



**Assessment of Potential Bankruptcy of
Constructions Companies Listed on Indonesia Stock Exchange in Period 2019 – 2021
Using Z-Score Model**

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ABSTRACT

The purpose of this study aims to assess the potential of bankruptcy in construction companies that is listed on Indonesia Stock Exchange in Period 2019 – 2021 using Z-Score model which is initiated by Edward I. Altman in 1968. The population used in this study were construction companies listed in Indonesia Stock Exchange in period 2019 – 2021 with the total of 18 companies. By using purposive sampling method, this research determines 51 samples (17 companies x 3 observing year) by considering the criteria that construction companies listed in Indonesia Stock Exchange and do not delist during 2019 – 2021. The method of data analysis in this study is descriptive statistical analysis and Z-Score model analysis. The research data was processed using the Microsoft Excel 2016 and the Statistical Package for Social Science (SPSS) 23 software. The results of this study indicate that 6 out of 17 companies had the potential of bankruptcy, 3 out of 17 companies were in grey zone which indicates high uncertainty about their financial condition, and 8 out of 17 companies had low risk area of bankruptcy (health) based on assessment using Z-Score Model in 2019; 9 out of 17 companies had the potential of bankruptcy, 8 out of 17 companies were in grey zone which indicates high uncertainty about their financial condition, and no companies had low risk area of bankruptcy (health) in 2020 based on assessment using Z-Score Model in 2020; and 8 out of 17 companies had the potential of bankruptcy, 5 out of 17 companies were in grey zone which indicates high uncertainty about their financial condition, and 4 out of 17 companies had low risk area of bankruptcy (health) based on assessment using Z-Score Model in 2021. This results also implied that Covid-19 affected whole construction sector in Indonesia.

Keywords: Assessment of Potential Bankruptcy, Z-Score Model, Construction Sector, Covid-19 Pandemic

INTRODUCTION

Financial condition of the company can tell us the sustainability of the company in short term and long term. “In order to discover the financial performance of company, it needs the throughout analysis to the financial report. Later on, the results can be used as basis for decision making” (Setiawan, 2021). One of indicators that can be applied to analysis the financial performance in order to determine whether the company is in good financial health or even indicate the high potential of bankruptcy is Altman Z-Score Model (Altman, 1968). “Z-score model can be used to detect and to predict the risk of financial distress that might be encountered by the company” (Altman, 1968). Z-score model has high accuracy than another model. Even though the predictions turn out to be wrong, at least the company can anticipate the possibly risk beforehand using z-score model as an early warning (Setiawan, 2021). When the company bankrupt, we need to give a concern that the impact of bankruptcy affects many aspects. Therefore, before the company bankrupt, there are few steps that has to been through, such as financial distress (Hiller, 2019). “Financial distress is the condition which the cash flow of company is not enough to fulfil their liabilities so that the company need to do corrective actions” (Hiller, 2019). If this matter does not be handled well, financial distress will be able to lead into bankruptcy. There are few steps that need to be done in order

to survive from financial distress, such as divestment of assets, merger and acquisition, bond issues, negotiate with third party, and/or restructurisation (Hiller, 2019).

Therefore, this study aims to explore the potential of financial distress and discover the cause of it. This study will concentrate only on construction sector that is listed in Indonesia Stock Exchange. Construction sector is one of the sectors that contribute the significant impact to the infrastructure development (Liputan6, 2015). It also contributes on Indonesia's economic growth in average of 10.54% against Gross Domestic Product during 2017 – 2021. Based on data released by Ministry of Industry of the Republic of Indonesia that can be seen in table 1, construction sector become top four sectors that contribute massively to the economy of Indonesia.

Table 1. Sectoral Contribution to Indonesia's GDP (2017 -2021)

No.	Sectoral Contribution	2021	2020	2019	2018	2017
1	Cultivation Industry	19.25%	19.86%	19.70%	19.86%	20.16%
2	Agriculture, Forestry and Fisheries	13.28%	14.68%	13.01%	13.02%	13.14%
3	Trade and Repair	12.97%	12.83%	12.72%	12.81%	13.01%
4	Construction	10.44%	10.60%	10.75%	10.53%	10.36%
5	Mining and Excavation	8.98%	6.16%	7.26%	7.08%	7.57%
6	Information and Communication	4.41%	4.56%	5.57%	5.37%	5.41%
7	Finance and Insurance Service	4.34%	4.32%	4.24%	4.15%	4.20%
8	Transportation and Warehouse	4.24%	3.80%	3.96%	3.77%	3.80%
9	Government Administration	3.44%	3.59%	3.62%	3.65%	3.70%
10	Education Service	3.28%	3.57%	3.30%	3.25%	3.29%
11	Real Estate	2.76%	2.93%	2.78%	2.78%	2.85%
12	Accomodation and Food and Beverage	2.43%	2.49%	2.77%	2.74%	2.79%
13	Other Service	1.84%	1.94%	1.95%	1.81%	1.76%
14	Company Service	1.77%	1.87%	1.92%	1.80%	1.75%
15	Health and Social Service	1.34%	1.36%	1.17%	1.10%	1.19%
16	Electricity and Gas Procurement	1.12%	1.17%	1.10%	1.06%	1.07%
17	Water Procurement	0.07%	0.07%	0.07%	0.07%	0.07%

Source: Ministry of Industry of the Republic of Indonesia (2022)

Hence, Covid-19 in 2020 cause contraction in all economic aspect, including Indonesia. This has changed every single aspect in life, including the Indonesian economy which is impacted significantly. It can be implied by the fact that Indonesia's economic growth in 2020 fell to -2.19 year on year (YoY). This pandemic has affected all economic sectors, including the construction sector. Construction industry has become the top five economic sectors which contributes significantly to Gross Domestic Product (GDP) growth. Hence, during the pandemic, it has experienced a major decline. GDP growth of construction sectors fell to -3,26 percent.

