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Analysis of Financial Distress Condition in Energy Sector Companies Using Modified Altman Z-Score and Springate Methods

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Abstract. This research aims to predict the financial distress condition in companies using the modified Altman Z-Score and Springate models, as well as to find a more accurate model and determine the difference in accuracy between the two models. The research adopts a descriptive method with a quantitative approach. The population of this study consists of energy sector companies listed on the Indonesia Stock Exchange during 2017-2021. The sample for this study includes 10 energy sector companies listed on the Indonesia Stock Exchange. The results of this research indicate that the model with the highest accuracy rate is the modified Altman Z-Score model with an accuracy rate of 76%, followed by the Springate model with an accuracy rate of 64%. One company is experiencing financial distress, eight companies are healthy, and one company falls within the grey area using the modified Altman Z-Score model. On the other hand, five companies are experiencing financial distress, and five companies are in a healthy condition according to the Springate model.

Keywords: Altman Z-Score; Springate; Financial Distress; Bankruptcy; Accurate Method

A. INTRODUCTION

Generally, the establishment of a company is aimed at generating profit or income. In the context of business, companies strive to create added value and generate revenue that exceeds their operational costs. The profit or income generated by a company can be used to finance its own growth, invest in the business, pay dividends to shareholders, or strengthen the company's financial position. However, if a company does not have good financial performance, it will result in various negative consequences. For example, difficulties in obtaining funding, a decrease in trust from stakeholders, difficulties in carrying out operations, and ultimately potential business failure or bankruptcy.

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Bankruptcy is a condition where a company is no longer able to operate its finances due to financial difficulties (Masdiantini & Warasniasih, 2020). Company bankruptcy does not occur suddenly, but generally there are signs or warnings of financial difficulties beforehand. Financial distress warning is an indicator or symptom that a company is facing difficulties in generating sales or decreasing profits from year to year. When a company experiences financial distress warning, it indicates that the company's financial condition is unhealthy and there are problems that negatively affect its financial performance.

One of the causes of financial distress is unfavorable economic changes, such as the conditions brought about by the Covid-19 pandemic. The COVID-19 pandemic has created a high level of uncertainty in the market. Unstable economic fluctuations and significant changes in consumer behavior have made business planning and financial decision-making more difficult. This can lead to financial instability and potential financial distress. Travel restrictions and factory closures in various regions have disrupted the global supply chain. Dependence on specific suppliers or the inability to meet production demands can lead to financial difficulties and potential financial distress.

During the Covid-19 pandemic, the global and domestic economies, including in Indonesia, experienced a decline. In 2020, the Indonesian economy contracted by 2.07% compared to 2019 (BPS, 2021). The Indonesian economy faced a challenging situation in the second and third quarters of 2020, with consecutive economic growth contractions of -5.3% and -3.5% respectively (Bappenas, 2021).

The Covid-19 pandemic that struck Indonesia since early 2020 has impacted nearly every sector, including the energy sector. Like other countries around the world, the energy industry in Indonesia has also undergone significant changes in several aspects due to this pandemic. One of the direct impacts of the Covid-19 pandemic on the energy industry is the decline in global demand and prices of crude oil. This is due to the significant reduction in air travel and motor vehicle usage as result of social restrictions and lockdowns implemented by the government to combat the spread of the Corona virus. The decreased demand has led to a global surplus of crude oil supply, causing a drastic drop in selling prices.

Furthermore, the Covid-19 pandemic has also affected national electricity production. Social restrictions have forced many businesses to close or operate at low capacities for months, resulting in a drastic decrease in electricity consumption. In response to this situation, the state-owned electricity company, PLN (Perusahaan Listrik Negara), has restructured the usage of generators more effectively and ensured their availability to maintain stability according to the needs of the public. On the other hand, the pandemic has also impacted investment projects in the energy sector as many investors have withdrawn their intentions due to the uncertain global economic situation. The Indonesian government must work harder to attract foreign investors and encourage domestic investment in the energy sector to boost national economic growth. Overall, the Covid-19 pandemic has had a significant impact on the energy industry in Indonesia, both directly and indirectly.

The energy sector itself plays a crucial role in Indonesia's economy as it is one of the sources of state revenue. Energy serves as the "engine" of economic activities. Industries require energy in various forms to carry out their production processes. Without the energy sector, industries would face serious challenges in obtaining energy sources to run their operations. This can lead to production declines, supply shortages, and economic slowdown.

