

ANALYSIS OF FINANCIAL DISTRESS USING THE ALTMAN Z-SCORE AND TAFFLER METHODS IN CEMENT SUBSECTOR MANUFACTURING COMPANIES LISTED ON THE INDONESIA STOCK EXCHANGE FOR THE PERIOD 2018-2021

Anwar¹, Armita Puspita. K², Muhammad Ichwan Musa³, Romansyah Sahabuddin⁴, Anwar Ramli⁵

¹²³⁴⁵Management Study Program, Faculty of Economics and Business, Universitas Negeri Makasar, Indonesia

Corresponding e-mail: ¹ anwar@unm.ac.id, ² armitapuspita11@gmail.com, ³ ichwan.musa71@gmail.com,
⁴ krteng@gmail.com, ⁵ anwar288347@yahoo.com

Abstract

This research aims to determine the potential for Financial Distress in cement manufacturing companies listed on the Indonesia Stock Exchange for the 2018-2021 period. The equation model used is the Altman Z-Score and the Taffler model. The data collection technique used is the documentation method with quantitative descriptive research data types. The results of the study show that cement sub-sector manufacturing companies for the 2018-2021 period have varied analysis results depending on the type of model implementation used. Companies that are in a healthy condition (safe area) for the two equation models are INTP in 2018-2021, and SMBR in 2018 for the Altman Z-Score model, while the SMGR Taffler model in 2018 is in a healthy condition (safe area). SMGR 2018-2020, WSBP 2018-2019, WTON 2018, and SMBR for 2020-2021 is in a gray area position for the Altman Z-Score equation model. While in the Taffler model, companies that are in a gray area position are SMGR in 2019-2021, SMCB 2019-2020, WSBP in 2021, and SMBR in 2018 and 2021. Meanwhile companies that are in a bankrupt position are SMGR in 2021, SMCB in 2018-2021, 2019-2020 WSBP, 2019-2021 WTON and 2019 SMBR for the Altman Z-Score model. In the Taffler model, bankrupt companies are 2018 and 2021 SMCB, 2020 WSBP, and 2019-2020 SMBR. 2019-2020 WSBP, 2019-2021 WTON and 2019 SMBR for the Altman Z-Score model. In the Taffler model, bankrupt companies are 2018 and 2021 SMCB, 2020 WSBP, and 2019-2020 SMBR. 2019-2020 WSBP, 2019-2021 WTON and 2019 SMBR for the Altman Z-Score model. In the Taffler model, bankrupt companies are 2018 and 2021 SMCB, 2020 WSBP, and 2019-2020 SMBR.

Keywords: *Financial Distress, Altman Z-Score, Taffler, Cement Manufacturing Companies listed on IDX 2018-2021*

1. INTRODUCTION

Globalization that occurs brings dynamic changes in almost all aspects of life, including the economic sphere in the business world. Competition in selling products in the market is not only seen in terms of quality, but in fact the selling price of the product also greatly influences the number of units sold (Pranita & Kristanti, 2020). Price competition makes the company ultimately sell with a profit margin that is not too big, while the company must continue to ensure that its financial obligations are able to be met. With the hope that it will generate profits that increase every year to keep growing and not experience liquidation (Wulandari, Burhanudin, & Widayanti, 2017). Financial distress is characterized when a company is unable to meet payment schedules or when projected cash flows indicate that the company will soon be unable to meet its obligations (Brigham and Daves in (Zatira & Puspitasari, 2020)). The cement industry is one of the pillars of economic development in Indonesia. Its position in creating sustainable development and infrastructure opportunities has made cement one of the backbones of the country's progress. There are at least 6 companies that dominate the domestic cement market on the Indonesia Stock Exchange (IDX). Namely PT. Semen Indonesia Tbk, PT. Indocement Tungal Prakarsa Tbk, PT. Indonesian Build Solutions Tbk, PT. Waskita Beton Precast Tbk, PT. Wijaya Karya Beton Tbk, and PT. Semen Baturaja (Persero) Tbk.

