Research Paper

Comparative Analysis of Financial Distressin PT. Wijaya Karya and PT. Waskita Karya Using Altman Z-Score and SOE Financial Health Assesment

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Abstract
This study analyzes and compares the financial distress conditions of PT Wijaya Karya Tbk and PT Waskita Karya Tbk during the 2019–2024 period using the Altman Z-Score method and the SOE Financial Health Assessment based on Ministerial Decree No. KEP-100/MBU/2002. This research employs a quantitative approach with descriptive and comparative methods using secondary data from the companies' annual financial statements. Data were analyzed by calculating financial ratios based on each assessment method and comparing the results between companies. The statistical tests applied include the Independent Sample t-test and Spearman Rank correlation. The results show that both companies are classified as experiencing financial distress based on the Altman Z-Score method. Meanwhile, the SOE financial health assessment categorizes the companies as less healthy to unhealthy. In addition, the Spearman Rank test indicates a positive and significant relationship between the results of the two methods. These findings suggest that the Altman Z-Score and SOE financial health assessment methods can be used complementarily to evaluate corporate financial distress.
Keywords: Financial Distress; Altman Z-Score; Spearman Rank; SOE Ministerial Decree; Finansial Health Assesment.

I. Preliminary

The construction sector plays an important role in supporting national infrastructure development in Indonesia. State-owned enterprises (SOEs) such as PT Wijaya Karya Tbk and PT Waskita Karya Tbk are among the main companies involved in large-scale infrastructure projects, such as: the Jakarta LRT Velodrome–Kelapa Gading and the Jakarta–Bandung High-Speed Railway (WIKA, 2020). WSKT has completed 65 of 88 PSN projects within a decade and was listed in the Fortune Southeast Asia 500 in 2024 (Waskita, 2025; Liputan6.com, 2025).

However, phased payment schemes, delayed receivables, and high debt burdens increase the risk of financial distress. In 2024, WSKT signed a Rp26.3 trillion Master Restructuring Agreement (MRA) with 21 banks, while WIKA reached a Rp20.58 trillion MRA with 11 financial institutions as part of financial restructuring efforts (CNBC Indonesia, 2024).

Table 1: Financial Data of WIKA and WSKT

	WIKA		WSKT	
	DTE Ratio	**Net Profit**	**DTE Ratio**	**Net Profit**
2019	2,23	2.621.015.140	3,21	1.028.898.367.891
2020	3,09	322.342.513	7,82	-9.287.793.197.812
2021	2,98	214.424.794	5,70	-1.838.733.441.975
2022	3,29	12.586.435	5,90	-1.672.733.807.060
2023	5,89	-7.824.538.997	7,24	-4.018.265.010.703
2024	4,35	-2.513.814.335	8,79	-3.913.600.848.372

Source: Indonesia Stock Exchange (IDX), processed by the author.

The data indicate a significant increase in debt-to-equity (DTE) ratio for both companies, reflecting a growing relience on debt financing. Net profit also declined substantially, with WIKA shifting from positive profits in 2019 to losses in 2023–2024, while WSKT recorded continuous losses since 2020. These trends suggest weakening financial performance and increasing financial pressure, particularly for WSKT, which exhibits consistently higher leverage and larger losses.

This study uses the Altman Z-Score to predict bankruptcy risk and the SOE Ministerial Decree No.

KEP-100/MBU/2002 to assess SOE financial health. The 2019–2024 period covers pre-pandemic conditions, COVID-19 impacts (2020–2022), and the phase of increased risk and MRA debt restructuring (2023–2024).

Previous studies have examined financial distress and the financial health of state-owned enterprises using various analytical methods. (Dwi & Shalekhah, 2025) analyzed the influence of firm characteristics such as firm size, company age, leverage, and profitability on corporate financial decisions in banking companies listed on the Indonesia Stock Exchange, highlighting the importance of financial indicators in evaluating corporate performance and stability.

Research by (Ramadhan, 2025) found that several Indonesian state-owned construction companies experienced declining financial health during and after the COVID-19 period. Other studies by (Resti, 2021) and (Azzahra, 2025) also revealed varying levels of financial health among state-owned enterprises.

However, most previous studies still use a single analytical method in assessing financial distress conditions. Studies that specifically compare the financial distress conditions of state-owned construction companies using a combination of the Altman Z-Score method and the company health assessment based on the Decree of the Minister of State-Owned Enterprises remain limited. Therefore, this study aims to analyze and compare the financial distress conditions of PT Wijaya Karya (Persero) Tbk and PT Waskita Karya (Persero) Tbk using both methods.

