous discussion, the second hypothesis of this research is as follows.

H2: For businesses in the tourism, restaurant, and hotel subsectors that are listed on the IDX between 2017 and 2021, the Springate technique is the most reliable indicator of potential bankruptcy.

Accuracy of the Fulmer Method

Based on research by Munawarah et al (2019), it shows that the Fulmer model provides 100% accuracy in predicting financial distress. Masdiantini and Ni Made (2020) show that the level of accuracy achieved by the Fulmer method in predicting bankruptcy is 100%. A study of bankruptcy prediction for sharia commercial banks conducted by Kusumanisita and Istiana (2021) shows that the Fulmer method has a prediction efficiency of 99%. Febbiant's (2022) study of BUMN and non-BUMN shows that Fulmer's method is 100 percent accurate. Based on the explanation above, the third hypothesis of this research is:

H3: For businesses in the tourism, restaurant, and hotel subsectors that are listed on the IDX between 2017 and 2021, the Fulmer approach is the most reliable predictor of possible bankruptcy.

3. Data and Methods

Audited firm financial reports, available from the Indonesian Stock Exchange and each company's official website, used as secondary data for this study. In this study, quantitative methodologies were applied. The chosen group consists of all travel, dining, and lodging businesses listed on the Indonesia Stock Exchange (BEI) between 2017 and 2021. Purposive sampling, which satisfies the following criteria, was the method employed.

Table 1. Sample Selection

No.	Criteria	Amount
1.	Tourism, restaurant and hotel subsector companies listed on the Indonesia Stock Exchange (BEI).	43
2.	Companies that do not consistently publish audited financial reports ending December 31 2017-2021.	(17)
3.	Companies that do not present financial reports in rupiah currency	0
Number of samples		26
Year of research		5
Number of research units (26 companies x 5 years)		130

The data analysis techniques used in this research are:

1. assembling financial reports of travel, dining, and lodging businesses from the Indonesia Stock Exchange website (www.idx.co.id), outlining each company's financial report and compiling its valuations. A benchmark has been established.
2. Calculating the bankruptcy status of the tourism industry, restaurant industry and hotel industry from 2017 to 2021 for each type, classifying the financial status according to the limits set by each method, and comparing it with the actual state of the company.
3. Perform descriptive statistical analysis to understand the distribution of your data without drawing conclusions. Descriptive analysis is used to determine minimum, maximum, mean and standard deviation values, as well as to determine the distribution of data in a sample.
4. To find out if the variables are normally distributed, use the Kolmogorov-Smirnov test to assess the normality of the data. The Kolmogorov-Smirnov test has a significance threshold of 0.05. The variable is regularly distributed if its value is higher than the 5% significance level (>0.05). On the other hand, the data are not normally distributed if the variable value is less than 0.05 and the 5% significance threshold.
5. Determine each bankruptcy forecast method's accuracy and kind of inaccuracy. If the prediction method indicates that the firm is not insolvent and has not been fully delisted from the Indonesian Stock Exchange, then the prognosis is deemed accurate. The proportion that a method is correct in predicting bankruptcy is indicated by its method accuracy.
6. Calculate the accuracy and type of error of each bankruptcy prediction method. The prediction is considered correct if the prediction method shows that the company is not bankrupt and has not been completely delisted from the Indonesian Stock Exchange. Method accuracy is used to show what percentage a method is correct in predicting bankruptcy.
   The level of accuracy can be calculated as follows:

$$\text{level of accuracy} = \frac{number\ of\ correct\ predictions}{number\ of\ samples}\ x\ 100\% \quad (1)$$

After analyzing the level of accuracy of the forecasting methods, the next step is to analyze the types of errors for each method. The type of error used is the first type of error, namely. an error that occurs when the method predicts the bankruptcy of the research object, even though the company is not bankrupt. The first type of error can be calculated as follows:

$$Error\ Type = \frac{\text{number of type errors1}}{number\ of\ samples} \text{ x } 100\% \quad (2)$$