Demand for cement commodities experienced a decline in national sales volume, which fell 1.1% year-on-year (YoY) until September 2022, compared to cement demand until September 2021. This was because the cement subsector was faced with oversupply conditions which were

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57% below the normal level around 70% which triggers increasingly fierce competition between companies. The gloomy cement industry in Indonesia is illustrated in the financial statements of companies listed on the Indonesia Stock Exchange (IDX). Then in early September 2021 the Indonesian cement industry experienced a case of predatory pricing or the practice of slashing prices pioneered by foreign cement factories that were already operating in Indonesia. The company sells its cement products cheaply in order to gain market share such as on online sites, where local cement has to compete with imported cement which is sold at a lower price. Misprediction of the company's financial statements in the future can be fatal, namely investors will lose the shares that have been invested and creditors will also suffer losses due to lending capital that cannot be repaid by the company. (Oleangga & Fauzi, 2020). To overcome this, lenders, investors, government, accountants and even management must be able to identify indicators of financial distress (Financial Distress) which are signals from within the company that can indicate potential financial difficulties (Matahari, Akbar, & Anwar, 2022: 4659). Bankruptcy prediction is important as an early warning that can change all complications and can avoid the high costs that occur due to failure (Edi & Tania, 2018: 80). Therefore, to determine the company's financial condition, it is necessary to do a financial distress analysis. This study uses two financial distress analysis models, namely the Altman Z-Score model to see a company's ability to manage assets to earn kaba, and the Taffler model to measure a company's ability to meet its current liabilities or short-term debt.

2. RESEARCH METHODS

The type of research used in this study is a quantitative descriptive research. Where the data in this study are translated using figures from annual financial reports in the form of profit and loss reports and statements of financial position to see the potential for bankruptcy that occurs in PT. Waskita Beton Precast, Tbk. While the data source in this study is secondary data with documentation collection techniques obtained from the Indonesia Stock Exchange (www.idx.co.id) in the form of annual financial reports for the 2020-2021 period. The location of the research is on the official website of the Indonesia Stock Exchange (IDX). The population in this study is The population of this study is the financial statements of 6 cement companies in the 2018-2021 period including PT. Semen Indonesia (Persero) Tbk, PT. Indocement Tunggul Prakarsa Tbk, PT. Indonesian Build Solutions Tbk, PT. Waskita Beton Precast Tbk, PT. Wijaya Karya Beton Tbk, PT. Semen Baturaja (Persero) Tbk. Meanwhile, the sample used in this study is financial statements consisting of profit and loss statements and reports of financial position of cement subsector companies listed on the Indonesia Stock Exchange for the 2018-2021 period.

3. RESULTS AND DISCUSSION

A. Altman Z-Score Equation Analysis Model

Z-Score bankruptcy analysis is a tool used to predict the level of bankruptcy of a company by calculating the value of several ratios and then entering it into a discriminant equation to assess the level of a company's ability to generate profits using five financial ratios. According to Altman in the research of Sudharyati, Suryani, & Meylani (2022:99) there are 5 types of ratios used to analyze bankruptcy in the Altman Z-Score model, namely:

1) X1 Ratio (Working Capital to Total Assets)

The X1 ratio is the ratio used to measure a company's ability to generate net working capital from all of its total assets. So that the value of Working Capital is able to pay the company's short-term debt. Calculation of working capital can be seen using the formula: current assets - current liabilities

2) X2 Ratio (Retained Earning to Total Assets)

The Retained Earning to Total Assets ratio is a ratio that shows the company's ability to generate retained earnings from the company's total assets. If the company loses money, then the value of retained earnings in the company will decrease.

3) X3 Ratio (EBIT to Total Assets)

Ratio of Earning Before interest and taxes to Total Assets is the ratio used to calculate a company's ability to generate profits from company activities before paying taxes and interest at the end of the fiscal year. EBITTA focuses on estimating the cash flow available to pay debts on long-term assets.

4) X4 Ratio (Market Value of Equality to Book Total of Debt Ratio)

Market Value of Equality Ratio to Book Total of Debt is part of the solvency ratio and the inverse of the debt-to-equity ratio (DER). Generally, companies that fail accumulate more debt than their own capital and show the ability of their own capital to fulfill all of their obligations.

