

Bankruptcy Analysis With Altman, Springate, And Zmijewski On Consumer Goods Companies Listed On The Indonesian Stock Exchange

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Article Info	ABSTRACT
<p>Corresponding Author: Julianto Julianto, et.al E-mail: ijuljulianto22@gmail.com</p>	<p>Financial statement analysis is very important for companies that go public, these financial reports become company performance reports for investors, suppliers, and employees because they are the most disadvantaged if the company loses money or goes bankrupt. The analysis needs to be done, with the consideration that the bankruptcy of a go public company will harm many parties. The object of this study is a consumer goods company listed on the Indonesia Stock Exchange (IDX) and included in the IDX30 indexed company class, the data used to analyze company bankruptcy using financial statement data for the 2016-2021 period. The purpose of this study is to determine the financial performance and devastation in the last five consecutive years. The method of analysis in this study is the analysis of financial statement ratios and bankruptcy analysis of the Altman Z-Score model, the Springate model and the Zmijewski model.</p> <p>Keywords: Altman, Springate, Zmijewski, Bankruptcy, Bursa Efek Indonesia (BEI)</p>

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INTRODUCTION

Since the beginning of March, 133 US companies have requested bankruptcy protection, according to Bloomberg statistics, as a result of the Covid-19 outbreak. According to CNBC, Covid-19 puts 30% of US restaurants in danger of bankruptcy and eventual closure. The largest Pizza Hut franchisee in the US, NPC International, filed for bankruptcy on July 1. Starbucks may file for bankruptcy this year, according to S&P Global Ratings, while the probability is low —less than 10%. (Baskoro, 2020). According to BPS data for that period, 82.85% of business actors reported income losses due to the corona outbreak.



Figure 1. Statistical data for each sector
 (Source: Jakarta, CNBC Indonesia)

From the image above showing data from the Central Statistics Agency, it is noted that household consumption in the third quarter of 2019 only grew 5.01% on an annual basis (year on year/YoY). Market players were anxiously waiting for the results of Indonesia's economic growth, because household consumption contributed 55.7% of the Indonesian economy.

Literatur Review

Understanding Financial Management

Financial management is one of the company's operational functions related to financial processing which is basically carried out by individuals, companies and the government. Financial management has an important role in the development of a company. Financial management is one of the important fields of science,

Financial statements

A financial report will be more useful for decision making, if with this information it can be predicted what will happen in the future. By further processing financial reports through a process of comparison, evaluation and trend analysis, we will be able to predict what might happen in the future, so this is where financial reports are really needed.

Bankruptcy

According to (Budiarti, 2020) A company can be considered bankrupt if it is unable to pay its debts, which is an undesirable situation in business. According to (Ratnasari, 2018) In order to no longer be able to fulfill its commitments due to the company's inability to create profits, a corporation must declare bankruptcy after failing to carry out its activities.

Altman Model

The Multiple Discriminant Analysis method with five types of financial ratios working capital to total assets, retained earnings to total assets, earnings before interest and taxes to total assets, market value of equity to book value of total debts and sales to total assets was used by Edward I.

Springate models

Springate conducted its study using 40 companies as a sample and applied multidiscriminant analysis according to the Altman model methodology. 92.5 percent of the time, the model can accurately predict bankruptcy.

Zmijewski Model

According to Zmijewski's research, this model has an accuracy rate of 94.9% (Juliana, 2012). The following equation is a bankruptcy prediction model that was successfully created by Zmijewski (Prihanthini & Sari, 2013)

METHODS

Research design

To support the preparation of this research, methods are needed to examine the data obtained, confirm the approaches, methods and techniques used to answer or explain research problems. Because the variables that will be studied are related to it and the aim is to present the facts and relationships between the variables studied, namely predicting bankruptcy that occurs in companies using the Altman, Springate and Zmijewski methods. In financial report analysis, the research methods that will be used in this research are descriptive and verification methods.

Data source

The data source in this research was obtained from secondary data in the form of financial reports of consumer goods companies listed on the Indonesia Stock Exchange with financial reports for the period February 2016 – January 2021.

How to Determine Data

The company data used is data from the company *consumer goods* which are on the IDX and are registered shares included in the IDX30 index calculation from 2016 – 2021 and have successively presented financial report data.