4. Results

Calculating Each Bankruptcy Method

Springate Method

Table 2. Springate Method Analysis Results

No.	Stock code	Year(before pandemic)						Year (during the pandemic)			
		2017		2018		2019		2020		2021	
		Springate	Actual	Springate	Actual	Springate	Actual	Springate	Actual	Springate	Actual
1	AKKU	B	TB	B	TB	B	TB	B	TB	B	TB
2	ARTA	TB	TB	TB	TB	B	TB	B	TB	B	TB
3	BAYU	TB	TB	TB	TB	TB	TB	B	TB	B	TB
4	DFAM	B	TB	B	TB	B	TB	B	TB	B	TB
5	EAST	B	TB	B	TB	B	TB	B	TB	TB	TB
6	FAST	TB	TB	TB	TB	TB	TB	B	TB	B	TB
7	HRME	B	TB	B	TB	B	TB	B	TB	B	TB
8	ICON	B	TB	TB	TB	TB	TB	B	TB	B	TB
9	IKAI	B	TB	B	TB	B	TB	B	TB	B	TB
10	INPP	B	TB	B	TB	TB	TB	B	TB	B	TB
11	JGLE	B	TB	B	TB	B	TB	B	TB	B	TB
12	JIHD	B	TB	B	TB	B	TB	B	TB	B	TB
13	JSPT	B	TB	TB	TB	B	TB	B	TB	B	TB
14	KPIG	TB	TB	B	TB	B	TB	B	TB	B	TB
15	MAPB	TB	TB	TB	TB	TB	TB	B	TB	B	TB
16	MINA	B	TB	TB	TB	B	TB	B	TB	B	TB
17	NASA	B	TB	B	TB	B	TB	B	TB	B	TB
18	PANR	B	TB	B	TB	B	TB	B	TB	B	TB
19	PDES	TB	TB	B	TB	B	TB	B	TB	B	TB
20	PGLI	B	TB	TB	TB	TB	TB	B	TB	TB	TB
21	PJAA	B	TB	B	TB	B	TB	B	TB	B	TB
22	PNSE	TB	TB	B	TB	B	TB	B	TB	B	TB
23	PSKT	B	TB	B	TB	B	TB	B	TB	B	TB
24	PTSP	TB	TB	TB	TB	TB	TB	B	TB	B	TB
25	SHID	B	TB	B	TB	B	TB	B	TB	B	TB
26	SOTS	B	TB	B	TB	B	TB	B	TB	B	TB
Bankrupt (B)		18	0	17	0	19	0	26	0	24	0
Not Bankrupt (TB)		8	26	9	26	7	26	0	26	2	26

Source: Data Processed (2022)

Based on analysis of tourism companies, restaurants and hotels using the Springate method, it was revealed that before the the Covid-19 pandemic's breakout, namely. in 2017, around 18 companies went bankrupt using the Springate method. Eight companies are unlikely to go bankrupt. In 2018, it is estimated that there will be 17 corporate bankruptcies and 9 corporate bankruptcies. In 2019, it is estimated that there will be 19 bankruptcies and 7 bankruptcies. During the COVID-19 pandemic, namely. in 2020, Springate's method predicts 26 companies will go bankrupt. In 2021, it is estimated that 24 companies will file for bankruptcy, but two businesses won't. Springate's methodological analysis of companies in the travel, restaurant and hotel sectors between 2017 and 2021 found that 104 companies went bankrupt, and up to 26 companies are expected to go bankrupt. You are good or not.

Fulmer Method

Table 3. Fulmer Method Analysis Results

No.	Stock code	Year(before pandemic)						Year (during the pandemic)			
		2017		2018		2019		2020		2021	
		Fulmer	Actual	Fulmer	Actual	Fulmer	Actual	Fulmer	Actual	Fulmer	Actual
1	AKKU	TB	TB	TB	TB	B	TB	TB	TB	B	TB
2	ARTA	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB
3	BAYU	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB

No.	Stock code	Year(before pandemic)						Year (during the pandemic)			
		2017		2018		2019		2020		2021	
		Fulmer	Actual	Fulmer	Actual	Fulmer	Actual	Fulmer	Actual	Fulmer	Actual
4	DFAM	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB
5	EAST	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB
6	FAST	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB
7	HRME	B	TB	B	TB	B	TB	B	TB	B	TB
8	ICON	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB
9	IKAI	B	TB	B	TB	B	TB	B	TB	B	TB
10	INPP	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB
11	JGLE	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB
12	JIHD	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB
13	JSPT	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB
14	KPIG	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB
15	MAPB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB
16	MINA	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB
17	NASA	B	TB	TB	TB	TB	TB	TB	TB	TB	TB
18	PANR	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB
19	PDES	TB	TB	TB	TB	TB	TB	TB	TB	B	TB
20	PGLI	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB
21	PJAA	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB
22	PNSE	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB
23	PSKT	B	TB	B	TB	B	TB	B	TB	B	TB
24	PTSP	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB
25	SHID	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB
26	SOTS	TB	TB	TB	TB	TB	TB	B	TB	B	TB
Bankrupt (B)		4	0	3	0	4	0	4	0	6	0
Not Bankrupt (TB)		22	26	23	26	22	26	22	26	20	26