5) X5 Ratio (Sales to Total Assets)

Sales Ratio to Total Assets is a ratio that describes the total asset turnover of sales volume. This ratio shows that the greater the value of sales to total assets, the better.

B. Taffler Equation Analysis Model

Taffler bankruptcy analysis is an analytical model used to measure the ability of a company's assets to obtain profit before tax to meet its current liabilities or short-term debt. According to Taffler (1994) there are 4 ratios used to analyze bankruptcy in companies, namely:

1) X1 Ratio (Earning Before Taxes to Current Liabilities)

The EBTL ratio or profit before tax to current liabilities is used to show the company's ability to generate profit before tax (Iswahyudi, 2022). This means that the lower the value, the less likely earnings before taxes can cover the company's current liabilities.

2) X2 Ratio (Current Assets to Total Liabilities)

The CATL ratio is used to measure a company's liquidity level in fulfilling all of its obligations using current assets. The greater the CATL value, the better the company's performance. Conversely, if the CATL ratio decreases, the company's performance will experience a bad condition.

3) X3 Ratio (Current Liabilities to Total Assets)

The CLTA ratio is a ratio that measures how much assets can be financed by current debt. The focus of the CLTA ratio is to describe the position of liquidity in paying current liabilities through the company's total assets. The higher the value of current liabilities compared to total assets, the greater the company's burden in repaying the loan. Conversely, if the value of current liabilities is less than total assets, the lower the burden on the company to repay the loan.

4) X4 Ratio (Sales to Total Assets)

Sales Ratio to Total Assets is a ratio that describes the total asset turnover of sales volume. This ratio shows that the greater the value of sales to total assets, the better.

3.1 Research Calculation Results

3.1.1 Altman Z-Score Calculation Results

The equation used in determining the level of bankruptcy of companies using the Revised Altman Z-Score formula for cement manufacturing companies listed on the Indonesia Stock Exchange is:

$$Z = 0.717X1 + 0.847X2 + 3.107X3 + 0.420X4 + 0.998X5$$

For more details, the researcher presents a table which is the overall ratio analysis results that have been obtained from the calculation of the five ratios used in the Altman Z-Score, namely

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Table 1. Calculation of the X1 to X5 Ratio on the Altman Z-Score Model

Company Code	Year	Mark				
		0.717.X1	0.847.X2	3,107. X3	0.420.X4	0.998.X5
SMGR	2018	0.112	0.038	0.251	1,567	0.603
	2019	0.040	0.012	0.124	0.698	0.505
	2020	0.037	0.026	0.139	0.729	0.450
	2021	0.010	0.011	0.141	0.524	0.456
INTP	2018	0.216	0.034	0.157	6,246	0.546
	2019	0.029	0.055	0.255	6,357	0.574
	2020	0.212	-0.026	0.255	4,330	0.518
	2021	0.184	-0.002	0.266	3,392	0.564
SMCB	2018	-0.274	-0.038	-0.114	0.495	0.555
	2019	0.232	0.022	0.065	0.302	0.564
	2020	0.003	0.025	0.147	0.352	0.486
	2021	-0.113	0.021	0.157	0.528	0.521
WSBP	2018	0.137	0.020	0.277	0.567	0.561
	2019	0.165	0.013	0.183	0.420	0.461
	2020	-0.280	-0.426	-0.703	0.321	0.256
	2021	-0.564	-0.239	-1,861	0.131	0.201
WTON	2018	0.050	0.037	0.217	0.240	0.778
	2019	0.068	0.030	0.188	0.241	0.684
	2020	0.046	0.000	0.048	0.276	0.564
	2021	0.045	0.005	0.027	0.164	0.482
SMBR	2018	0.093	0.006	0.082	3,536	0.359
	2019	0.078	0.002	0.082	0.919	0.036
	2020	0.031	0.001	0.020	1,907	0.299
	2021	0.103	0.008	0.037	1,100	0.300

Source: *Processed data, 2023*

From the table above, it is known that the company's ability to manage assets to generate profits is considered not optimal. This condition is influenced by the low working capital to total assets so that it affects the company's sales volume. As for the value criteria *Cut Off* from the altman Z-Score model it can be seen if a company shows the results of the analysis as follows;

The Cut Off value of the Altman Z-Score equation analysis is:

- a. If the Z value < 1.23 then the company is included in the Bankrupt category.
- b. If the value is $1.23 < Z < 2.9$ then the company is in a gray area. This means that the company has financial difficulties, but the possibility of being saved and bankrupt is just as great depending on the company's policy decisions.
- c. If the Z value > 2.9, the company is in a healthy condition or not bankrupt.