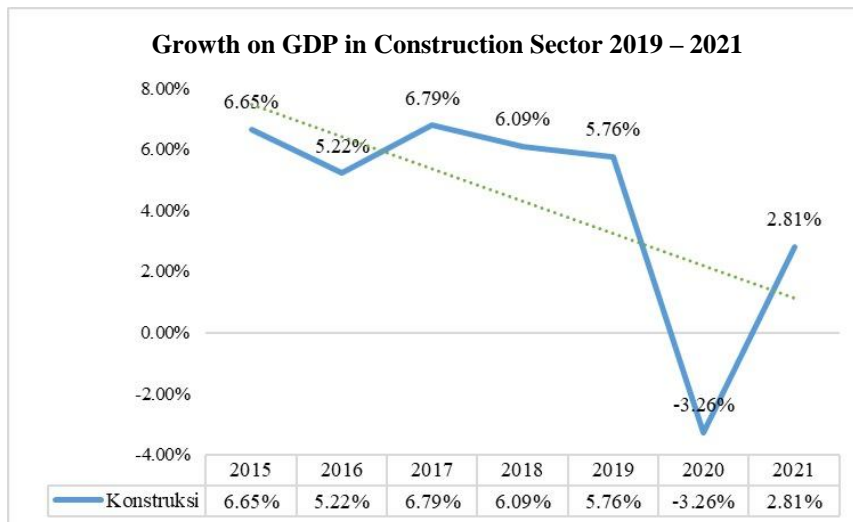


Figure 1. Growth on GDP in Construction Sector 2019 – 2021

The following data below present specifically the growth on net profit from top 5 construction companies that is listed in Indonesia Stock Exchange. These companies are sorted by the size of total assets of the company.

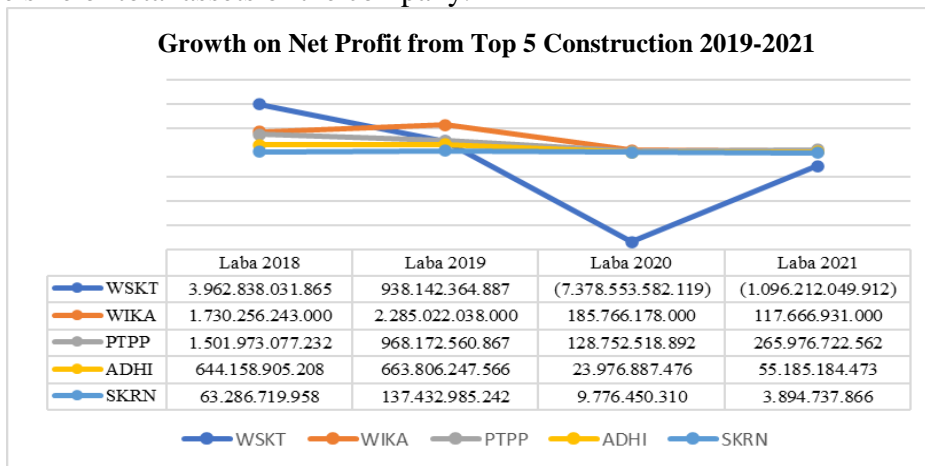


Figure 2. Growth on Net Profit from Top 5 Construction Companies in Indonesia

Based on those data, it can be seen that the profit in 2020 was decreasing significantly. Table 2 below also tells that the average of decreased reached up to 251% in 2020. The decreasing of net profit of these companies caused the financial distress. It can be proven by one of the listed construction companies that apply for “Permohonan Penundaan Kewajiban Pembayaran Utang (PKPU) in November 2020.

Table 2. Profit of Top 5 Construction Companies in Indonesia

Code	Δ2019	Δ2020	Δ2021
WSKT	-76%	-887%	-573%
WIKA	32%	-92%	-58%
PTPP	-36%	-87%	52%
ADHI	3%	-96%	57%
SKRN	117%	-93%	-151%
Mean	8%	-251%	-135%

Source: Financial Reports (2022)

PT Mitra Pemuda Tbk is the construction companies that is concentrated in steel. Until now, PT Mitra Pemuda Tbk is still suspended by Indonesia Stock Exchange due to bankruptcy verdict from Jakarta District Court on November 9, 2020. Bankruptcy verdict was given to the joint operation of PT Mitra Pemuda Tbk and Qinjian International (South Pacific) Group

Development (CNQC-MTRA-JO). Later on, MTRA decided to apply PKPU for the third-parties-liabilities from PT Grama Bazita in the development project of PT Logos Indonesia Bekasi One.

This study will concentrate observed year of 2019, 2020, and 2021. Year 2019 represented phenomenon that happened before Covid-19 virus spread in Indonesia. Year 2020 represented phenomenon that happened during pandemic outbreak. Year 2021 represented phenomenon that happened post pandemic. Therefore, this study aims to discover the potential of bankruptcy in construction companies listed in Indonesia Stock Exchange in 2019 – 2021 using Altman Z-Score Model and explore which company is getting impacted by pandemic and manage to survive in 2020 (post pandemic).

LITERATURE REVIEW

Agency Theory

Agency theory describes the relationship between principals and agents in a company (Jensen and Meckling, 1976). "This agency relationship usually appears in companies that are not directly managed by the owner, but the owner delegates his duties to other parties such as shareholders delegating the management of their company to management" (Jensen and Meckling, 1976). Principals have concerns that the company can operate well and provide maximum profits to shareholders, while on the other side agents have concerns in obtaining high compensation and additional income beyond what was agreed upon (Jensen and Meckling, 1976). The conflict between these interests causes the principal to always try to resolve the conflict by providing additional compensation to the agent with the expectation that the agent will maximize the value of the company that is being managed (Jensen and Meckling, 1976).

Providing additional compensation made by the principal can restrict the possibility of agents in abusing their power in managing the company, such as provide adequate incentives to the agent. In addition to providing incentives, principals can also incur other additional costs aimed at supervising agent performance. In general, principals tend to distrust financial reports prepared by agents. One way to increase the principal's sense of trust of the condition of the financial statements that have been prepared by the agent is through an independent third party, in this case is external auditor. These third parties will later help the principal to obtain adequate assurance of the correctness of the information in the company's financial statements.