Table 1. Sample Data for Consumer Goods Companies registered with IDX30

No	Issuer Code	Company name
1	GGRM	Gudang Garam Tbk.
2	ICBP	Indofood CBP Sukses Makmur Tbk
3	INDF	Indofood Sukses Makmur Tbk.
4	KLBF	Kalbe Farma Tbk.
5	UNVR	Unilever Indonesia Tbk.

Source: www.idx.co.id

Data Processing Techniques

1. Altman Z-Score Method

$$Z = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$$

Information:

X₁= Working capital/Total assets

X₂= Retained earnings/Total assets

X₃= Earnings before interest and taxes/ Total assets

X₄= Book value of equity/ Book value of total debt

Z = Bankruptcy Index

2. Springate Method

$$S = 1.03A + 3.07B + 0.66C + 0.4D$$

Information

A= Working Capital/Total assets

B= Earnings before interest and taxes/Total assets

C = Earnings before taxes/Current liabilities

D= Sales/Total assets

S = Bankruptcy index

3. Zmijewski Method

$$X = -4.3 - 4.5X_1 + 5.7X_2 - 0.004X_3$$

Information

X₁= Return On Assets (ROA)

X₂= Leverage (Debt Ratio)

X₃= Liquidity (Current Ratio)

X = Bankruptcy Index

RESULTS AND DISCUSSION

Description of Research Object

In this research, the research object is consumer goods companies listed on the Indonesia Stock Exchange (BEI) from 2017 to 2021, namely, the period before the Covid pandemic to the period after the Covid pandemic.

Altman Model Bankruptcy Analysis Calculation Results

After carrying out calculations using the Altman method and comparing the results of these calculations with the cut off value, the following results were obtained:

Table 2. Altman Calculation Results

Company Code	Z-Score					Average	Prediction Status
	2017	2018	2019	2020	2021		
GGRM	6.15	6.40	6.60	7.66	5.97	6.55	Not Bankrupt
ICBP	5.62	5.26	6.05	2.88	2.95	4.55	Not Bankrupt
INDF	3.78	2.91	3.74	2.54	3.21	3.24	Not Bankrupt
KLBF	9.82	9.86	9.22	9.08	9.58	9.51	Not Bankrupt
UNVR	6.04	6.75	5.74	5.47	5.27	5.85	Not Bankrupt

Source: Processed data, 2023

Based on table 2 above, it is known that during the research year, namely 2017 to 2021, none of the companies sampled in the research were predicted to experience bankruptcy.

Springate Model Bankruptcy Analysis Calculation Results

Table 3. Springate Calculation Results

Company Code	S-Score					Average	Prediction Status
	2017	2018	2019	2020	2021		
GGRM	1.67	1.73	1.90	1.80	1.33	1.69	Not Bankrupt
ICBP	1.78	1.82	2.04	1.23	1.04	1.58	Not Bankrupt
INDF	1.02	0.81	0.97	0.77	0.92	0.90	Not Bankrupt
KLBF	2.53	2.45	2.27	2.11	2.17	2.31	Not Bankrupt
UNVR	3.16	3.66	3.07	2.94	2.73	3.12	Not Bankrupt

Source: Processed data, 2023

Based on table 3 above, it is known that during the research year, namely 2017 to 2021, none of the companies sampled in the research were predicted to experience bankruptcy.

Zmijewski Model Bankruptcy Analysis Calculation Results

Table 4. Zmijewski's Calculation Results

Company Code	X-Score					Average	Prediction Status
	2017	2018	2019	2020	2021		
GGRM	-2.73	-2.84	-2.92	-3.32	-2.65	-2.89	Not Bankrupt
ICBP	-2.78	-2.98	-3.16	-1.70	-1.55	-2.43	Not Bankrupt
INDF	-1.90	-1.78	-2.09	-1.61	-1.64	-1.81	Not Bankrupt
KLBF	-4.05	-4.04	-3.88	-3.79	-3.91	-3.93	Not Bankrupt
UNVR	-1.83	-2.92	-1.67	-1.54	-1.25	-1.84	Not Bankrupt

Source: Processed data, 2023

Based on table 4 above, it is known that during the research year, namely 2017 to 2021, none of the companies sampled in the research were predicted to experience bankruptcy.