The ratio calculation results from the Altman Z-Score model can be interpreted into the financial analysis equation using the Z-Score formula so that the analysis model is obtained as contained in table 2. Namely:

Table 2. Calculation Results of the Altman Z-Score Formula

Company name	Year	Mark	Interpretation
		Z-Scores	
PT. SEMEN INDONESIA (PERSERO) TBK	2018	2.57	The company is in a vulnerable area (Grey Area)
	2019	1.38	The company is in a vulnerable area (Grey Area)
	2020	1.38	The company is in a vulnerable area (Grey Area)
	2021	1.14	The company is in a state of Distress (Bankrupt)
PT. INDOCEMENT TUNGGAL INITIATIVE TBK	2018	7,20	The company is in good health (Non-Bankrupt)
	2019	7,27	The company is in good health (Non-Bankrupt)
	2020	5,29	The company is in good health (Non-Bankrupt)
	2021	4,40	The company is in good health (Non-Bankrupt)
PT. INDONESIA BUILDING SOLUTIONS TBK	2018	0.62	The company is in a state of Distress (Bankrupt)
	2019	1.18	The company is in a state of Distress (Bankrupt)
	2020	1.01	The company is in a state of Distress (Bankrupt)
	2021	1.11	The company is in a state of Distress (Bankrupt)
PT. WASKITA BETON PRECAST TBK	2018	1.56	The company is in a vulnerable area (Grey Area)
	2019	1.24	The company is in a vulnerable area (Grey Area)
	2020	-0.83	The company is in a state of Distress (Bankrupt)
	2021	-2.33	The company is in a state of Distress (Bankrupt)
PT. WIJAYA BETON WORKS TBK	2018	1.32	The company is in a vulnerable area (Grey Area)
	2019	1.21	The company is in a state of Distress (Bankrupt)
	2020	0.93	The company is in a state of Distress (Bankrupt)
	2021	0.72	The company is in a state of Distress (Bankrupt)
PT. SEMEN BATURAJA (PERSERO) TBK	2018	4.08	The company is in good health (Non-Bankrupt)
	2019	1,12	The company is in a state of Distress (Bankrupt)
	2020	2,26	The company is in a vulnerable area (Grey Area)
	2021	1.55	The company is in a vulnerable area (Grey Area)

Source: *Processed data, 2023*

1. PT. Semen Indonesia (Persero) Tbk
Calculations with the Altman Z-Score model at PT. Semen Indonesia (Persero) Tbk in 2018-2020 is in a gray area position and in 2021 will experience bankruptcy. In 2018, it obtained a Z-Score value of 2.57. In 2019 it was 1.38. In 2020 it was 1.38. In 2021, 1.14 were detected as experiencing bankruptcy.
2. PT. Indocement Tunggal Prakarsa Tbk
Calculations with the Altman Z-Score model at PT. Indocement Tunggal Prakarsa Tbk in 2018-2021 are in a healthy condition or safe area. In 2018, it obtained a Z-Score value of 7,20. In 2019 it was 7.27. In 2020 it was 5.29. And in 2021 it will be 4.40.
3. PT. Build Solutions Indonesia Tbk
Calculations with the Altman Z-Score model at PT. Solusi Bangun Indonesia Tbk in 2018-2021 is in a state of bankruptcy. In 2018, the Z-Score was only 0.62. In 2019 it was 1.18. In 2020 it was 1.01. And in 2021 it is 1.11.

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4. PT. Waskita Beton Precast Tbk

Calculations with the Altman Z-Score model at PT. Waskita Beton Precast Tbk in 2018-2019 was in a gray area position, while in 2020-2021 it was in a bankrupt position. In 2018, it obtained a Z-Score value of 1.56. In 2019 it was 1.24. In 2020 it was -0.83. And in 2021 it is -2.33.