Source: Data Processed (2022)

The Fulmer method analysis's results are displayed in Table 3. Before the COVID-19 epidemic struck in 2017, the Fulmar approach estimates that four companies and 22 companies filed for bankruptcy based on its examination of businesses in the travel, restaurant, and lodging sectors. Prior to. The company did not go bankrupt. Three corporate bankruptcies and 23 corporate bankruptcies are expected to occur in 2018. Four corporate bankruptcies and 22 corporate bankruptcies are estimated to occur in 2019. During the COVID-19 pandemic, namely in 2020 according to the Fulmar method there were 4 bankrupt companies and 22 companies that did not go bankrupt. In 2021, six companies will go bankrupt, and it is estimated that there will be no more than 20 companies. Analyzing tourism, restaurant and hotel industry companies using the Fulmer method for 2017-2021, it can be concluded that there are 21 companies that are expected to go bankrupt. Currently, there are 109 companies that are predicted to be healthy or bankrupt.

Descriptive Statistical Test

Table 4. Descriptive Statistical Test Results

	N	Minimum	Maximum	Mean	Std. Deviation
SPRINGATE	130	-2,378	4,036	21,487	844824
FULMER	130	-10,886	14,893	2.15702	2.851488
Valid N (listwise)	130				

Source: Data Processed (2022)

Descriptive statistical test results based on table 4 indicate that the lowest (minimum) value for the Springate IA company in 2020 was -2.378, the highest (maximum) value for the IA company in 2019 was 4.036, and the mean (average value) was et. 0.21487 and standard deviation (SD) of 0.44824. The lowest (minimum) Fulmar score on IKAI was -10.886 in 2017, the highest (maximum) score on MINA was 14.893 in 2018, and the average (mean) score was 2.15702 with a standard deviation (std deviation) of 2. 851488.

Normality test

The precise Kolmogorov-Smirnov test method was used as a normality test. The advantage of the exact method is that it can calculate the significance level precisely without relying on assumptions that may not be met by the data, for example the data is small, sparse, doubly correlated, unbalanced and irregular. divided (Mehta and Patel, 2011).

Table 5. Normality Test Results

		Unstandardized Residuals
N		**38**
Normal Parameters, b	Mean	-.0012985
	Std. Deviation	1.09634558
Most Extreme Differences	Absolute	.136
	Positive	,078
	Negative	-.136
Statistical Tests		.136
Asymp. Sig. (2-tailed)		.075c

Source: Data Processed (2022)

Based on Table 5, the results of the normality test show that the exact sign (two sides) of the Springate method is 0.506 and Fulmer's is 0.110. This shows that the data is normally distributed with an Exact Sig value. (Two-tailed) Both variables are greater than (>0.05).

Accuracy Level and Error Type

Table 6. Calculation Results of Accuracy Levels and Error Types

No.	Prediction Method	Prediction Results		Amount	Level of accuracy	*Error Type*
		Bankrupt	Not Bankrupt			
1	Springate	104	26	130	20%	80%
2	Fulmer	21	109	130	84%	16%

Source: Data Processed (2022)

According to the above table, the Fulmar method, which has an accuracy of 84%, is the most accurate in predicting bankruptcy in the tourism, restaurant, and hotel industries for companies listed on the Indonesia Stock Exchange. The mould, on the other hand, has an accuracy of 16%. The Springate method has an accuracy of 20% and an error rate of 80% in predicting bankruptcy. Therefore, H2 is rejected, but H3 is accepted.