Bankruptcy Theory

"Bankruptcy is a state where the company is unable to fulfill its liabilities and ownership of company assets will be transferred from what was originally owned by shareholders to the property of company bondholders" (Altman, 1968). "The causes of company bankruptcy can generally be divided into two, namely external and internal company factors" (Hiller, 2019). External factors that cause company bankruptcy can be in the form of the economic conditions of a country, competitors owned by the company, and changes in the nature of the company's consumers (Hiller, 2019). Internal factors that cause company bankruptcy can be in the form of management who abuses their authority and is ineffective in managing the company (Hiller, 2019).

Before the company goes bankrupt, there are several stages that the company will go through before it becomes bankrupt, including (Hiller, 2019):

1. Latency
At the latency stage, the company will begin to experience a decrease in the cash flows. The decrease in cash flow can be caused by various factors such as loss in business or consumers' purchasing power are getting saturated.
2. Shortage of Cash
In the shortage of cash stage, the company begins to experience cash shortages caused by a decrease in the company's cash flow in the latency stage. Even so, the company at this stage is still able to generate profits.
3. Financial Distress
At the stage of financial distress, the company has difficulty paying its liabilities. This condition must be addressed by taking prompt corrective action if you want to save the company's financial condition.
4. Bankruptcy
At this stage, the company is no longer able to pay all of its liabilities. There is a transfer of assets from shareholders to bondholders due to the company's inability to fulfill its liabilities.

Information regarding the potential for bankruptcy of the company will benefit various parties if the information can be known at the right time. Information regarding bankruptcy will be useful for management in order to take preventive and corrective actions. Information regarding bankruptcy will be useful for creditors so they can monitor payments on loans that have been given and as material for consideration in making new loans (Altman, 1968). Information regarding the potential for bankruptcy of the company will be useful for investors as a basis for making decisions about the securities issued by the company. Information about potential company bankruptcy will be useful for the government because there are several business sectors under the government that need to be monitored and if information on company bankruptcy can be known at the outset, then preventive steps can be taken (Altman, 1968).

If a company that is in the financial distress stage does not get quick corrective action, then bankruptcy costs will arise. Bankruptcy costs are costs that arise (directly or indirectly) after a company goes bankrupt (Hiller, 2019). "Direct costs related to the bankruptcy of a company can be in the form of administrative costs that must be borne by the company such as attorney fees, accountant fees, and other costs that must be paid by the company" (Hiller, 2019). The cause of bankruptcy costs is that the process for a company to declare bankruptcy is a long and expensive journey. Bankruptcy is not only limited to the activity of transferring company ownership to new owners because it must consider the interests of other parties affected by the company (Hiller, 2019).

Relation of Agency Theory and Bankruptcy

Agency theory describes the differences in the interests of principals and agents of a company. The difference in interests will be increasingly perceived if the company encounters some financial problems. There are several strategies that management might take to resolve these financial distresses (Hiller, 2019):

1. Management will take greater risks than usual when the company experiences financial problem so that these large risks can also provide large returns. This kind of decision is made because the manager considers that the assets managed by the company belong to the principal and will not impact management as an agent if the company later goes bankrupt.
2. Management will utilize assets owned by the company for their own personal interests. Instead of taking corrective action when the company is encountering financial difficulties, management takes advantage of these financial distresses for their personal gain because they believe that the company's financial distress cannot be saved.

Those differences in interests between principals and agents that are not immediately resolved later on will lead to less effectiveness in company management (Hiller, 2019). Companies that are in the bankruptcy stage, especially those at the stage of financial distress, require quick corrective action so that the company's financial condition can be recovered. However, if the agent and principal do not have the same goals and views on these corrective actions, then these differences can accelerate the bankruptcy of a company.

Altman Z-Score Model

Awareness about the importance of analysing the possibility of a company experiencing bankruptcy increased since the Enron (2001) and WorldCom (2002) cases emerged. These two cases provide a different view that the impact of the bankruptcy of the companies might not be too fatal if it has been predicted and mitigated beforehand. One of the methods that can be used to predict the bankruptcy of a company is the Z-Score Model.

"The Z-Score Model is a practical risk measurement indicator in predicting the bankruptcy conditions of a company and monitoring what the company might encounter" (Hiller, 2019). The Z-Score model combines 5 ratios derived from a company's financial statements with these constant ratios to obtain conclusions about a company's financial condition. These five ratios consist of the ratio of working capital to total assets, the ratio of earnings before interest and tax to total assets, the ratio of retained earnings to total assets, the ratio of market value of equity to total liabilities, and the ratio of sales to total assets. These fifth ratios and constants are obtained through a series of weighting processes in order to provide an accurate assessment (Altman, 1968). The Z-Score Model equation in this study is as follows:

$$Z = 1.2 \times \frac{\text{Working Capital}}{\text{Total Asset}} + 3.3 \times \frac{\text{EBIT}}{\text{Total Asset}} + 1.4 \times \frac{\text{Retained Earning}}{\text{Total Asset}} + 0.6 \times \frac{\text{Market Value of Equity}}{\text{Total Liabilities}} + 1.0 \times \frac{\text{Sales}}{\text{Total Asset}}$$