5. PT. Wijaya Karya Beton Tbk

Calculations with the Altman Z-Score model at PT. Wijaya Karya Beton Tbk in 2018 was in a gray area position, while in 2019-2021 it was in a bankrupt position. In 2018, it obtained a Z-Score value of 1.32. In 2019 it was 1.21. In 2020 it was 0.93. And in 2021 it will be 0.72.

6. PT. Semen Baturaja (Persero) Tbk

Calculations with the Altman Z-Score model at PT. Semen Baturaja (Persero) Tbk in 2018 it is in a healthy condition, in 2019 it is in a bankrupt position and in 2020-2021 it is in a gray area position. In 2018, it obtained a Z-Score value of 4.08. In 2019 it was 1.12. In 2020 it was 2.26. And in 2021 it will be 1.55.

3.1.2 Calculation result of the Taffler Model

The equation used in determining the level of bankruptcy of companies using the Taffler equation formula for cement manufacturing companies listed on the Indonesia Stock Exchange is:

$$\mathbf{T-Score = 0.53X1 + 0.13X2 + 0.18X3 + 0.16X4}$$

For more details, the researcher presents a table which is the overall ratio analysis results that have been obtained from the calculation of the five ratios used in the Taffler model, namely:

Table 3. Calculation of the X1 to X4 Ratio on the Taffler Model

Company Code	Year	Mark			
		0.53.X1	0.13.X2	0.18.X3	0.16.X4
SMGR	2018	0.200	0.115	0.029	0.097
	2019	0.103	0.047	0.028	0.081
	2020	0.123	0.047	0.027	0.072
	2021	0.078	0.054	0.033	0.073
INTP	2018	0.155	0.351	0.025	0.088
	2019	0.251	0.360	0.025	0.092
	2020	0.244	0.309	0.026	0.083
	2021	0.245	0.267	0.027	0.090
SMCB	2018	-0.045	0.028	0.094	0.089
	2019	0.089	0.033	0.027	0.090
	2020	0.083	0.042	0.036	0.078
	2021	0.098	0.007	0.033	0.032
WSBP	2018	0.080	0.181	0.087	0.090
	2019	0.072	0.157	0.067	0.074
	2020	-0.294	0.056	0.156	0.041
	2021	-0.107	0.057	0.252	0.032
WTON	2018	0.049	0.133	0.106	0.125
	2019	0.043	0.137	0.108	0.110
	2020	0.014	0.133	0.100	0.090
	2021	0.008	0.130	0.100	0.077

SMBR	2018	0.064	0.086	0.021	0.058
	2019	0.034	0.067	0.015	0.006
	2020	0.007	0.061	0.027	0.048
	2021	0.058	0.073	0.015	0.048

Source: Processed data, 2023

From the table above, it is known that the company's ability to manage liquidity is considered to be lacking. This condition occurs because the level of optimization of current assets is still not maximized so that the value of current debt is greater than the use of current assets which triggers the company to be in a state of bankruptcy. As for the value criteria *Cut Off* from the Altman Z-Score model and the Taffler model it can be seen if a company shows the following analysis results;

The Cut Off value of the Taffler equation analysis is:

- If the value of $T < 0.2$, the company is included in the Bankrupt category.
- If the value is $0.2 \leq T \leq 0.3$ then the company is in a grey area.
- If the T value > 0.3 then the company is in a healthy condition or not bankrupt.