5. Discussion

The Fulmer approach, which has an accuracy of 84%, is the most accurate way for predicting bankruptcy, while the Springate method has an accuracy of 20%, according to the results of data processing and analysis. The present study's findings are consistent with those of Munawarah et al., indicating that the Fulmer approach outperforms the Grover and Altman approach in

forecasting economic crises. Masdiantini and Ni Made (2020) found that the Fulmer method had higher accuracy than the Springate and Altman method in predicting one hundred percent bankruptcy. A study of BUMN and non-BUMN conducted by Febbiant (2022) shows that the Fulmer method has one hundred percent accuracy. The results of this research are different from the results of Laksmana and Ayu (2019) who found that the Springate model provided one hundred percent accuracy in predicting bankruptcy. Cason et al. (2020) found that the Springate model was the most accurate for predicting unstable financial conditions. Isykharma et al (2021) showed that the Springate model provided predictions of financial crises with 100% accuracy. In a study of tobacco companies, Ulfah and Abdul (2022) found that the Springate model provided financial crisis predictions with 80% accuracy.

6. Conclusion

The results of data processing carried out on bankruptcy analysis carried out using the Springate and Fulmer methods on companies in the tourism, restaurant and hotel subsectors listed on the Indonesian Stock Exchange (BEI) from 2017 to 2021 show that the Springate and Fulmer methods have significant capabilities to predict bankruptcy. Manager's influence: Analysis of the Springate and Fulmer method for predicting bankruptcy in the tourism, restaurant and hotel sectors in Indonesia provides important information for manager decision making. The Fulmer method produces the highest accuracy of 84%, and the Springate method produces an accuracy of 20%. This method is very effective in guiding strategic financial planning and risk management of companies in this industry. The results show that [specify the better method shows a better level of predicting the probability of financial problems in the analyzed subsectors. This means that businesses in the tourism, restaurant and hotel sectors should consider incorporating these specific techniques into their risk assessment framework to make their early warning systems more effective. For managers, it's more than just a financial forecast. The identified methods can serve as proactive tools for implementing targeted and timely managerial interventions. Executives can make informed decisions about signs of financial instability, such as restructuring debt, optimizing operational efficiency, or seeking external financial support to reduce bankruptcy risk.

Recommendations

Model development: Analyzing the possibility of developing a more accurate and precise bankruptcy forecasting model that responds to the commercial characteristics of the tourism, restaurant and hotel subsectors, Improving information: Encouraging the collection and updating of more complete and accurate financial data. improve forecast accuracy, Apply other methods: suggest other methods that may be better suited to a particular business context. External factor analysis: Expands research to include external factors that can influence bankruptcy, such as changes in government policy, global events or economic conditions. Results validation: Validate research results involving respondents or subject matter experts to ensure the relevance of the results to business practices. It is hoped that this research will significantly increase our understanding of the effectiveness of the Springate and Fulmer methods in the tourism, restaurant and hotel industries in Indonesia, as well as becoming a basis for further research in developing bankruptcy prediction models.

Referances

Alfadillah. (2021). "Lack of visitors, 1,033 hotels in Indonesia are permanently closed due to the pandemic." Travel Coil.

Ambarsari, Ratna. (2020). "Financial Distress Analysis using the Altman Z-Score, Springate, Zmijewski, Fulmer, and Grover models on Property and Real Estate Companies Listed on the Indonesian Stock Exchange for the 2016-2018 period." Thesis, Surakarta, Muhammadiyah University of Surakarta.

Ancol. (2021). "Affected by shocks during the pandemic, Ancol continues to survive with various strategies and prepares for company transformation." Ancol Corporate..

Arlita, Virda, Rosalia. (2020). "Comparative Analysis of the Altman, Springate, Grover, and Zmijewski Models in Predicting Financial Distress and Their Review from an Islamic Perspective." Thesis, Jakarta, Yarsi University.

Azzahra, Qonita. (2022). "Contribution of the tourism sector to GDP 2017-2021". Alinea.id.

Fahma, Yoga, Taufan, and Nina D. Setyaningsih. (2019). "Financial Distress Analysis Using the Altman, Zmijewski, Grover, Springate, Ohlson and Zavgren Method to Predict Retail Company Bankruptcy", Asian Scientific Journal of Business and Economics, vol. 15, no. 2, 200-216. https://doi.org/10.32815/jibeka.v15i2.398

Febbianti, Y. (2022). "Analysis of the Financial Distress Model in Predicting Potential Bankruptcy in BUMN and Non-BUMN Companies in the Building Construction Subsector Listed on the Indonesian Stock Exchange for the 2014-2020 Period", Thesis, Pekanbaru, Sultan Syarif Kasim Riau State Islamic University.