II. Research Purposes

Based on the background of the study, the objectives of this research are as follows:
1. To analyze the level of financial distress of PT Wijaya Karya and PT Waskita Karya during the 2019–2024 period using the Altman Z-Score method.
2. To assess the financial performance of PT Wijaya Karya and PT Waskita Karya during the 2019–2024 period based on the criteria stipulated in the Decree of the Minister of State-Owned Enterprises No. KEP-100/MBU/2002.
3. To compare the results of financial performance assessments obtained from the Altman Z-Score method and the Decree of the Minister of State-Owned Enterprises No. KEP-100/MBU/2002.

III. Theoritical Review

Financial Distress

Financial distress refers to a condition in which a company experiences financial difficulties due to insufficient cash flow to meet its financial obligations, which may eventually lead to bankruptcy. According to (Altman et al. as cited in (Yosandra & Sembiring, 2022), financial distress occurs when a company cannot satisfy creditor demands, indicating declining financial stability. (Natania & Suhartono, 2024). also describe financial distress as an early warning signal of potential bankruptcy. Identifying these conditions is important for management, investors, and creditors in evaluating a company's financial performance and risk.

Altman Z-Score

The Altman Z-Score method effectively combines financial ratios to assess bankruptcy risk. Initially developed for publicly listed manufacturing firms, Altman applied Multiple Discriminant Analysis to 66 U.S. companies to differentiate healthy firms from those at risk of bankruptcy (Amtiran, 2023). The model evaluates liquidity (working capital/total assets), asset financing ability through retained earnings, profitability (EBIT/total assets), solvency (market capitalization/total liabilities), and operational efficiency (sales/total assets) (Robiansyah et al., 2022).

> Equation for Altman's Z-Score Model (1968):
> $$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1X_5$$

Figure 1: Altman Z-Score Formula

The Z-score is classified into three categories: >2.99 (healthy), 1.81–2.99 (grey zone), and <1.81 (high risk). Although originally developed for publicly listed manufacturing firms, Altman expanded the model in 1983 to enable broader application.

Financial Performance

Financial performance reflects a company's finansial results over a specific period and indicates its finansial health and sustainability (Krisnawati, 2020). It is commonly assessed using liquidity (current ratio), solvency (debt-to-equity), profitability (ROA, ROE, profit margin), and activity ratios (sales-to-assets), which reveal operational efficiency, strengths, weaknesses, and potential financial distress risks.

The Decree of the Minister of State-Owned Enterprises No. KEP-100/MBU/2002

The Decree of the Minister of State-Owned Enterprises No. KEP-100/MBU/2002 provides official guidelines for evaluating the financial health of SOEs. It systematically evaluates managerial and financial performance, classifying firms as healthy, less healthy, or unhealthy.

Table 2: Health Level Classification According to the Decree of the Minister of SOEs

HEALTHY	LESS HEALTHY	UNHEALTHY
AAA if TS < 95	BBB if 50 <TS< =60	CCC if 20 <TS< =30
AA if 80 <TS< = 95	BB if 40 <TS< =50	CC if 10 <TS< =20
A if 65 <TS< = 80	B if 30 <TS< =40	C if TS< =10

Source: (BUMN, 2002)

Financial aspect receives the highest weight and includes several key indicators such as return on equity (ROE), return on investment (ROI), cash ratio, current ratio, collection period, inventory turnover, total asset turnover, and the equity-to-total assets ratio. The evaluation produces a score that classifies SOEs into different categories of financial health. (BUMN, 2002).

Hypothesis

Financial distress refers to a condition in which a company experiences financial difficulties in meeting its obligations and faces an increased risk of bankruptcy. SOE financial health is assessed using the Decree of the Minister of SOEs No. KEP-100/MBU/2002, which evaluates liquidity, solvency, profitability, and activity ratios to determine the overall health category of the company (Prasetyo et al., 2024). Based on the research framework, problem formulation, relevant theories, and prior studies, the hypotheses are as follows:

H_{01}: PT. Wijaya Karya Tbk and PT. Waskita Karya Tbk do not show financial distress based on the Altman Z-Score (2019–2024).

H_{a1}: PT. Wijaya Karya Tbk and PT. Waskita Karya Tbk show financial distress based on the Altman Z-Score (2019–2024).

H_{02}: Both companies remain financially healthy based on the Decree of the Minister of SOEs (2019–2024).

H_{a2}: Both companies are not financially healthy based on the Decree of the Minister of SOEs (2019–2024).

H_{03}: There is no difference between the Altman Z-Score and SOE Decree assessments.

H_{a3}: There is a difference between the Altman Z-Score and SOE Decree assessments.