Table 4. Calculation results of the Taffler Model Formula

Company name	Year	Mark T-Scores	Interpretation
PT. SEMEN INDONESIA (PERSERO) TBK	2018	0.44	The company is in good health (Non-Bankrupt)
	2019	0.26	The company is in a vulnerable area (Grey Area)
	2020	0.27	The company is in a vulnerable area (Grey Area)
	2021	0.24	The company is in a vulnerable area (Grey Area)
PT. INDOCEMENT TUNGGAL INITIATIVE TBK	2018	0.62	The company is in good health (Non-Bankrupt)
	2019	0.73	The company is in good health (Non-Bankrupt)
	2020	0.66	The company is in good health (Non-Bankrupt)
	2021	0.63	The company is in good health (Non-Bankrupt)
PT. INDONESIA BUILDING SOLUTIONS TBK	2018	0.17	The company is in a state of Distress (Bankrupt)
	2019	0.24	The company is in a vulnerable area (Grey Area)
	2020	0.24	The company is in a vulnerable area (Grey Area)
	2021	0.17	The company is in a state of Distress (Bankrupt)
PT. WASKITA BETON PRECAST TBK	2018	0.44	The company is in good health (Non-Bankrupt)
	2019	0.37	The company is in good health (Non-Bankrupt)
	2020	-0.04	The company is in a state of Distress (Bankrupt)
	2021	0.23	The company is in a vulnerable area (Grey Area)
PT. WIJAYA BETON WORKS TBK	2018	0.41	The company is in good health (Non-Bankrupt)
	2019	0.40	The company is in good health (Non-Bankrupt)
	2020	0.34	The company is in good health (Non-Bankrupt)
	2021	0.32	The company is in good health (Non-Bankrupt)
PT. SEMEN BATURAJA (PERSERO)	2018	0.23	The company is in a vulnerable area (Grey Area)
	2019	0.12	The company is in a state of Distress (Bankrupt)

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TBK	2020	0.14	The company is in a state of Distress (Bankrupt)
	2021	0.19	The company is in a vulnerable area (Grey Area)

Source: Processed data, 2023

1. PT. Semen Indonesia (Persero) Tbk
Calculations with the Taffler model at PT. Semen Indonesia (Persero) Tbk in 2018 is in a healthy position and in 2019-2021 it is in a gray area position. It is known that in 2018 it obtained a T-Score value of 0.44. In 2019 it was 0.26. In 2020 it was 0.27. In 2021, 0.24 were detected as experiencing bankruptcy.
2. PT. Indocement Tunggal Prakarsa Tbk
Calculations with the T-Score model at PT. Indocement Tunggal Prakarsa Tbk in 2018-2021 is in a healthy condition or safe area. In 2018, it obtained a T-Score value of 0.62. In 2019 it was 0.73. In 2020 it was 0.66. And in 2021 it will be 0.63.
3. PT. Build Solutions Indonesia Tbk
Calculations with the T-Score model at PT. Solusi Bangun Indonesia Tbk in 2018 and 2021 is in a state of bankruptcy, while in 2019-2020 it is in a gray area position. In 2018, the T-Score was only 0.17. In 2019 it was 1.24. In 2020 it was 1.24. And in 2021 it is 1.17.
4. PT. Waskita Beton Precast Tbk
Calculations with the T-Score model at PT. Waskita Beton Precast Tbk in 2018-2019 was in a healthy position or safe zone, while in 2020 it was in a bankrupt position and 2021 it was in a gray area position. In 2018, it obtained a T-Score value of 0.44. In 2019 it was 0.37. In 2020 it was -0.04. And in 2021 it will be 0.32.
5. PT. Wijaya Karya Beton Tbk
Calculations with the T-Score model at PT. Wijaya Karya Beton Tbk in 2018-2021 is in a safe zone position. It is known that in 2018 it obtained a T-Score value of 0.41. In 2019 it was 0.40. In 2020 it was 0.34. And in 2021 it will be 0.32.
6. PT. Semen Baturaja (Persero) Tbk
Calculations with the T-Score model at PT. Semen Baturaja (Persero) Tbk in 2018 and 2021 is in a gray area, in 2019-2020 it is in a bankrupt position. It is known that in 2018 it obtained a Z-Score value of 0.23. In 2019 it was 0.12. In 2020 it was 0.14. And in 2021 it will be 0.19.