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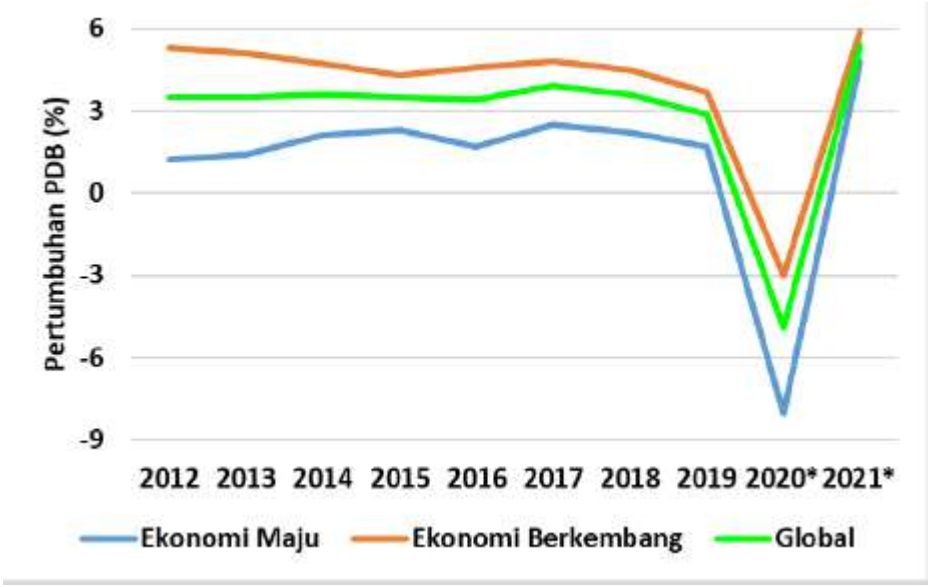
Restrictions on community activities, known as Large-Scale Social Restrictions (PSBB), directly reduce demand, including energy needs. According to the analysis by the Agency for the Assessment and Application of Technology (BPPT) in a study titled "The Impact of the COVID-19 Pandemic on the Energy Sector in Indonesia," it is stated that energy demand is expected to decline in line with economic slowdown and the implementation of PSBB policies. In 2020, national energy requirements were projected to decrease by approximately 107.4 to 199.2 million barrels of oil equivalent (MBOE) (Kompas, 2020).

During the Covid-19 pandemic in 2020, the oil and gas industry experienced decreased demand, price declines, and production surplus despite a decrease in production. Millions of people spent time at home, learning, working, and shopping online, while domestic and international travel came to a halt. Activities in offices, hotels, and conference venues declined, as did the manufacturing industry and micro, small, and medium-sized enterprises (MSMEs). Consequently, the demand for transportation fuel experienced a significant decrease. The lockdown policies implemented in many countries to combat the Covid-19 pandemic directly impacted the decline in fuel demand (Forbes, 2020).



Source : IMF (2020)

Based on IMF data on the economic crisis caused by Covid-19, the implementation of Large-Scale Social Restrictions (PSBB) policies has led to a decline in industrial activities, especially in the service sector, and has disrupted global supply chains and trade. The impact of social interaction restrictions mainly occurred in China as a global trading hub, which disrupted supply chains, including energy supply and demand. In the context of the global economic shock caused by the Covid-19 pandemic, most commodity prices have declined. One of the commodities that has been most affected is energy commodities, especially crude oil, due to its direct connection to the transportation sector, which has experienced a significant decrease.

The decline in income due to decreased demand and consumption in the energy sector has an impact on the financial performance of those companies, and if it continues, the companies may potentially experience signals of financial distress. Efforts to minimize the occurrence of financial distress include conducting ratio analysis to assess the health of a company's performance (Rahman, 2022). The earlier signs of financial distress are

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detected, the sooner management can take preventive measures to reduce the risk of corporate bankruptcy. This can be done through policy and business strategy updates. Companies facing financial difficulties need to design strategies to improve their performance. If financial performance continues to decline, there is a high likelihood that the company will face the risk of bankruptcy (Daryanto et al., 2021). In this context, it is important to conduct an analysis of financial distress predictions to provide an overview of the company's financial condition during the Covid-19 pandemic. This analysis is useful in mitigation efforts and predicting the sustainability of the company's operations to withstand the challenges posed by the Covid-19 pandemic. Furthermore, this analysis also serves as a consideration in decision-making and as a basis for management evaluation in handling potential worst-case scenarios (Armadani et al., 2021).