Hanafi, Mamduh, M., & Halim, A. (2018). Financial Report Analysis (5th ed.), Yogyakarta: UPP STIM YKPN.

Hernadianto, Yusmaniarti & Fraternesi, (2020). "Financial Distress Analysis in Property and Realestate Subsector Services Companies Listed on the Indonesian Stock Exchange". JSMBI (Indonesian Journal of Management Science and Business), vol. 10, no. 1, 80-102. https://doi.org/10.32528/JSMBI.V10I1.3391

Isykharima, Alifya, Maulidina. (2021). "Analysis of the Accuracy of Financial Distress Prediction Methods as a Delisting Company Detector". Joint National Seminar on Social and Political Sciences. 92-102.

Kason. (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". MEA Scientific Journal, vol. 4, no. 3, 442-458. https://doi.org/10.29407/nusamba.v5i1.13526

Ministry of Tourism and Creative Economy. (2021). "Tourism and Creative Economy Outlook Book 2021". kemenparekraf.go.id.

Kristanti, Farida, T. (2019). Financial Distress theory and its development in the Indonesian context, Malang: Inteligensia Media.

Kusumanisita, A., Ika, and Istiana Mita Musdalifah. (2021). "Analysis of Bankruptcy Predictions in Sharia Commercial Banks in Indonesia Using the Fulmer Method for the 2010-2019 Period", Journal of Sharia Economics and Banking, vol. 7, no. 2, 135-144. https://dx.doi.org/10.29300/aij.v7i2.4634

Kusumaningrum, Trias, Madanika. (2021). "Comparison of the Level of Accuracy of Financial Distress Prediction Models in Companies Included in KANTAR'S 2020 TOP 30 Global Retails (EUR)", MEA Scientific Journal (Management, Economics and Accounting), vol. 5, no. 3. 1309-1327. https://doi.org/10.29300/aij.v7i2.4417

Laksmana, Komang, A., R., I., and Ayu Damarwati. (2019). "Analysis of the Accuracy Test of the Grover, Springate, and Zmijewski Models in Predicting Bankruptcy of Delisted Companies on the IDX". Master of Management Journal, vol. 8, 1-11. https://doi.org/10.29303/jmm.v8i1.355

Masdiantini, P., Riesty and Ni Made S. Warasniasih, (2020). "Financial Reports and Prediction of Company Bankruptcy", Scientific Journal of Accounting, vol. 5, no. 1, 196-220. https://doi.org/10.23887/jia.v5i1.25119

Mehta, C.R., & Patel, N.R. (2011). IBM SPSS Exact Tests. 2011, January, 1–236.

Mohammadi, Safiye. (2016). "Studying the Efficiency and the Power of Predicting bankruptcy of Firms Listed on the Stock Exchange Using Springate, Fulmer, and Zavgren Models", Mediterranean Journal of Social Sciences, vol. 7 no. 4, 124-130.

Munawarah. (2019). "Altman, Zmijewski, Grover, and Fulmer's Accuracy in Determining Financial Distress in Trade and Service Companies". OWNER Research & Accounting Journal, vol. 3, no. 2, 278-288. https://doi.org/10.33395/owner.v3i2.170

Norita. (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, vol. 9, no. 2.

Parquinda, Liana. (2019). "Analysis of the use of the Grover (G-Score), Fulmer (H-Score), Springate (S-Score), Zmijewski (X-Score), and Altman (Z-Score) Models as Bankruptcy Predictors (Study of textile and garment companies that listing on the Indonesian Stock Exchange (BEI) for the 2015-2017 period)", Thesis, Malang, Brawijaya University.

Prihadi, T. (2013). Financial Report Analysis: Theory and Application, Jakarta: PPM Management.

Putri, N., K., Ayu, Rianita, and Desak NS Werastuti (2020). "Analysis of the Fulmer and Grover Model in Predicting Financial Distress in the Consumer Goods Industry", Accounting Student Scientific Journal, vol. 11, no. 3, 733-745. https://doi.org/10.23887/jimat.v12i1

Ulfah, H., Kurnia, and Abdul Moin, (2022). "Predicting Financial Distress using Altman Z-SScore, Springate S-Score and Zmijewski 1, no. 2, 159-169.