Working Capital to Total Asset Ratio

"Working capital is the difference between current assets and current liabilities owned by the company and can be categorized as a company's liquid assets so that it can fulfill its liabilities that mature in the short term (Altman, 1968). Positive working capital will help the company to be able to fulfill its liabilities, while negative working capital will cause difficulties for the company to repay its liabilities to creditors (Altman, 1968). The higher the ratio of working capital to total assets shows the larger portion of working capital owned by the company from its total assets. The mathematical equation of this ratio in Altman Z-score model is as follows:

$$1.2 \times \frac{\text{Working Capital}}{\text{Total Asset}}$$

Earning before Interest and Tax to Total Asset Ratio

"The ratio of income before interest and tax aims to determine the level of profitability of the company to the assets it owns regardless of loan interest and corporate tax factors" (Altman, 1968). This ratio only focuses on the ability to generate operating profit. "Companies that have large profits with small assets are less likely to experience default due to the emergence of financial difficulties faced by the company" (Altman, 1968). The higher the ratio of earnings before interest and tax to total assets shows the better the business activities owned by a company in generating income for that company. The mathematical equation of this ratio in Altman Z-score model is as follows:

$$3.3 \times \frac{\text{Earning Before Interest and Tax}}{\text{Total Asset}}$$

Retained Earning to Total Asset Ratio

"The retained earnings ratio shows the amount of profit that is not paid by the company in the form of dividends to the total assets owned by the company so that certain amount can be reinvested without using large amounts of external funds (debt) so that the company is less

likely to be in a state of financial difficulty or even bankrupt” (Altman, 1968). This ratio indicates a company's ability to survive by relying on itself (Altman, 1968). The higher the ratio of retained earnings to total assets indicates the greater the company's ability to finance the company's assets and business plans that the company will carry out in the future. The mathematical equation of this ratio in Altman Z-score model is as follows:

$$1.4 \times \frac{\text{Retained Earning}}{\text{Total Asset}}$$

Market Value of Equity to Total Liabilities Ratio

"The ratio of market value of equity to total liabilities aims to find out how quick the value of the company's assets will decrease if the company goes bankrupt in case the company's liabilities are greater than the company's assets" (Altman, 1968). This ratio can also determine the level of market trust in the company based on the company's market value of equity. The higher the market value of equity to total liabilities ratio, the greater the company's ability to carry out its liabilities. The mathematical equation of this ratio in Altman Z-score model is as follows:

$$0.6 \times \frac{\text{Market Value of Equity}}{\text{Total Liabilities}}$$

Sales to Total Asset Ratio

The ratio of sales to total assets is also well-known as asset turnover elaborate the effectiveness of the assets that is owned by a company in order to make sales and generate income. “A company with a low sales ratio indicates that the company is not utilizing existing assets maximally to earn income” (Altman, 1968). The higher the sales to total assets ratio, the more efficient it is company in utilizing its assets to produce profits reflected through the sales of the company. The mathematical equation of this ratio in Altman Z-score model is as follows:

$$1.0 \times \frac{\text{Sales}}{\text{Total Asset}}$$

CONCEPTUAL FRAMEWORK

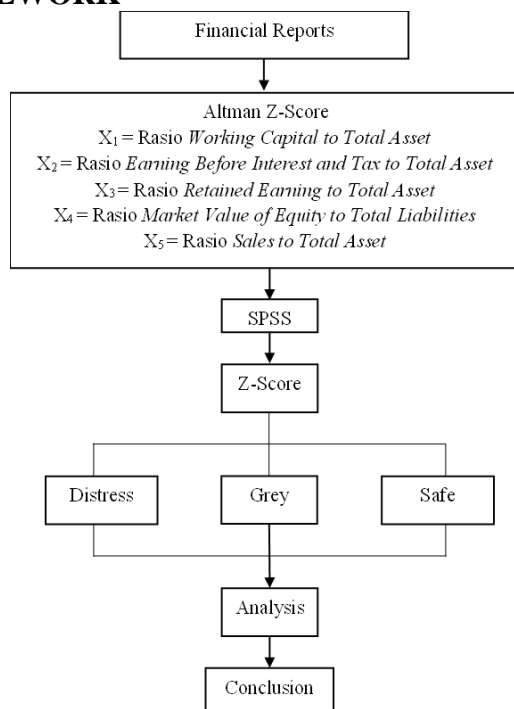


Figure 3. Conceptual Framework

H₁: The results of Altman Z-Score Model indicate the potential of bankruptcy in construction companies listed in Indonesia Stock Exchange in 2019 – 2021.

H₀: The results of Altman Z-Score Model do not indicate the potential of bankruptcy in construction companies listed in Indonesia Stock Exchange in 2019 – 2021.

MATERIALS & METHODS

This research aims to assess the potential of bankruptcy of construction companies listed in Indonesia Stock Exchange during 2019 – 2021. Therefore, the model used in this research were adopted from Z-Score Model by Edward I. Altman in 1968. Altman Z-Score Model is using 5 financial ratios such as profitability, leverage, liquidity, solvency, and activity ratios in order to predict the financial distress if the company. By using these ratios, descriptive statistical analysis is conducted to gather the statistical information regarding the value of mean, standard deviation, maximum, and minimum from the data given. Later on, these ratios were analysed further using Microsoft Excel using referenced constant by Altman Z-Score model so that we could imply whether these companies were in low-risk area of financial distress, grey area, or indicating bankruptcy. Hereafter, researcher will do a deeper analysis to discover the cause of the bankruptcy. The Altman Z-Score model that is used in the research is as shown below:

$$Z = 1,2 \times \frac{\text{Working Capital}}{\text{Total Asset}} + 3,3 \times \frac{\text{EBIT}}{\text{Total Asset}} + 1,4 \times \frac{\text{Retained Earning}}{\text{Total Asset}} + 0,6 \times \frac{\text{Market Value of Equity}}{\text{Total Liabilities}} + 1,0 \times \frac{\text{Sales}}{\text{Total Asset}}$$

The population is a group of elements that meets certain criteria determined by researcher to study and draw conclusions (Kuncoro, 2018). The population used in this study is construction companies listed in Indonesia Stock Exchange in period 2019 – 2021 with the total of 18 companies. Meanwhile, sampling is the process of selecting several elements from the population and used to understanding the various characteristics and generalized the characteristics from the population (Kuncoro, 2018). The sampling method used in this study is purposive sampling, which is the method of selecting samples using certain criteria that is determined by the researcher in accordance with the objective of the study. The criteria mentioned is the construction company listed in Indonesia Stock Exchange and do not delist during the observing period of 2019 – 2021. Hence, this research determines 51 samples (17 companies x 3 observing year). The data that is used in this study were collected by using documentation method. The data were gathered in financial report of the construction companies that can be accessed in the official website of Indonesia Stock Exchange. The research data was processed using the Microsoft Excel 2016 and the Statistical Package for Social Science (SPSS) 23 software.