B. LITERATURE REVIEW

Bankruptcy

Sometimes, companies may not always achieve the desired outcomes as planned. In certain situations, a company may face mild financial challenges, such as liquidity difficulties marked by struggles to pay employee salaries or debt interest. If these issues are not appropriately addressed, initial minor financial difficulties can escalate into more serious problems, even leading to corporate bankruptcy (Kadim & Sunardi, 2018). Bankruptcy itself is a condition in which a company or individual is unable to fulfill their financial obligations that are due or does not possess sufficient assets to settle their debts. This is often indicated by the company's inability to meet payment obligations to creditors or experiencing significant financial losses.

Causes of Bankruptcy

According to Weston & Copeland (1992) in Sumolang et al. (2021), the factors contributing to corporate bankruptcy that originate from external sources include:

1. Economic factors, such as inflation and deflation in the prices of goods and services, financial policies, interest rates, currency devaluation or revaluation, and surplus or deficit in the balance of payments.
2. Social factors, such as changes in lifestyle and trends within society, can have a significant impact on the likelihood of corporate bankruptcy. These social factors include changing consumer preferences, evolving needs, or emerging trends that can affect the demand for the products or services offered by the company. Additionally, social unrest or riots occurring within society can also affect the business and financial stability of a company. Social disruptions or chaos can hinder company operations, disrupt supply chains, and result in significant financial losses.
3. Political or governmental factors, such as policies implemented, such as the withdrawal of subsidies for a particular industry, imposition of export and import tariffs, and the introduction of new laws related to specific sectors. These policies can have a significant influence on the financial performance and stability of a company. For example, the withdrawal of subsidies can increase production costs for a company, while the imposition of export and import tariffs can affect access to international markets and the competitiveness of the company.

Additionally, according to Darsono & Ashari (2005) in Sumolang et al. (2021), some causes of bankruptcy that originate from internal factors within a company include:

1. Misuse of authority by employees or company owners that can lead to financial or structural losses for the company. The misuse of authority can disrupt organizational stability, reduce operational efficiency, and hinder the progress of the company. The

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impacts can include financial losses due to irrational decision-making or manipulation of financial data, as well as structural losses such as loss of trust from other employees, breakdown of a healthy work culture, and damaged reputation.

2. Poor management can result in a mismatch between the company's strategy and changing market conditions, leading to inappropriate decisions and inefficient resource allocation. Ineffective management performance can have negative consequences for the company since management is responsible for setting the direction and goals of the company. When management makes inappropriate decisions or fails to analyze market needs effectively, competitors can take advantage and cause the company to incur losses.

Bankruptcy Indicators

According to Hanafi & Halim (2016) in Aadilah & Hadi (2022), it is stated that bankruptcy can actually be predicted through several relevant indicators. First, an analysis of the company's current and future cash flow can be conducted. Second, an analysis of the company's strategy involving an assessment of the competition it faces. Third, an evaluation of the company's cost structure relative to its competitors. Fourth, an assessment of the quality of the company's management. Fifth, an assessment of management's ability to control costs. Sixth, the utilization of the company's financial statements as a tool to predict potential financial difficulties. Seventh, the use of external information that can provide insights into the possibility of financial difficulties. By analyzing these indicators, the potential bankruptcy of a company can be identified more effectively. Cash flow analysis, company strategy, cost structure, management, financial statements, and external information are important factors that can be used to predict financial difficulties.

Financial Distress

Financial distress is a condition in which a company or entity experiences serious or unstable financial difficulties. Financial distress occurs when a company fails to manage and maintain financial performance stability. It starts with the failure to promote the company's products, resulting in declining sales. As a result, decreased revenue due to low sales can lead to operational and net losses in the current year (Nabawi & Efendi, 2020). Financial distress does not necessarily mean that the company is bankrupt but indicates that the company is facing serious financial difficulties and has the potential to lead to bankruptcy if not properly addressed. According to Drescher (2014) in Sudirgo et al. (2019), financial distress is the final stage of liquidity crisis and has the potential to end in bankruptcy. This indicates that the company is struggling to meet its obligations to creditors. Financial distress can have broad and significant impacts on the company, employees, suppliers, creditors, investors, customers, and the government. These impacts can include financial losses, job uncertainty, market instability, and customer dissatisfaction. Therefore, it is important for companies to manage and prevent financial distress in order to maintain business sustainability and minimize its negative effects on all parties involved.