IV.   Research Methods

Time and Place of Research

This study used secondary data from the Indonesia Stock Exchange (www.idx.co.id), annual reports and financial statements of PT. Wijaya Karya Tbk (www.wika.co.id) and PT. Waskita Karya Tbk (www.waskita.co.id), as well as academic journals from Google Scholar. Data collection began in October 2025.

Research Design

This study applied a comparative design to analyze the financial distress conditions of PT Wijaya Karya Tbk and PT Waskita Karya Tbk during 2019–2024 using the Altman Z-Score and the Decree of the Minister of State-Owned Enterprises No. KEP-100/MBU/2002. A descriptive approach was used to compare the results of the two assessment methods.

Statistical Hypotheses

The hypotheses tested the financial conditions of the two companies and the relationship between the two assessment methods:

A. Homogeneity Test (Levene's Test)

- H_0: Variances of both groups are equal (homogeneous)
- H_a: Variances of both groups differ (not homogeneous)

B. Difference Test (Independent Sample T-Test)

- H_{01}: No significant difference in mean Altman Z-Score results between the companies
- H_{a1}: Significant difference in mean Altman Z-Score results between the companies
- H_{02}: No significant difference in mean Ministerial Decree scores between the companies
- H_{a2}: Significant difference in mean Ministerial Decree scores between the companies

C. Supporting Test (Spearman Rank Correlation)
* H_{03}: No significant correlation between the two methods
* H_{a3}: Significant correlation between the two methods

Research Variables
Research variables are elements defined for study to obtain information and draw conclusions (Sugiyono, 2023:68). This study uses two main variables:

A. Independent Variable (X)
The independent variable influences or causes changes in the dependent variable (Sugiyono, 2023:69). In this study, it refers to the financial performance assessment methods: Altman Z-Score and the Ministerial Decree No. KEP-100/MBU/2002.

B. Dependent Variable (Y)
The dependent variable is influenced by the independent variable (Sugiyono, 2023:69). The dependent variable is the company's financial condition, expressed as healthy, less healthy, or unhealthy per the Ministerial Decree, or safe, grey zone, or distressed according to the Altman Z-Score.

Data Collection Method
This study used secondary data from financial statements obtained through the Indonesia Stock Exchange (IDX) and the official websites of PT. Wijaya Karya (Persero) Tbk and PT. Waskita Karya (Persero) Tbk. Academic journals were accessed via Google Scholar and Publish or Perish, while books were obtained from Google Books and the Ipusnas application. Literature selection applied inclusion and exclusion criteria: publications from the last 10 years, written in Indonesian or English, relevant to the research topic and fully accessible. Sources lacking clear methodology or full text were excluded.

Population and Sample
The population consists of eight state-owned construction companies listed on the Indonesia Stock Exchange. The sample was selected using purposive sampling, including SOE construction companies that published financial statements for 2019–2024 and showed indications of financial distress risk.

Data Analysis Methods
• Altman Z-Score Method
The Altman Z-Score model developed by Edward Altman (1968) was used to predict potential financial distress based on financial ratio calculations.

• Financial Health Assessment Method Based on Ministerial Decree No. KEP-100/MBU/2002
This study also applied the Decree of the Minister of SOEs No. KEP-100/MBU/2002 to evaluate the financial health of SOEs. The analysis focused on the financial aspect relevant to financial distress conditions.

• Normality Test
Normality of the data was tested using the Shapiro–Wilk test due to the sample size being fewer than 50, with a significance level of 0.05.

• Homogeneity Test
Variance equality between WIKA and WSKT was examined using Levene's Test at a 0.05 significance level.

• Difference Test (Independent Sample T-Test)
If the data were normal and homogeneous, an Independent Sample T-Test was used to analyze differences between the two companies based on the Altman Z-Score and KEP-100 methods ($\alpha = 0.05$).

• Supporting Test (Spearman Rank Correlation)
Spearman Rank Correlation was applied to measure the relationship between the Altman Z-Score results and the KEP-100 financial health assessment ($\alpha = 0.05$).

V. Results And Discussion

Company Profile
A. PT. Wijaya Karya Tbk
Founded on March 11, 1960, WIKA initially focused on electrical and water pipeline works and later

expanded into civil construction, energy, and industrial sectors. Subsidiaries such as PT. Wijaya Karya Beton Tbk and PT. Wijaya Karya Gedung Tbk support project specialization. The company went public on October 29, 2007, offering 28.46% of shares, oversubscribed tenfold, with proceeds strengthening capital and expansion.

B. PT. Waskita Karya Tbk

Originating from a nationalized foreign firm in 1961, Waskita became a limited liability company in 1974. Initially focused on basic infrastructure, it later established subsidiaries like PT. Waskita Toll Road and PT. Waskita Beton Precast Tbk, forming an integrated business ecosystem. The IPO on December 19, 2012, offered 32% of shares at IDR 380, enhancing transparency and competitiveness.