3.2 Research Discussion

Based on the overall results of the bankruptcy analysis using the Altman Z-Score and Taffler models, cement manufacturing companies listed on the Indonesia Stock Exchange for the 2018-2021 period experienced different levels of financial distress. Where companies that are in a healthy condition (safe zone) using the altman Z-Score model are PT Indocement Tunggal Prakarsa Tbk in 2018-2021. Furthermore PT. Semen Baturaja (Persero) Tbk, which was only in the safe zone in 2018. This condition explains that the company is able to provide increased profits during the current period. This was reinforced by an increase in sales volume followed by an increase in the value of EBIT and retained earnings so that it had a positive effect on the market share value. In the Taffler model, the company that is in the safe zone is PT. Indocement Tunggal Prakarsa Tbk in 2018-2021 and PT. Wijaya Karya Beton Tbk in 2018-2021, PT. Semen Indonesia (Persero) Tbk only in 2018, and PT. Waskita Beton Precast Tbk only in 2018-2019. This condition explains that some companies that are in the safe zone have the ability to manage company assets in obtaining profit before tax to meet current liabilities or short-term debt which is getting better. This was reinforced by the increase in the value of EBT which was driven by net sales and an increase in work productivity so that current liabilities could be paid.

In the gray area condition, there are several companies that are in that position using the Altman Z-Score analysis model, namely PT. Semen Indonesia (Persero) in 2018-2020, PT Waskita Beton Precast Tbk in 2018-2019, PT. Wijaya Karya Beton Tbk in 2018, and Semen Baturaja (Persero) Tbk in 2020-2021. This happens because this happens due to large sales volume which is

influenced by optimizing the profit value so that the net profit generated by the company can be managed back into capital. In the taffler model, the company that is in a gray area is PT. Semen Indonesia (Persero) Tbk in 2019-2021, PT. Solusi Bangun Indonesia Tbk in 2019-2020, PT. Waskita Beton Precast in 2021, as well as PT. Semen Baturaja (Persero) Tbk in 2018 and 2021. Conditions explain that companies must be more careful in managing and carrying out their operations. If you do not immediately take corrective action, it will result in financial difficulties that will lead to bankruptcy. Furthermore, companies that were detected as experiencing bankruptcy in cement manufacturing companies in the 2018-2021 year using the Altman Z-Score analysis model were PT. Semen Indonesia (Persero) Tbk in 2021, PT Solusi Bangun Indonesia Tbk in 2018-2021, PT. Waskita Beton Precast Tbk in 2020-2021, PT. Wijaya Karya Beton Tbk in 2019-2021, and PT. Semen Baturaja (Persero) Tbk in 2019. This condition occurred due to a significantly decreased working capital affecting the company in managing its assets. In addition, the rate of return on total assets is not able to cover the burden that must be borne resulting in decreased EBIT and sales values triggering bankruptcy.

In the Taffler model, companies that are in a state of distress, PT. Solusi Bangun Indonesia Tbk in 2019 and 2021, PT Waskita Beton Precast Tbk in 2020 and PT. Semen Baturaja (Persero) Tbk in 2019-2020. This happens because several companies experience liquidity difficulties. This means that the rate of return on liabilities owned by the company on sales continues to decrease due to the high inventory owned by the company. This condition indicates that sales are getting lower so they are unable to cover the burden that must be borne. There is a risk that there will be payment difficulties in the future due to larger current debt. The results of this study are in line with those conducted by Matahari, Akbar, & Anwar (2022) regarding the level of bankruptcy in telecommunications companies listed on the Indonesia Stock Exchange for the 2016-2021 period which shows that 4 out of 5 telecommunications companies are experiencing distress. At PT. Telkom Indonesia Tbk, is in a healthy condition in 2016-2019 then a gray area in 2020-2021. This accurate result is obtained using the Altman Z-Score model which is indicated by the presence of total debt that is greater than the company's assets. The equation in this study is to use one of the financial distress analysis models that researchers apply, namely the Altman Z-Score. Meanwhile, according to Widiasmara & Rahayu (2019) regarding differences in the Ohlson model, the Taffler Model, the Springate model in predicting financial distress states that nine industrial sectors are listed on the Indonesia Stock Exchange (IDX) in 2015-2017. The best model for predicting financial distress is the taffler model with an accuracy rate of 83.93%, then the Springate Model and the Ohlson Model. In this study it is explained that the taffler model places more emphasis on a company's ability to fulfill its obligations to its debtors, so that a company with a liquidity ratio that is below the industry's normal ratio will become a company that has the potential to go bankrupt. In line with the research by Sengngeng, Sahabuddin, & Rauf (2022) explaining that to see whether a company experiences significant profits will be reflected in the acquisition of economic added value.