Modified Altman Z-Score Model

The Altman Z-Score is a predictive model used to measure the likelihood of a company's bankruptcy. The model was developed by Edward Altman in 1968 and has become one of the commonly used methods in financial analysis. Several modifications have been made to the Altman Z-Score model to accommodate changes in the business and financial environment. These modifications involve adjustments to the variables or weights used in calculating the Z-Score. The modified Z-Score formula is a highly flexible formula that allows its application in various types of businesses, both those that go public

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and those that do not. This formula is also suitable for use in developing countries, including Indonesia (Isnain et al., 2022). The formula for the Z-Score is as follows (Aadilah & Hadi, 2022):

Z-Score = 6,56X1 + 3,26X2 + 6,72X3 + 1,05X4

Where:
X1 = Working Capital / Total Assets
X2 = Retained Earnings / Total Assets
X3 = Earnings Before Interest and Taxes / Total Assets
X4 = Market Value of Equity / Book Value of Debt

If the Z-Score value is > 2.60, the company is considered to be in a safe or healthy zone. Companies with Z-Score values between 1.10 and 2.60 are considered to be in the grey area. However, if a company has a Z-Score value < 1.10, it is classified as being in a state of financial distress.

Springate Model

The Springate Model, also known as the S-Score, is one of the methods used for financial analysis and predicting the potential bankruptcy of a company. The Springate Model was developed by Gorgon L.V in 1978. This model utilizes the Multiple Discriminant Analysis (MDA) method. The Springate S-Score is constructed based on four financial ratios that are used to predict the likelihood of financial distress in a company. The equation for the Springate Model is as follows (Loppy et al., 2020):

S-Score = 1,03X1 + 3,07X2 + 0,66X3 + 0,4X4

Where:
X1: Working Capital / Total Assets
X2: Earnings Before Interest and Taxes / Total Assets
X3: Earnings Before Taxes / Current Liabilities
X4: Sales / Total Assets

If the S-Score is greater than 0.862, the company is considered to be in a healthy financial condition. However, if the S-Score is less than 0.862, the company is classified as being in a state of financial distress.

Selection of Accurate Methods

Testing the accuracy of a model is a process carried out to obtain a predictive model with the highest level of accuracy and the lowest error rate. In Fadilah & Ratnasari (2023), the following process is used to calculate the accuracy rate of each model:

$$Accuracy\ Rate = \frac{Number\ of\ Correct\ Predictions}{Number\ of\ Samples}\ x\ 100\%$$

In addition to the accuracy of each model, the error rate also needs to be considered. If the model predicts that a sample will not experience distress, but in reality it does experience distress, it can be considered a type error. To calculate the error rate, the following formula can be used:

$$Error\ Rate = \frac{Number\ of\ Errors}{Number\ of\ Samples}\ x\ 100\%$$

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C. RESEARCH METHODOLOGY

The method used in this research is a descriptive method with a quantitative approach. Descriptive analysis method is used to describe or depict the object under study. Meanwhile, the quantitative approach analyzes data using statistics, which can be parametric or nonparametric statistics.

In this study, data collection was conducted through documentation and literature review. The documentation method involves recording and studying documents or archives related to the research problem. All secondary data was collected from www.idx.co.id and the company's website for the years 2017-2021. The literature review gathered relevant theories related to the main topic and analyzed those theories. For this research, the majority of the literature used consisted of research journals, previous research papers, books, and internet research related to the research theme.

The research data was obtained from the financial reports of energy sector companies that are publicly listed and registered in the Indonesia Stock Exchange (IDX) through the website www.idx.com. The population used consisted of energy sector companies listed on the IDX from the years 2017-2021. Sampling was done using purposive sampling method with specific criteria, namely selecting energy sector companies that are listed on the IDX and have published their annual financial reports for five consecutive years from 2017 to 2021. The total sample obtained for this research was 10 companies.