Research Findings
Altman Z-Score Method

Financial statements from 2019–2024 were analyzed using the Altman Z-Score, assessing potential financial distress through liquidity, profitability, activity ratios, and market value.

Table 3: Altman Z-Score by Indicator Results

	WIKA					WSKT				
Years	X1	X2	X3	X4	X5	X1	X2	X3	X4	X5
2019	0.193	0.117	0.045	0.416	0.438	0.033	0.083	0.011	0.216	0.256
2020	0.055	0.064	0.005	0.346	0.243	-0.197	-0.048	-0.090	0.219	0.161
2021	0.003	0.064	0.003	0.191	0.257	0.148	-0.058	-0.010	0.222	0.118
2022	0.047	0.004	0.002	0.126	0.286	0.122	-0.084	-0.013	0.123	0.156
2023	-0.116	-0.104	-0.118	0.038	0.341	-0.012	-0.125	-0.039	0.069	0.115
2024	0.176	-0.145	-0.039	0.190	0.303	-0.027	-0.189	-0.050	0.084	0.139

Source: Indonesia Stock Exchange (IDX), processed by the author.

The results indicate that WIKA showed vulnerability to financial distress, with several Z-Score values below 1 and even negative. The X3 ratio (EBIT to total assets) was negative for two consecutive years, indicating low efficiency in using assets to generate profits. In contrast, WSKT exhibited poorer financial conditions, with negative Z-Score values throughout most of the study period. The X2 and X3 components were negative for three consecutive years (2020–2023), indicating significantly weaker financial performance compared to WIKA.

The Decree of the Minister of State-Owned Enterprises No. KEP-100/MBU/2002
- **Return On Equity (ROE) Rasio**

Table 4: Return on Equity Ratios (in million IDR)

WIKA			WSKT		
Years	ROE	**SKOR**	Years	ROE	**SKOR**
2019	-0.48%	**0**	2019	-0.23%	**0**
2020	-0.12%	**0**	2020	0.23%	**2**
2021	0.13%	**2**	2021	0.78%	**2**
2022	0.03%	**2**	2022	-0.25%	**0**
2023	-0.78%	**0**	2023	-0.41%	**0**
2024	-0.67%	**0**	2024	1.05%	**4**

Source: Processed by the author.

WIKA recorded mostly negative ROE values during 2019–2024, resulting in a score of 0 under the non-infrastructure SOE criteria. ROE improved slightly from −0.12% in 2020 to 0.13% in 2021, before declining to 0.03% in 2022 and −0.78% in 2023, indicating persistent profitability challenges. WSKT's ROE fluctuated sharply during the study period. It fell to −0.25% in 2022, declined further to −0.41% in 2023, and rebounded to 1.05% in 2024.

- **Return On Investment (ROI) Rasio**

Table 5: Return On Investment Ratio (in million IDR)

WIKA			WSKT		
Years	ROI	**SKOR**	Years	ROI	**SKOR**
2019	5.81%	**5**	2019	1.80%	**3**
2020	1.31%	**3**	2020	-9.00%	**1**
2021	0.87%	**2**	2021	-0.59%	**1**
2022	0.98%	**2**	2022	-0.65%	**1**
2023	-12.75%	**1**	2023	-3.70%	**1**
2024	-3.67%	**1**	2024	-5.36%	**1**

Source: Processed by the author.

WIKA's Return on Investment (ROI) fluctuated during 2019–2024. ROI peaked at 5.08% in 2019, fell to 1.31% in 2020, slightly recovered to 0.98% in 2022, and declined to −3.67% in 2024. WSKT's ROI showed sharper fluctuations. It was 1.80% in 2019, dropped to −9.00% in 2020, slightly improved to −0.59% in 2021, and then declined again to −0.65% in 2022, −3.70% in 2023, and −5.36% in 2024.

- **Cash Rasio**

Table 6: Cash Ratio (in million IDR)

WIKA			WSKT		
Years	**Cash Ratio**	**SKOR**	**Years**	**Cash Ratio**	**SKOR**
2019	204.65%	**5**	2019	272.28%	**5**
2020	154.05%	**5**	2020	207.49%	**5**
2021	187.68%	**5**	2021	379.49%	**5**
2022	207.75%	**5**	2022	457.90%	**5**
2023	171.66%	**5**	2023	417.32%	**5**
2024	334.10%	**5**	2024	342.96%	**5**

Source: Processed by the author.