RESULT

1. Descriptive Statistic Analysis

Table 1 below presents the descriptive statistic of five ratios that is used in Altman Z-Score model. The descriptive statistical analysis reports the value of minimum, maximum, mean, and standard deviation of the data used in the study. The empirical results present that the minimum, maximum, mean, and standard deviation of working capital to total asset ratio in sequence are -0.3727, 2.2586, 0.4153, and 0.4525; the minimum, maximum, mean, and standard deviation of earnings before interest and tax to total asset ratio in sequence are -1.4475, 0.8311, -0.0045, and 0.4223; the minimum, maximum, mean, and standard deviation of retained earnings total asset ratio in sequence are -1.3986, 1.5740, 0.2221, and 0.3972; the minimum, maximum, mean, and standard

deviation of market value of equity to total liabilities ratio in sequence are 0.0199, 2.9957, 0.5441, and 0.6181; the minimum, maximum, mean, and standard deviation of sales to total asset ratio in sequence are 0.0856, 1.0629, 1.4631, and 0.2495.

Table 3. Descriptive Statistical Analysis

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
X1	51	-.372665976	2.258553275	.4152606127	.4524901993
X2	51	-1.44749829	.8310560753	-.004465574	.4222871310
X3	51	-1.39855053	1.574035800	.2221153051	.3971569037
X4	51	.0199285554	2.995729174	.5440679870	.6180854039
X5	51	.0856268421	1.062912354	.4630911498	.2495460904
Valid N (listwise)	51				

Source: SPSS 23 Test Results

2. Z-Score Model

The assessment results regarding the potential of bankruptcy in construction sector listed in Indonesia Stock Exchange period 2019 – 2021 are as shown in table 2 below:

1. In 2019, there are 6 out of 17 companies had the potential of bankruptcy, 3 out of 17 companies were in grey area, and 8 out of 17 companies had low risk area of bankruptcy (health) in 2019 based on assessment using Z-Score Model;
2. In 2020, there are 8 out of 17 companies were in grey area, and the rest of the companies showed potential of bankruptcy in 2020 based on assessment using Z-Score Model;
3. In 2021, there are 8 out of 17 companies had the potential of bankruptcy, 5 out of 17 companies were in grey area, and 4 out of 17 companies had low risk area of bankruptcy (health) in 2021 based on assessment using Z-Score Model.

Table 4. Z-Score Model Assessment

No.	Stocks Code	Year 2019	Year 2020	Year 2021
1.	ACST	0.15 (Distress Zone)	0.30 (Distress Zone)	2.28 (Grey Zone)
2.	ADHI	1.27 (Distress Zone)	0.56 (Distress Zone)	0.44 (Distress Zone)
3.	CSIS	3.19 (Safe Zone)	2.39 (Grey Zone)	3.40 (Safe Zone)
4.	DGIK	3.00 (Safe Zone)	1.95 (Grey Zone)	3.00 (Safe Zone)
5.	IDPR	2.32 (Grey Zone)	2.90 (Grey Zone)	0.51 (Distress Zone)
6.	MTRA	1.32 (Distress Zone)	-0.85 (Distress Zone)	-2.93 (Distress Zone)
7.	NRCA	3.04 (Safe Zone)	2.04 (Grey Zone)	3.09 (Safe Zone)
8.	PBSA	3.11 (Safe Zone)	2.03 (Grey Zone)	3.10 (Safe Zone)
9.	PSSI	3.58 (Safe Zone)	1.99 (Grey Zone)	2.30 (Grey Zone)
10.	PTPP	0.99 (Distress Zone)	0.57 (Distress Zone)	0.53 (Distress Zone)
11.	SKRN	1.85 (Grey Zone)	1.74 (Distress Zone)	2.07 (Grey Zone)
12.	SSIA	1.94 (Grey Zone)	2.17 (Grey Zone)	2.31 (Grey Zone)
13.	TOPS	3.66 (Safe Zone)	0.47 (Distress Zone)	0.85 (Distress Zone)
14.	TOTL	3.01 (Safe Zone)	1.90 (Grey Zone)	1.95 (Grey Zone)
15.	WEGE	2.99 (Safe Zone)	1.12 (Distress Zone)	1.22 (Distress Zone)
16.	WIKA	1.23 (Distress Zone)	0.48 (Distress Zone)	0.39 (Distress Zone)
17.	WSKT	0.49 (Distress Zone)	0.03 (Distress Zone)	0.20 (Distress Zone)

Source: Microsoft Excel 2016

DISCUSSION

1. Research Period

Refer to the table 2, construction companies did not have financial issue and in low-risk area of bankruptcy in 2019. Data analysed show that 8 out of 17 companies are in a safe zone based on Altman Z-Score's assessment and only 6 companies or 35% companies indicate the potential of bankruptcy. This result consistent with the global economics

condition in that time. China-US trade war has taken the spotlight that have increasingly impacted the economy. As a result, despite the current state, Indonesian government continues to pay close attention to the construction industry in Indonesia. According to Coordinating Minister for the Economy, Darmin Nasution stated that the government has devised a program for infrastructure development in 2020-2024 which concentrated on three frameworks: basic service infrastructure, economic infrastructure, and urban infrastructure. This policy intends to attract the foreigners to invest in and boost the infrastructure competitiveness on a global scale.