The consideration for choosing the population of energy sector companies is that during the period of 2017-2021, the energy sector faced various challenges including a decline in global oil prices, global economic crisis due to the Covid-19 pandemic, as well as changes in government policies regarding regulations and subsidies (Worldbank, 2023). Additionally, investment prospects in this sector have become increasingly difficult due to competition with other countries that have similar natural resources.

The uncertainty of the situation has led many companies in the energy sector to face significant financial risks. Some of them have even experienced financial difficulties to the point of bankruptcy or default.

Therefore, conducting research on financial distress in companies within the energy sector during the period of 2017-2021 is highly relevant. This research can provide a clearer understanding of the factors that influence the likelihood of a company experiencing financial distress. Consequently, it can assist investors and decision-makers in conducting more accurate investment risk analyses, thereby minimizing potential losses.

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D. RESULTS AND DISCUSSION

Predicting Financial Distress in the Energy Sector from 2017-2021 Using the Altman Z-Score Method

The table below presents the results of data analysis using the Altman Z-Score model in the energy sector from 2017-2021, as shown in Table 1:

Table 1: Altman Z-Score Model Analysis Results

Company Code	Altman Z-Score Analysis					Average (Z-Score)	Predicate
	2017	2018	2019	2020	2021		
ADRO	4,592	4,374	3,777	3,775	5,293	4,362	*Non Financial Distress*
BSSR	7,740	5,325	4,557	5,648	7,988	6,252	*Non Financial Distress*
PTBA	7,737	8,022	7,699	6,700	8,114	7,654	*Non Financial Distress*
RUIS	2,139	2,602	1,999	2,056	2,395	2,238	*Grey Area*
DEWA	0,516	0,347	0,496	1,104	0,496	0,592	*Financial Distress*
ELSA	4,302	4,303	3,919	3,861	4,200	4,117	*Non Financial Distress*
ITMG	8,868	7,774	7,592	6,815	10,040	8,218	*Non Financial Distress*
MYOH	7,729	11,636	10,040	13,488	15,426	11,664	*Non Financial Distress*
MBAP	11,602	9,633	10,224	10,461	13,520	11,088	*Non Financial Distress*
TOBA	3,485	3,122	2,176	1,602	3,031	2,683	*Non Financial Distress*

Source: Data Processing (2023)

Based on Table 1, the average prediction of financial distress for PT Adaro Energy Indonesia Tbk (ADRO), PT Baramulti Suksessarana Tbk (BSSR), PT Bukit Asam Tbk (PTBA), PT Elnusa Tbk (ELSA), PT Indo Tambangraya Megah Tbk (ITMG), PT Samindo Resources Tbk (MYOH), and PT Mitrabara Adiperdana Tbk (MBAP) from 2017 to 2021 indicates that they did not experience financial distress or non-financial distress. The Z-Score values for each company in each year from 2017 to 2021 were always > 2.60, which indicates that the companies are considered healthy based on the modified Altman Z-Score threshold. However, PT TBS Energi Utama Tbk (TOBA) experienced a grey area condition in 2019-2020, but in the following year, 2021, PT TBS Energi Utama Tbk (TOBA) was able to improve its financial performance and achieve a healthy condition according to the Altman Z-Score calculation. Based on the average calculation over five consecutive years from 2017 to 2021, it can be concluded that eight companies are in a healthy condition.

Based on Table 1 above, the average prediction of financial distress for PT Radiant Utama Interinsco Tbk (RUIS) over a five-year period from 2017 to 2021 falls within the grey area. During this time frame, the company has not been able to improve its condition to a healthy or non-financial distress state. The grey area condition in Altman Z-Score is defined as a situation where the company falls between the safe zone and the failure zone. In this condition, the company still has the possibility to avoid default or bankruptcy, but the risk is already relatively high and requires closer observation.

Based on the average prediction of financial distress in the energy sector from Table 1, the Z-Score results for PT Darma Henwa Tbk (DEWA) indicate that the company is in a state of financial distress. From 2017 to 2021, PT Darma Henwa Tbk (DEWA) consistently experienced financial distress as the modified Z-Score values were always

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below 1.10. The mining energy industry faces its own challenges, such as regulatory changes, environmental issues, or social conflicts that can impact the company's operations. If PT Darma Henwa Tbk (DEWA) encounters obstacles in conducting its operational activities due to these factors, it can have a negative impact on the company's finances.