The liquidity ratio fluctuated during the study period, declining from 204.65% in 2019 to 154.05% in 2020 before increasing to 334.10% in the following period. WSKT's cash ratio remained relatively high throughout 2019–2024. It decreased from 272.28% in 2019 to 207.49% in 2020, then rose to 457.90% in 2022 before gradually declining to 342.96% in 2024.

- **Current Ratio**

Table 7: Current Ratio (in million IDR)

WIKA			WSKT		
Years	**Current Ratio**	**SKOR**	**Years**	**Current Ratio**	**SKOR**
2019	139.49%	5	2019	108.92%	3
2020	108.52%	3	2020	59.21%	0
2021	100.59%	3	2021	156.00%	5
2022	109.68%	3	2022	155.83%	5
2023	80.13%	0	2023	94.83%	1
2024	158.96%	5	2024	90.84%	1

Source: Processed by the author.

WIKA's current ratio fluctuated during 2019–2024. The largest decline occurred between 2022 and 2023, falling from 109.68% to 80.13%, before recovering to 158.96% in the following period. WSKT's current ratio also fluctuated. It declined from 108.92% in 2019 to 59.21% in 2020, increased to 156.00% in 2021 and remained stable at 155.83% in 2022, then fell to 94.83% in 2023 and 90.84% in 2024.

- **Collection Period**

Table 8: Collection Period Ratios (in million IDR)

	WIKA			WSKT		
Years	**CP**	**Difference/Adjustment**	**SKOR**	**CP**	**Difference/Adjustment**	**SKOR**
2018	62.68	-	**-**	0.57	-	**-**
2019	59.85	2.84	**5**	1.27	-0.69	**5**
2020	48.02	11.83	**5**	80.25	-78.98	**4.5**
2021	46.46	1.56	**5**	86.80	-6.55	**4.5**
2022	230.17	-183.72	**1.2**	44.54	42.26	**5**
2023	135.07	95.11	**2.5**	90.60	-46.06	**4**
2024	127.92	7.15	**2.5**	76.05	14.55	**4.5**

Source: Processed by the author.

PT Wijaya Karya (Persero) Tbk's collection period (CP) remained relatively stable at 46–63 days during 2018–2021 but increased sharply to 230 days in 2022. Although it declined afterward, CP remained above 100 days, indicating slower receivables collection. PT Waskita Karya (Persero) Tbk's CP fluctuated significantly, rising from 1.27 days in 2019 to 80.25 days in 2020, falling to 44.54 days in 2022, and increasing again to 90.60 days in 2023 before settling at 76.05 days in 2024.

- **Inventory Turnover**

Table 9: Inventory Turnover (in million IDR)

	WIKA			WSKT		
Years	ITO	Difference/Adjustment	SKOR	ITO	Difference/Adjustment	SKOR
2018	70.04	-	-	44.73	-	-
2019	91.94	-21.91	4	79.71	0.56	4.5
2020	216.60	-124.66	1.8	86.20	0.92	4.5
2021	224.09	-7.49	1.8	130.04	0.66	3.5
2022	204.12	19.98	3	18.95	6.86	5
2023	184.87	19.25	3	19.55	0.97	5
2024	218.28	-33.41	1.2	14.72	1.33	5

Source: Processed by the author.

Similar to the collection period, a high inventory turnover indicates that a significant portion of PT. Wijaya Karya (Persero) Tbk's cash is tied up in inventory. From 2020 to 2024, inventory turnover increased, ranging between 184 and 224 days. The inventory turnover (ITO) of PT. Waskita Karya (Persero) Tbk fluctuated over the study period, rising from 79.71 days in 2019 to 130.04 days in 2021, before sharply dropping to 18.95 days in 2022. It remained stable around 19–20 days in 2023 and fell further to 14.72 days in 2024, with the largest change of 111.09 days occurring between 2021 and 2022.

- **Total Aset Turnover Rasio**

Tabel 10: Total Asset Turnover (in million IDR)

	WIKA			WSKT		
Years	TATO	Difference/Adjustment	SKOR	TATO	Difference/Adjustment	SKOR
2018	57.11%	-	-	41.59%	-	-
2019	47.78%	9.34%	3.5	27.55%	14.04%	4
2020	26.27%	21.50%	5	17.32%	10.23%	4
2021	29.41%	-3.14%	2	12.45%	4.87%	3
2022	32.17%	-2.76%	2	16.62%	-4.17%	1.5
2023	38.94%	-6.76%	2	12.01%	4.61%	3
2024	33.05%	5.89%	3	14.84%	-2.83%	1.5

Source: Processed by the author.