Potential Bankruptcy Before Covid-19

Altman's calculation results show that from 2017 to 2019, no sample companies are predicted to experience bankruptcy or be in the gray area. The gray area is a prediction that states that a company is experiencing financial difficulties. All companies sampled in this research are Gudang Garam Tbk., Indofood CBP Sukses Makmur Tbk., Indofood Sukses Makmur Tbk., Kalbe Farma Tbk., and Unilever Indonesia Tbk. predicted not to experience bankruptcy.

Potential for Bankruptcy During Covid-19

The results of calculations using the Zmijewski method show that in 2020, none of the sample companies are predicted to experience bankruptcy. This shows that, amidst the economic downturn due to the impact of Covid-19, consumer goods companies can still survive. Even though it has experienced a decline, this industrial sector is trying to carry out company operational activities optimally. The company's existence in the midst of the pandemic is also caused by the increasing public need for primary goods.

Potential Bankruptcy After Covid-19

Altman's calculation results show that in 2021, none of the sample companies are predicted to experience bankruptcy or be in the gray area. In line with the results of Altman's calculations, the Springate method also predicts that after the Covid-19 pandemic, no sample companies will experience bankruptcy.

Test the Difference

This test is usually used as an alternative to One Way Anova when normality assumptions are not met. Calculations are carried out using the SPSS application. Following are the results of the Kruskal-Wallis test.

Accuracy Test

Based on the results of data processing, a recapitulation of health level predictions was compiled using the Altman Z-Score, Springate and Zmijewski models.

Table 5. Accuracy Test Results

Prediction	Altman Z-Score	Springate	Zmijewski
Healthy	5	5	5
Not healthy	0	0	0
Total	5	5	5
Accuracy (%)	100	100	100
Errors (%)	0	0	0

Source: Processed Data, 2023

Based on the calculation results above, the results show that the accuracy levels of the three methods both have an accuracy level of 100%. These results indicate that there is no difference in the level of accuracy between Altman Z-Score bankruptcy prediction method, Springate, and Zmijewski at the consumer goods sector listed on the Indonesia Stock Exchange for the 2017 - 2021 period.

CONCLUSION

Based on the calculation results of the three methods that analyze the potential for bankruptcy before, during and after Covid-19, the following conclusions can be drawn: 1) Calculation results before the Covid-19 pandemic period from 2017 to 2019 which were calculated using the Altman Z method -Score shows that all sample companies in this study are predicted not to experience bankruptcy. 2) The results of calculations during the Covid-19 pandemic period in 2020 which were calculated using the Zmijewski method show that all sample companies are predicted not to experience bankruptcy even though the economy has declined due to the impact of the Covid-19 pandemic. 3) The calculation results after the Covid-19 pandemic in 2021 which were calculated using the Altman Z-Score method showed that all sample companies were predicted to experience bankruptcy. 4) Three bankruptcy analysis models that have been tested show that there is no significant difference in the potential bankruptcy of consumer good companies on the Indonesia Stock Exchange for the 2017-2021 period, where each of the three models has the same level of accuracy, namely 100%. There are research suggestions, namely 4) Three bankruptcy analysis models that have been tested show that there is no significant difference in the potential bankruptcy of consumer good companies on the Indonesia Stock Exchange for the 2017-2021 period, where each of the three models has the same level of accuracy, namely 100%. There are research suggestions, namely 4) Three bankruptcy analysis models that have been tested show that there is no significant difference in the potential bankruptcy of consumer good companies on the Indonesia Stock Exchange for the 2017-2021 period, where each of the three models has the same level of accuracy, namely 100%. There are research suggestions, namely 1) For further research, it is recommended to increase the research period and add bankruptcy analysis methods. Apart from that, further research can try other sectors as research objects. 2) For companies to immediately evaluate any indications of bankruptcy and be alert in taking certain actions to overcome problems that occur so that the company avoids bankruptcy. 3) Investors pay attention to the company's financial performance before investing their funds in a particular company. This aims to ensure that investors can consider carefully before making a decision.

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