Using the Altman Z-Score model, there is one company predicted to be in a state of financial distress, which is PT Darma Henwa Tbk (DEWA). There is one company in the grey area, which is PT Radiant Utama Interinsco Tbk (RUIS), and eight companies are in a healthy condition, namely PT Adaro Energy Indonesia Tbk (ADRO), PT Baramulti Suksessarana Tbk (BSSR), PT Bukit Asam Tbk (PTBA), PT Elnusa Tbk (ELSA), PT Indo Tambangraya Megah Tbk (ITMG), PT Samindo Resources Tbk (MYOH), PT Mitrabara Adiperdana Tbk (MBAP), and PT TBS Energi Utama Tbk (TOBA).

Prediction of Financial Distress in the Energy Sector for the Period 2017-2021 Using the Springate Method

The table below shows the results of data analysis using the Springate model in the energy sector for the period 2017-2021 as presented in Table 2:

Table 2: Results of the Springate Model Analysis Calculation

Company Code	Springate Analysis					Springate (Z-Score)	Predicate
	2017	2018	2019	2020	2021		
ADRO	0,892	0,871	0,678	0,407	1,119	0,793	*Financial Distress*
BSSR	1,226	3,143	1,675	1,624	1,338	1,801	*Non Financial Distress*
PTBA	1,675	1,624	1,338	0,891	1,665	1,438	*Non Financial Distress*
RUIS	0,752	0,881	0,796	0,775	0,801	0,801	*Financial Distress*
DEWA	0,328	0,290	0,333	0,322	0,283	0,311	*Financial Distress*
ELSA	0,799	0,904	0,942	0,817	0,835	0,859	*Financial Distress*
ITMG	1,847	1,775	1,345	0,823	2,274	1,613	*Non Financial Distress*
MYOH	1,332	2,398	2,073	1,839	2,083	1,945	*Non Financial Distress*
MBAP	2,945	2,446	1,991	1,715	2,973	2,414	*Non Financial Distress*
TOBA	1,138	1,157	0,784	0,429	0,784	0,858	*Financial Distress*

Source: Data Processing (2023)

Based on Table 2, the average prediction of financial distress for PT Baramulti Suksessarana Tbk (BSSR), PT Bukit Asam Tbk (PTBA), PT Indo Tambangraya Megah Tbk (ITMG), PT Samindo Resources Tbk (MYOH), and PT Mitrabara Adiperdana Tbk (MBAP) from 2017 to 2021 indicates that they did not experience financial distress. The S-Score values for each company every year from 2017 to 2021 were always > 0.862, according to the cut-off threshold of the Springate model. When the S-Score > 0.862, it indicates that the company is in a healthy condition. However, PT Elnusa Tbk (ELSA) experienced financial distress in 2017, 2020, and 2021, which resulted in an average financial distress condition when calculated over the five-year period from 2017 to 2021. The average S-Score for PT Elnusa Tbk (ELSA) is 0.859, which is below the cut-off value of the Springate Model (< 0.862), indicating an unhealthy or financially distressed condition. PT TBS Energi Utama Tbk (TOBA) also experienced a similar situation to PT Elnusa Tbk (ELSA), where PT TBS Energi Utama Tbk (TOBA) experienced financial distress from 2019 to 2021, but remained in a non-financial distress or healthy condition in 2017 and 2018. However, when

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averaged over the five-year period from 2017 to 2021, PT TBS Energi Utama Tbk (TOBA) experienced financial distress. PT TBS Energi Utama Tbk (TOBA) has an S-Score value of 0.858.

PT Adaro Energy Indonesia Tbk (ADRO) experienced financial distress in 2019-2020 but managed to turn their financial situation around in 2021, entering a healthy condition. It can be observed that the S-Score value for the year 2021 is > 0.862. However, when considering the overall or average calculation over the 5-year period, PT Adaro Energy Indonesia Tbk (ADRO) is in a state of financial distress.

Furthermore, based on Table 2, there are two companies predicted to experience financial distress from 2017 to 2021. These companies are PT Radiant Utama Interinsco Tbk (RUIS) and PT Darma Henwa Tbk (DEWA). Both companies have S-Score values < 0.862, indicating an unhealthy condition. PT Radiant Utama Interinsco Tbk (RUIS) has an average S-Score of 0.801, while PT Darma Henwa Tbk (DEWA) has an average S-Score of 0.311. Both companies' S-Score values are below the cut-off value of the Springate Model, which is < 0.862.