Total asset turnover (TATO) of PT. Wijaya Karya (Persero) Tbk remained relatively stable during the study period. TATO declined at the beginning of the period, from 47.48% in 2019 to 26.27% in 2020, then recovered to 29.41% in 2021 and 32.17% in 2022. The total asset turnover (TATO) of PT. Wijaya Karya (Persero) Tbk declined from 27.55% in 2019 to 12.45% in 2021, slightly rebounded to 16.62% in 2022, and then fluctuated between 12.01% and 14.84% through 2024. This trend reflects varying efficiency in utilizing capital employed to generate revenue.

- Total Equity to Total Asset Rasio

Tabel 11: TETA Ratio Calculation (in million IDR)

	WIKA			WSKT		
Tahun	TETA	Difference/Adjustment	SKOR	TETA	Difference/Adjustment	SKOR
2018	29.07%	-	-	48.77%	-	-
2019	30.94%	-1.87%	10	23.75%	25.02%	7.25
2020	24.46%	6.48%	7.25	11.34%	12.41%	6
2021	25.13%	-0.67%	7.25	14.92%	-3.58%	6
2022	23.30%	1.83%	7.25	14.50%	0.42%	6
2023	14.51%	8.80%	6	12.14%	2.37%	6
2024	18.68%	-4.17%	6	10.22%	1.92%	6

Source: Processed by the author.

The total equity to total asset ratio (TETA) of PT. Wijaya Karya (Persero) Tbk fluctuated but remained relatively stable each year. In 2023, TETA decreased by 37.72% compared to the previous period, indicating an increased reliance on debt to finance the company's operations. The total equity to total asset ratio (TETA) of PT. Waskita Karya (Persero) Tbk declined overall, from 23.75% in 2019 to 11.34% in 2020, briefly rising to 14.92% in 2021, remaining near 14.50% in 2022, and falling to 12.14% in 2023 and 10.22% in 2024.

Statistical Tests
- Normality Test

The Shapiro-Wilk test was used to assess the normality of Altman Z-Score data for each company, as the sample size was below 50, meeting the requirement for parametric tests such as the Independent Sample t-test.

Table 12: Normality Test Results for the The Decree of the Minister of SOEsMethod

Tests of Normality				
Company Code		Shapiro-Wilk		
		Statistic	df	Sig.
The Decree of the Minister of SOEs	WIKA	.975	6	**.922**
	WSKT	.994	6	**.997**

Source: Data processed by the author using SPSS software.

The Shapiro-Wilk test showed significance values of 0.922 for WIKA and 0.997 for WSKT, both above 0.05, indicating normal distribution and suitability for the Independent Sample t-test.

Table 13: Normality Test Results for the Altman Z-Score Method

Tests of Normality				
Company Code		Shapiro-Wilk		
		Statistic	df	Sig.
Altman Z-Score	WIKA	.948	6	**.727**
	WSKT	.905	6	**.405**

Source: Data processed by the author using SPSS software.

The Shapiro–Wilk test yielded significance values of 0.727 for WIKA and 0.405 for WSKT, both above 0.05, indicating normal distribution and suitability for homogeneity and Independent Sample t-tests.

- **Homogeneity Test**

Tabel 14: Homogeneity Test

	Levene's Test for Equality of Variances	
	F	Sig.
Altman Z-Score	.003	**.958**
	2.970	**.116**
The Decree of the Minister of SOEs		

Source: Data processed by the author using SPSS software.

The homogeneity test using Levene's Test showed a significance value of >0.958 for the Altman Z-Score data, which is greater than 0.05. This indicates that the variance is homogeneous, allowing the mean differences between the two companies to be tested using an Independent Sample t-test.

- **Difference Test**

After confirming normality and homogeneity, an Independent Sample t-test was performed to compare the financial conditions of PT. Wijaya Karya Tbk and PT. Waskita Karya (Persero) Tbk using the Altman Z-Score and the Decree of the Minister of SOEs No. KEP-100/MBU/2002.

Table 15: Difference Test Results of Altman Z-Score and SK BUMN Scores between PT. Wijaya Karya Tbk and PT. Waskita Karya (Persero) Tbk

		T-Test For Equality Of Means	
		Sig. (2-tailed)	Sig. (2-tailed)
Altman Z-Score	Equal	.147	**.39500**
	Equal	.150	**.39500**
The Decree of the Minister of SOEs	Equal	.718	**-1.000000**
	Equal	.722	**-1.000000**

Source: Data processed by the author using SPSS software.

The Independent Sample t-test showed that H_{01} and H_{02} are accepted. Altman Z-Score (Sig. = 0.147) indicates no significant difference in financial distress between WIKA and WSKT, while the Decree of the Minister of SOEs scores (Sig. = 0.718) confirm no significant difference in their financial health.