The first case of Covid-19 was discovered in Indonesia on February 14, 2020. Since then, Covid-19 has been formally classified as a pandemic by the authorities. Accordingly, the government started putting various policies into place in order to stop the Covid-19 virus's spread and lessen its effects on Indonesia. This has changed every single aspect in life, including the Indonesian economy which is impacted significantly. It can be implied by the fact that Indonesia's economic growth in 2020 fell to -2.19 year on year (YoY). This pandemic has affected all economic sectors, including the construction sector. Construction industry has become the top five economic sectors which contributes significantly to Gross Domestic Product (GDP) growth. Hence, during the pandemic, it has experienced a major decline. GDP growth of construction sectors fell to -3,26 percent. The analysis of Altman Z-Score confirm this fact. According to the Altman Z-Score Model analysis for construction companies listed on the Indonesia Stock Exchange in 2020, there are no companies in this sector that are in a healthy financial condition. 8 out of 17 companies were in a grey zone, and 9 out of 17 companies were facing through a financial distress that could lead onto bankruptcy. Looking more closely, some issues arose as a result of the policies – *Pembatasan Sosial Berskala Besar (PSBB)* – that was obstructing the operational of these companies. PSBB has caused delays in the process of materials delivery due to the social restrictions. It caused the lack of the supplies needed for the construction. Furthermore, it also had a significant impact on the mobility of the workers in construction sites due to the limitation of the workers' capacities as stated in the PSBB's policies. Furtherly, it also affected the distribution channels that shut down in order to minimalized the interactions within people. Some construction's projects also had to be postponed quite a while so that delays in revenue also occurred. On the other hand, the companies' cost soared. These issues had an adverse effect on the company's financial situation. Due to this, there is no companies that were in a safe zone according to Altman Z-Score's categories.

Altman Z-score model's analysis present that in 2021, 4 out of 17 constructions companies that listed in Indonesia Stock Exchange manifested the sign of recovery in their financial conditions. On the other hand, 5 out of 17 companies were in grey zone and 8 out of 17 companies were still encountered the impact of pandemic in 2020. These results also implied that 47% of construction companies still struggled to recover from pandemic.

2. Company Analysis

The results of the Z-Score Model analysis of PT Acset Indonusa Tbk. with the stock code ACST consecutively from 2019 to 2021 is 0.15 (distress zone), 0.30 (distress zone), and 2.28 (grey zone). This result shows that ACST has already encountered financial distress even before the pandemic started. That is to say that the financial distress of ACST is caused by the internal issue of the company and not caused by Covid-19. Hence, ACST somehow managed to recover its financial conditions in 2021. It can be seen from the z-score analysis that the value of z-score increased significantly in 2021 and move from distress zone to grey zone category. The financial reports of ACST presents that ACST recognized net loss Rp1.1Trillion in 2019 and Rp1.3Trillion in 2020. In 2021, although ACST was still in a loss, they somehow managed to reduce their loss to Rp698Billion. The

improvement in ACST's performances were caused by new project tender, such as development of toll lane of Tangerang – Merak Segmen Cikande – Serang Timur, Silaturahmi Tunnel in Istiqlal Mosque, BRI Tower, and the renovation of Ritz Carlton Hotel in Mega Kuningan.

PT Adhi Karya Persero Tbk (ADHI) is one of the state-owned enterprises in construction sector which consist of 51% government ownership and 49% public ownership. ADHI is well-known as its achievements in mega projects, such as the renovation of Gelora Bung Karno (GBK) Stadium, the renovation of Manahan Stadium, and MRT projects. Altman z-score model analysis indicates that during 2019 – 2021 consecutively are 1.27 (distress zone), 0.56 (distress zone), and 0.44 (distress zone). Unlike ACST, the value of z-score of ADHI keeps decreasing year by year and it clarifies that they had financial struggle in three years consecutively and did not have improvement by the time. Covid-19 makes their financial more severe due to some project that had to be postponed temporary corresponding to PSBB's policies.

As a results, financial reports shows that revenues decreased 29.27% year on year (YoY) from Rp15.2Trillion to Rp10.8Trillion. On the other hand, cash flow statements indicate that there was switch over state budget from construction sectors into healthcare sectors. During Pandemic, the government determined to enlarge the portion of state budget into healthcare sector to handle the pandemic. The budget later on would be allocated into incentive of medical personnel, procurement of medical tools, purchasing the Covid-19 vaccine, etc. The data shows that 9.4% portion of state budget or approximately Rp2,714.2Trillion was allocated into healthcare sector in 2020. In 2021, ADHI started to show improvement in its profit as a result of its revenues that increased from Rp86.5Billion or 264% year on year (YoY). Therefore, recovery from its revenue did not affect the value of z-score. The value of z-score model kept decreasing in 2021 to 0.44. This case happened because even the profit showed recovery, but their liabilities increased from Rp32.5Trillion to Rp34.2Trillion. It caused their debt-to-equity ratio went up from 1.69 times to 1.81 times. Cash flow statement also decrease from Rp3.2Trillion in 2020 to Rp2.3Trillion in 2021.

PT Cahayasakti Investindo Sukses Tbk with the stock code CSIS is one of the construction companies that listed in Indonesia Stock Exchange that indicates the good financial health according to Altman z-score model in 2019 and 2021. Altman z-score model shows that the values of z-score consecutively in 2019, 2020, and 2021 are 3.19, 2.39, and 3.40. Even though, CSIS seems to have a low-risk potential of bankruptcy, they were in grey zone during the pandemic in 2020. Like any other companies, CSIS also struggled to survive during Covid-19. Hence, z-score values of CSIS post-pandemic in 2019 indicated that their financial health is better and in a safe zone according to z-score categories.

PT Nusa Konstruksi Enjiniring Tbk (DGIK) also shows the good financial health according to Altman z-score model in 2019 and 2021. Therefore, DGIK were once in a grey zone with high financial uncertainty in 2020. Altman z-score model shows that the values of z-score consecutively in 2019, 2020, and 2021 are 3.00, 1.95, and 3.00. PT Nusa Konstruksi Enjiniring Tbk recognized net profit of Rp4Billion in 2019 and Rp10Billion in 2021. Therefore, in 2020 the company was suffering in loss of Rp13Billion.