Selecting Accurate Methods

Testing the accuracy of a model is a step to obtain a forecasting model with the highest accuracy and the level of errors generated for each forecasting model (Fadilah & Ratnasari, 2023). The objective of model accuracy testing is to assess the performance and predictive capability of a model, as well as to evaluate whether the model can be applied to new data with consistent results.

Table 3 Accurate Method Selection

Years	Modified Altman Z-Score Model			Springate Model	
	Financial Distress	Grey Area	Non Financial Distress	Financial Distress	Non Financial Distress
2017	1	1	8	3	7
2018	1	1	8	2	8
2019	1	2	7	4	6
2020	1	2	7	4	6
2021	1	1	8	3	7
Total Sample	5	7	38	16	34
Accuracy Rate	76%			68%	
Error Type	24%			32%	

Source: Data Processing (2023)

Out of a total of 50 samples calculated, which included 10 energy sector companies in Indonesia during the period 2017-2021, the Altman Z-Score model predicted that 5 samples would experience financial distress, while 38 samples were predicted not to experience financial distress. The model achieved an accuracy rate of 76% with an error rate of 24%. In the Springate model, it was predicted that 16 samples would experience

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financial distress, while 34 samples would not experience financial distress. The accuracy rate of this model was 68% with an error rate of 32%.

Discussions

The two methods Altman Z-Score and Springate, yielded different results. With the Altman Z-Score method, it was found that 8 companies remained healthy or did not experience financial distress during the 2017-2021 period. These companies are PT Adaro Energy Indonesia Tbk (ADRO), PT Baramulti Suksessarana Tbk (BSSR), PT Bukit Asam Tbk (PTBA), PT Elnusa Tbk (ELSA), PT Indo Tambangraya Megah Tbk (ITMG), PT Samindo Resources Tbk (MYOH), PT Mitrabara Adiperdana Tbk (MBAP), and PT TBS Energi Utama Tbk (TOBA). On the other hand, the Springate method indicated that there were five companies in a healthy condition. These companies are PT Baramulti Suksessarana Tbk (BSSR), PT Bukit Asam Tbk (PTBA), PT Indo Tambangraya Megah Tbk (ITMG), PT Samindo Resources Tbk (MYOH), and PT Mitrabara Adiperdana Tbk (MBAP).

According to Sutra and Mais (2019), good risk management, cost efficiency focus, and business diversification can influence the prediction of financial distress in healthy companies. Some companies have diverse business portfolios, such as investments in renewable energy or diversification into sectors other than energy. Companies can try to diversify their business portfolios by adding new products or services, allowing them to adapt to market changes and increase sources of revenue (Antara News, 2020). Additionally, some companies may have diverse business portfolios, such as investments in renewable energy or diversification into sectors other than energy. These companies should also have good risk management by diversifying natural resources and anticipating the negative impacts of global economic situations through specific strategies. This makes them more resilient to fluctuations in world oil prices or demand decreases due to economic crises. According to Wijaya and Sari (2019), factors such as controlling operational costs and timely debt obligations fulfillment are important in maintaining a healthy condition for companies. Companies must efficiently control operational costs without compromising product or service quality. It is also crucial for companies to pay their debts on time to avoid the risk of interest payments due to delayed debt payments.

Furthermore, the two methods, Altman Z-Score and Springate, yielded different results in predicting companies experiencing financial distress. With the Altman Z-Score method, one company, PT Darma Henwa Tbk (DEWA), was predicted to experience financial distress. On the other hand, the Springate method predicted that five companies would experience financial distress. These companies include PT Adaro Energy Indonesia Tbk (ADRO), PT Radiant Utama Interinsco Tbk (RUIS), PT Darma Henwa Tbk (DEWA), PT Elnusa Tbk (ELSA), and PT TBS Energi Utama Tbk (TOBA).