- **Uji Spearman (Uji Pendukung)**

The Spearman Rank correlation test was used as a supporting analysis to assess the alignment of WIKA and WSKT's financial conditions between the Altman Z-Score and the Decree of the Minister of SOEs No.

KEP-100/MBU/2002, while also addressing the research problem.

Table 16: Spearman Rank Correlation Results for PT. Wijaya Karya Tbk

			SKBUMN	ALTMAN_Z_SCORE
Spearman's rho	The Decree of the Minister of SOEs	Correlation Coefficient	1,000	1,000**
		Sig. (2-tailed)		
		N	6	6
	ALTMAN_Z_SCORE	Correlation Coefficient	1,000**	1,000
		Sig. (2-tailed)		
		N	6	6

**. Correlation is significant at the 0.01 level (2-tailed).
Source: Data processed by the author using SPSS software.

The Spearman Rank correlation yielded a coefficient of 1.00 with a 0.01 (2-tailed) significance, indicating a perfect positive correlation between the Altman Z-Score and the Decree of the Minister of SOEs during the study period.

Table 17: Spearman Rank Correlation Results for PT. Waskita Karya Tbk

			SK BUMN	ALTMAN_Z_SCORE
Spearman's rho	The Decree of the Minister of SOEs	Correlation Coefficient	1,000	,829*
		Sig. (2-tailed)		,042
		N	6	6
	ALTMAN_Z_SCORE	Correlation Coefficient	,829*	1,000
		Sig. (2-tailed)	,042	
		N	6	6

*. Correlation is significant at the 0.05 level (2-tailed).
Source: Data processed by the author using SPSS software.

Discussion

- **Financial Distress Condition of PT Wijaya Karya and PT Waskita Karya Using the Altman Z-Score Method for the 2019–2024 Period**

The Altman Z-Score method is used to measure financial distress and is selected in this study to be compared with the method outlined in the Decree of the Minister of State-Owned Enterprises No. KEP-100/MBU/2002.

Table 18: Financial Distress Conditions of Both Companies Using the Altman Z-Score Method

PT. Wijaya Karya Tbk			PT. Waskita Karya Tbk		
Year	Result	Condition	Year	Result	Condition
2019	1.23	**DISTRESS**	2019	0.58	**DISTRESS**
2020	0.62	**DISTRESS**	2020	-0.31	**DISTRESS**
2021	0.47	**DISTRESS**	2021	0.31	**DISTRESS**
2022	0.43	**DISTRESS**	2022	0.22	**DISTRESS**
2023	-0.31	**DISTRESS**	2023	-0.16	**DISTRESS**
2024	0.30	**DISTRESS**	2024	-0.27	**DISTRESS**

Source: Data processed by the author.

The results are consistent with the Altman Z-Score theory, which states that companies with weak liquidity, profitability, and capital structure are more likely to experience financial distress. Declines in working capital to total assets (X1), retained earnings to total assets (X2), and EBIT to total assets (X3) contributed to lower Z-Scores, aligning with Maulana (2024), who reports that firms under liquidity pressure and rising debt burdens experience financial distress.

PT Wijaya Karya Tbk (WIKA) shows a decline in Z-Score from 1.23 in 2019 to −0.31 in 2023, with a slight recovery to 0.30 in 2024, remaining in the distress zone. This decline reflects reduced working capital, EBIT, and retained earnings, alongside increasing debt that amplifies financial leverage and risk. PT Waskita Karya Tbk (WSKT) experienced more severe distress, with negative Z-Scores, declining sales and EBIT, and continuous losses since 2020. Retained earnings fell from IDR 10,233,410 million in 2019 to −IDR 14,564,295 million in 2024, while declining assets and negative working capital indicate significant liquidity pressure. WSKT's deterioration stems from high leverage, operational inefficiencies, delayed project completion, and aggressive expansion that increased debt without corresponding revenue growth.

These findings align with prior research on Indonesian state-owned companies. (Eka Putri & Resha Maielyana, 2025) evaluate WIKA's performance from 2020 to 2023 using profitability, liquidity, activity, and

solvency ratios combined with the Altman Z-Score. They report declining liquidity, rising debt, and high bankruptcy risk, confirming that deteriorating financial ratios and solvency issues in major infrastructure firms correlate strongly with financial distress.

Both WIKA and WSKT exhibit clear financial distress at different levels. WIKA's slight recovery demonstrates that operational adjustments and debt management stabilize the firm, whereas WSKT requires comprehensive restructuring to restore liquidity and profitability. Addressing operational and financial challenges is essential to prevent further deterioration and ensure long-term viability.