Altman z-score model shows that the values of z-score of PT Indonesia Pondasi raya Tbk (IDPR) consecutively in 2019, 2020, and 2021 are 2.32, 2.90, and 0.51. In 2019, IDPR was in grey zone with the value of 2.32 according to z-score model. This value indicates that the company had high uncertainty in financial conditions even before pandemic happened. Out of expectation, the value of Altman z-score model precisely increased in 2020 with the value of 2.90. This reflected improvement from management in managing its operational. In 2021, financial performance of IDPR has decreased significantly and

consistent to the value of 0.51 based on Altman z-score. If we looked deeper into the financial reports, IDPR seems to have hardship in its bottom line. In 2019, IDPR succeeded to recognize Rp958Billion or 4.17% growth in revenues. Hence, the other expenses had significantly increased from Rp127Million in 2018 to Rp1.81Billion in 2019. Moreover, finance expenses were increasing as well became Rp15.31Billion. This financial performance affected the categorization of Altman z-score of IDPR in grey zone in 2019.

In 2020, despite of the pandemic, the company managed to recognize the revenues of Rp652Billion. The revenues are indeed decreasingly from 2019, yet it was an astounding performance in the middle of the pandemic. Altman z-score value showed recovery in 2020 due to liabilities repayment up to Rp40Billion. However, the liabilities increased again became Rp136Billion. The value of retained earnings drained drastically from Rp200Billion to Rp51Billion in 2021 and caused the equity value decreased. In accordance to the statements above, it can be implied that the financial distress of the company is more due to the disability in managing its bottom line and affected the lower profit. On the other side, liabilities had increased and deteriorated the profit even more in line with finances expenses that kept increasing due to interest expenses.

Altman z-score value of PT Mitra Pemuda Tbk (MTRA) during 2019 to 2021 indicates that financial performances has highly chance of bankruptcy. Even more, Indonesia Stock Exchange decided to put the transactions of these stocks on suspended for a while due to bankruptcy. These results are in line with Altman z-score. The values in 2019, 2020, and 2021 consecutively were 1.32, -0.85, and -2.93. If we look closer to the financial reports, the net profit/loss shows significantly decrease in three consecutive year, loss Rp12Billion in 2019, loss Rp91Billion in 2020, and loss Rp81Billion in 2021. These results implies that MTRA had already had a problem before the pandemic outbreak in 2020. Covid-19 makes their financial more severe and create a negative value of z-score model. Liabilities kept increasing over these three years, Rp222Billion, Rp258Billion, and Rp264Billion. On the other hand, the current ratio of MTRA also kept decreasing during these periods, 1.22, 1.09, and 0.70. With these problematic ratios, the probability of liabilities repayments hit zero. These poor financial conditions then became the main factor for the sub-contracting company PT Grama Bazita to apply for a PKPU against the company. Later on, those conditions made MTRA to be suspended by Indonesia Stock Exchange.

The results of the Z-Score Model analysis of PT Nusa Raya Cipta Tbk. with the stock code NRCA consecutively from 2019 to 2021 is 3.04 (safe zone), 2.04 (grey zone), and 3.09 (safe zone). These shows that NRCA can be classified as in good financial health according to Altman z-score model in 2019 and 2021. Therefore, NRCA were once in a grey zone with high financial uncertainty in 2020. The Altman z-score model shows that pandemic affected the operational of the holding company and its subsidiaries. As what it told in its annual reports, NRCA had to postpone few tender projects and it affected to its profit that was slowing down from Rp101Billion in 2019 to Rp55Billion in 2020. Hence, the company had been able to come back to recover its financial performance in 2021 in line with the recovery of Indonesia from pandemic outbreak.

The results of the Z-Score Model analysis of PT Paramita Bangun Sarana Tbk. with the stock code PBSA consecutively from 2019 to 2021 is 3.11 (safe zone), 2.03 (grey zone), and 3.10 (safe zone). Z-score model shows that financial condition of PBSA is in safe zone. Hence, like any other company, PBSA also get impacted by pandemic and decreased the z-score value to 2.03 in 2020. If we look closer to its financial report, the revenue of PBSA was decreasing from Rp608Billion in 2019 to Rp553Billion in 2020. The President Director of PBSA, Vincentius Susanto stated that revenues in 2019 slowed down due to pandemic outbreak which made some projects had to be postponed by the clients.

PT Pembangunan Perumahan Tbk (PTPP) is another state-owned-enterprises that listed in Indonesia Stock Exchange. The results of the Z-Score Model analysis of PT Pembangunan Perumahan Tbk with the stock code PTPP consecutively from 2019 to 2021 is 0.99 (distress zone), 0.57 (distress zone), and 0.53 (distress zone). Z-score model indicated that PTPP was suffering during these three years and had a highly chance to get into bankruptcy according to Altman Z-Score model. Their financial performance became more severe during pandemic in 2020. It can be seen from the z-score value of the company that kept decreasing since 2020. Based on its financial reports, in 2020 company recognized revenues of Rp15.8Trillion or 32.84% lower than year before. PTPP clarified that company was only able to get new contract with the value of Rp22.26Trillion in 2020, yet their target in 2020 should be Rp25Trillion. On the other hand, the asset value kept decreasing drastically from Rp59.2Trillion in 2019 to Rp53.4Trillion in 2020.

The results of the Z-Score Model analysis of PT Superkrane Mitra Utama Tbk (SKRN) from 2019 to 2021 shows that the financial condition of the company had high uncertainty and was in a grey area category based on Altman z-score model. Even more, SKRN also showed an indication of financial distress in 2020. From its financial reports, net profit had slowed down significantly from Rp137Billion in 2019 to Rp10Billion in 2020. It made the z-score value decreased from 1.85 (grey area) in 2019 to 1.74 (distress zone) in 2020. Hence, the company was able to recover from its financial distress in 2021. Although the company could only recognised net profit of Rp4Billion in 2021, the company was able to decrease the liabilities significantly to Rp77Billion. This value made the z-score value of SKRN getting better in 2021 with the value of 2.07.

PT Surya Semesta Internusa Tbk (SSIA) is construction enterprise that concentrate in construction services, especially the development in industry area and commercial property. The results of the Z-Score Model analysis of PT Surya Semesta Internusa Tbk (SSIA) from 2019 to 2021 shows that the financial condition of the company had high uncertainty and was in a grey area category based on Altman z-score model. In 2020 and 2021, SSIA started to recognize loss. This indicate that the financial condition of SSIA during these years was not their best financial performances.