According to Hilmawan and Wibowo (2021), several factors contribute to the financial distress of energy companies in Indonesia. The decrease in energy demand as a result of the Covid-19 pandemic, such as social restrictions and lockdowns, has caused a decline in energy demand. Government policies in handling the Covid-19 pandemic, including lockdown measures, travel restrictions, and social regulations, can affect the operational aspects of energy companies. Additionally, energy and fiscal policies implemented by the government can have a significant impact on the financial condition of companies. The Covid-19 pandemic also impacted global oil prices due to the decrease in global demand and price competition among oil producers. Companies face challenges in selling their products at specific prices, leading to negative effects on net profits. Some companies may depend on exports to market their products, making it difficult to sell their

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products due to border closures (Elisa & Putri, 2019). Dependence on specific countries as export destinations carries risks when those countries experience economic shocks. If energy companies primarily focus on the production and sale of commodities such as oil, gas, coal, or other minerals, they can be directly affected by the decrease in commodity prices in the global market. The decline in commodity prices can reduce company revenues and impact profitability.

Based on the research using the Altman Z-Score method, one company, PT Radiant Utama Interinsco Tbk (RUIS), falls into the grey area. The grey area condition in Altman's model is defined as a situation where the company is in between the safe zone and the distress zone. This value indicates that the financial health of the company is currently unstable and requires strategic measures to prevent it from falling into the red zone or bankruptcy (Yuniarti & Kurniaharjanto, 2020). In this condition, the company still has a possibility to avoid default or bankruptcy, but the risk is already quite high and requires careful observation (Wallstreetprep, 2023).

When a company is in the grey area, management needs to take immediate and appropriate actions. This may include reassessing their business strategy and making necessary adjustments to align with the current market situation. They can also improve cost efficiency through various means such as budget cuts in non-essential areas, operational optimization, and judicious workforce reduction. Considering new options like raising capital from new investors or obtaining short-term loans can be efforts to strengthen their financial position. Additionally, the company should consider selling or leasing some of their productive assets if they are no longer needed to increase liquidity (Saputra et al., 2020).

E. CONCLUSIONS AND SUGGESTIONS

This study concludes that the Altman Z-Score and Springate models show significant differences in detecting financial distress conditions in energy sector companies during the period of 2017-2021. The Altman Z-Score model exhibits an accuracy rate of 76%, while the Springate model has an accuracy rate of 64%. Using the Altman Z-Score model over a five-year period, on average, eight companies are considered healthy, namely PT Adaro Energy Indonesia Tbk (ADRO), PT Baramulti Suksessarana Tbk (BSSR), PT Bukit Asam Tbk (PTBA), PT Elnusa Tbk (ELSA), PT Indo Tambangraya Megah Tbk (ITMG), PT Samindo Resources Tbk (MYOH), PT Mitrabara Adiperdana Tbk (MBAP), and PT TBS Energi Utama Tbk (TOBA). One company, PT Darma Henwa Tbk (DEWA), is identified to be in a financial distress condition, while PT Radiant Utama Interinsco Tbk (RUIS) is in the grey area.

On the other hand, the Springate model predicts five healthy companies, namely PT Baramulti Suksessarana Tbk (BSSR), PT Bukit Asam Tbk (PTBA), PT Indo Tambangraya Megah Tbk (ITMG), PT Samindo Resources Tbk (MYOH), and PT Mitrabara Adiperdana Tbk (MBAP). Additionally, five companies are predicted to be in an unhealthy or financial distress condition, namely PT Adaro Energy Indonesia Tbk (ADRO), PT Radiant Utama Interinsco Tbk (RUIS), PT Darma Henwa Tbk (DEWA), PT Elnusa Tbk (ELSA), and PT TBS Energi Utama Tbk (TOBA).

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The recommendations from this study are expected to bring about changes, particularly for the following parties:

1. For company management, especially if the company is predicted to experience bankruptcy, the information from the prediction of financial distress using specific models can be used as a reference to take appropriate actions to address the financial distress. This can be achieved by improving profitability, liquidity, and operational capacity to mitigate the future risk of financial distress.
2. For investors, this information can serve as a consideration in making decisions regarding whether to invest by buying or selling stocks. By analyzing the financial condition of the company more deeply and assessing the efforts made by the company to improve its financial performance, investors can make wiser investment decisions.
3. For future researchers, it is recommended to sample companies from different sectors and extend the research period to enhance the accuracy of the data, thereby obtaining more representative estimates. Additionally, exploring the use of other predictive models besides Altman Z-Score and Springate can also be considered.

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