4. CONCLUSION

The difference between these 2 analysis models illustrates that to avoid bankruptcy a company must be able to increase sales volume and optimize profit value so that the net profit generated by the company can be managed back into capital. This increase was also influenced by the value of EBIT and retained earnings so that the book value of the stock was getting better, triggering investors to invest funds in the company. In addition to that, the company's ability to increase liquidity by reducing costs and increasing sales volume, managing company funding properly, such as preparing emergency funding plans, monitoring accounts receivable turnover and the efficiency of the company's working capital.

ANALYSIS OF FINANCIAL DISTRESS USING THE ALTMAN Z-SCORE AND TAFFLER METHODS IN CEMENT SUBSECTOR MANUFACTURING COMPANIES LISTED ON THE INDONESIA STOCK EXCHANGE FOR THE PERIOD 2018-2021

Anwar, Armita Puspita. K, Muhammad Ichwan Musa, Romansyah Sahabuddin, Anwar Ramli

REFERENCES

- Edi, & Tania, M. (2018). The Accuracy of the Altman, Springate, Zmijewski, and Grover Models in Predicting Financial Distress. *Journal of Accounting and Finance Review*, 79-92.
- Iswahyudi, M. (2022). Zmijewski, Taffler, Springate and Grover Model: Analysis of Bankruptcy Prediction Models. *Equity: Journal of Economic Education*, 10(1), 2549-2292.
- Matahari, A., Akbar, & Anwar, A. (2022). Analysis of Financial Distress in Telecommunication Companies Listed on the Indonesia Stock Exchange for the 2016-2021 period. *Fair Value: Scientific Journal of Financial Accounting and Finance*, 4(10), 4659-4670.
- Ongga, P., & Fauzi, F. (2020). ANALYSIS OF DITREES' FINANCIAL POTENTIAL IN THE CEMENT INDUSTRY LISTED ON THE INDONESIA STOCK EXCHANGE. *Scientific Journal of Management Development*, 3(1), 47-57.
- Pranita, KR, & Kristanti, FT (2020). ANALYSIS OF FINANCIAL DISTRESS USING SURVIVAL ANALYSIS. *Nominal: Accounting and Management Research Barometer*, 9(2), 240-257.
- Sudharyati, N., Suryani, A., & Meylani, I. (2022). Bankruptcy Difference Analysis with the Altman Z-Score, Grover and Springate Methods. *Scientific Journal of Economics and Business*, 13(2), 98-103.
- Sengngeng, AB, Sahabuddin, R., & Rauf, A. (2022). Comparative Analysis of Economic Added Value in the Telecommunication Sector on the Indonesia Stock Exchange. *INOVASI: Journal of Economics, Finance and Management*, 18(2), 248-255.
- Taffler, RJ (1984). Empirical Models for the Monitoring of UK Corporations. *Journal of Banking and Finance*, 8(2), 199-227. doi:[https://doi.org/10.1016/0378-4266\(84\)90004-9](https://doi.org/10.1016/0378-4266(84)90004-9)
- Wulandari, F., Burhanudin, & Widayanti, R. (2017). Bankruptcy Prediction Analysis Using the Altman Method (Z-Score) in Pharmaceutical Companies (Case Study of Companies Listed on the Indonesia Stock Exchange in 2011-2015). *Journal of Management and Business*, 2(1), 15-27. Retrieved December 27, 2022, from https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwi8ocHp2pj8AhWj8HMBHWKTCfcQFnoECAwQAQ&url=https%3A%2F%2Fsolusibangunindonesia.com%2F&usg=AOvVaw2GM60hqijyjGKVreEy_18b
- Zatira, D., & Puspitasari, R. (2020). Z-Score Analysis of Predictions of Bankruptcy of Cement Companies Listed on the IDX for the 2016-2019 Period. *Proceedings of the Multidisciplinary National Symposium*, 430-439.