The results of the Z-Score Model analysis of PT Totalindo Eka Persada Tbk with the stock code TOPS consecutively from 2019 to 2021 is 3.66 (safe zone), 0.47 (distress zone), and 0.85 (distress zone). Z-score model indicates that TOPS was in a good financial health before pandemic outbreak. Hence, the pandemic made its financial condition became severe. Its revenue was getting decreased from Rp681Billion in 2019 to Rp320Billion in 2020. Even more, as the pandemic was getting better and the government's policies was getting loosen, TOPS was not able to recover from its distress zone in 2021.

The results of the Z-Score Model analysis of PT Total Bangun Persada Tbk with the stock code TOTL consecutively from 2019 to 2021 is 3.01 (safe zone), 1.90 (grey zone), and 1.95 (grey zone).

Z-score value kept decreasing over these years because its revenue was slowing down from Rp2.48Trillion in 2019 to Rp2.29Trillion in 2020. From its bottom line's performance, net profit for 2020 was decreasing significantly became Rp76Billion.

The results of the Z-Score Model analysis of PT Wijaya Karya Bangunan Gedung Tbk with the stock code WEGE consecutively from 2019 to 2021 is 2.99 (safe zone), 1.12 (distress zone), and 1.22 (distress zone). These values represents that the financial condition of WEGE was good before the pandemic outbreak. Hence, pandemic in 2020 made the company recognized net loss of Rp451Billion in 2019 to Rp153Billion in 2020 or slowing down 66.06% Year on Year (YoY). As an additional information, WEGE, WIKA, and WSKT is one of the state-owned-enterprises that is concentrated in constructions sector. Hence, even WEGE become the part of state-owned-enterprises, it

has a difference in business prospects than any other state-owned-enterprises in construction sector. WEGE is more concentrated in the building constructions, while WIKA and WSKT is more concentrated on infrastructure constructions, such as toll, bridge, dam, etc. Covid-19 impacted WEGE significantly because some clients determined to close their business lines during pandemic in accordance to government's policies in order to stop the spread of the virus.

The results of the Z-Score Model analysis of PT Wijaya Karya Tbk (WIKAT) consecutively from 2019 to 2021 is 1.23, 0.48, and 0.39. These values indicates that the financial distress of the company was not caused by the pandemic, but the internal issues in management that made the financial condition became worse. Pandemic outbreak only made their financial health became more severe in 2020. In 2020, PT Wijaya Karya Tbk recognized the net profit of Rp185.76Billion. Meanwhile, short term liabilities of the company were increasing drastically from Rp30.3Trillion in 2019 to Rp44.1Trillion in 2020 or paced up to 45.54%. This condition made the z-score value reached 0.39 in 2020. In the first quarters of 2020, especially after pandemic hits in February 2020, the management representation elaborated that 13% of the projects suspended and 23% of the project was slowing down in some parts as a result of decreased of social mobility and restrictions due to physical distancing program. It affected the decreased of net profit/loss significantly in 2020. However, WIKAT was still not able to recover from its financial distress even after physical distancing program was over. It can be seen from its net profit/loss that was still decreasing Rp214Billion in 2021. On the other hand, the liabilities were increasing Rp499Billion in 2021. It caused the z-score value reached 0.39 in 2021.

The results of the Z-Score Model analysis of PT Waskita Karya Tbk (WSKT) consecutively from 2019 to 2021 is 0.49, 0.03, and 0.20. In 2020, WSKT recognized the net loss up to Rp7.38Trillion in 2020. This is caused by the finance expenses that is increasing 31% than 2019 due to investment project in 2019. Moreover, the initial plan to divest 5 toll was not able to be realized due to covid-19. It made the financial became worse because the operational expenses were increasing drastically 123% from its revenues in 2020.

CONCLUSION

This study provides several essential points that can be highlighted into conclusion. The following are the conclusion that has been drawn from the discussion and analysis results above:

1. In 2019, 6 out of 17 companies had the potential of bankruptcy, 3 out of 17 companies were in grey zone which indicates high uncertainty about their financial condition, and 8 out of 17 companies had low risk area of bankruptcy (health) based on assessment using Z-Score Model.
2. In 2020, 9 out of 17 companies had the potential of bankruptcy, 8 out of 17 companies were in grey zone which indicates high uncertainty about their financial condition, and no companies had low risk area of bankruptcy (health) in 2020 based on assessment using Z-Score Model;
3. In 2021, 8 out of 17 companies had the potential of bankruptcy, 5 out of 17 companies were in grey zone which indicates high uncertainty about their financial condition, and 4 out of 17 companies had low risk area of bankruptcy (health) based on assessment using Z-Score Model.
4. There are no companies that could maintain their financial performance during pandemic outbreak. Even more, after the status of pandemic had already been stable, some of them still could not manage to recover yet. It can be proven by 47% of construction companies that was still struggle to encounter financial distress.

LIMITATIONS

1. The research objects are concentrated on construction companies listed in Indonesia Stock Exchange. So, there is high possibilities of bias if these results are used to generalized things that is out of research scopes.
2. The observed year in this study is in 2019 – 2021. Year 2019 represented phenomenon that happened before Covid-19 virus spread in Indonesia. Year 2020 represented phenomenon that happened during pandemic outbreak. Year 2021 represented phenomenon that happened post pandemic.
3. The analysis method that is used to analyse financial performances of companies are only concentrated on Altman Z-Score Model and other measurement is being ignored. So, another approach might give different results.

IMPLICATIONS

Based on the results of this study and the discussions presented above, several implications can be made as follows:

1. This research contributes in representing economic condition during Covid-19 in general and analyse the impact of Covid-19 specifically against construction companies and how the government policies during pandemic affect their operational.
2. This research contributes in presenting the financial conditions of each construction companies that became the sample in this study. Deep analysis is conducted by using Altman Z-Score Model and later be compared to the data from their financial report.

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