- **Financial Health Condition of PT Wijaya Karya Tbk and PT Waskita Karya Tbk Based on the Decree of the Minister of State-Owned Enterprises No. KEP-100/MBU/2002 for the 2019–2024 Period**

    The financial health of both companies was also assessed using the Decree of the Minister of State-Owned Enterprises No. KEP-100/MBU/2002 as a comparison to the Altman Z-Score method.

Table 19: Financial Health Condition of the Research Objects Based on the Decree of the Minister of State-Owned Enterprises No. KEP-100/MBU/2002

PT. Wijaya Karya Tbk			PT. Waskita Karya Tbk		
N	**Total Weight**	**Results**	**N**	**Total Weight**	**Results**
2019	37.5	**B / LESS HEALTHY**	2019	31.75	**B / LESS HEALTHY**
2020	30.05	**B / LESS HEALTHY**	2020	27	**CCC / UNHEALTHY**
2021	28.05	**CCC / UNHEALTHY**	2021	30	**CCC / UNHEALTHY**
2022	25.45	**CCC / UNHEALTHY**	2022	28.5	**CCC / UNHEALTHY**
2023	19.5	**CC / UNHEALTHY**	2023	25	**CCC / UNHEALTHY**
2024	23.7	**CCC / UNHEALTHY**	2024	28	**CCC / UNHEALTHY**

Source: Data processed by the author.

These findings are also consistent with the financial health assessment theory for state-owned enterprises, which suggests that a lower total score indicates declining financial performance and a higher risk of financial instability. The decrease in these ratios reflects weakening financial performance, particularly in terms of liquidity, profitability, and capital structure. The findings are also in line with (Resti, 2021), which concluded that construction state-owned enterprises are vulnerable to financial difficulties, particularly due to the impact of the pandemic, high liabilities, project delays, and declining profitability.

The financial health assessment using the Decree of the Minister of SOEs No. KEP-100/MBU/2002 categorized both companies as less healthy to unhealthy. This reflects state-owned construction firms' reliance on long-term project financing. In the post-pandemic period, although economic activity began to recover, delays in project completion and payment realization continued to constrain cash flow, increase liabilities, and reduce profitability. Therefore, this method provides a relevant and comprehensive overview of financial health, particularly for construction state-owned enterprises with complex financial structures, high leverage, and significant operational risks.

These findings align with prior research on Indonesian state-owned infrastructure companies. (Deswita, 2023) shows that financial health in BUMN sektor infrastruktur declined significantly during the COVID-19 pandemic. Using comprehensive financial ratios—including ROE, ROI, ITO, and TATO—across eight companies listed on the Indonesia Stock Exchange from 2018 to 2021, six companies shifted from "Healthy" to "Unhealthy" categories. Asset turnover (TATO) was the most influential variable, indicating that efficient asset utilization is critical for operational efficiency and stability, especially during crises. These findings support the present study, as declining financial ratios in WIKA and WSKT directly correspond to heightened financial distress and operational vulnerability.

- **Alignment of Results Between the Altman Z-Score Method and the Decree of the Minister of State-Owned Enterprises No. KEP-100/MBU/2002 in Assessing Financial Distress**

    The results reveal differences between the Altman Z-Score and the Decree of the Minister of SOEs No. KEP-100/MBU/2002. WIKA was categorized as less healthy in 2019–2020 by the SOE decree, but in financial distress during 2019–2024 according to the Altman Z-Score. Similarly, WSKT was less healthy in 2019 under the SOE decree but distressed by the Z-Score. (Astuty, 2004) found that the Altman Z-Score method and the Decree of the Minister of State-Owned Enterprises No. KEP-100/MBU/2002 have aligned assessment results, which is also confirmed in this study despite differences in classification in several observation years.

    These differences arise from the objectives and characteristics of each method. The Altman Z-Score functions as an early warning tool that is sensitive to ratios such as working capital, retained earnings, and market capitalization, allowing earlier detection of financial pressure. In contrast, the SOE decree applies a weighted scoring system using accounting indicators, including earnings after tax, equity, depreciation, capital employed, current assets, receivables, revenue, and inventory, emphasizing operational performance and

financial structure evaluation.

Despite this, both methods show a declining trend and rising financial distress risk, supported by a positive, significant Spearman Rank correlation. Therefore, the Altman Z-Score acts as an early detection tool, while the SOE decree provides a normative evaluation of financial health, making the two approaches complementary.

VI.   Conclusions and Suggestions

Conclusion

The Altman Z-Score analysis shows that both companies experienced financial distress throughout the study period, with Z-Scores below the 1.81 threshold. This condition reflects declining liquidity, weakening profitability, and accumulated losses, particularly in working capital, retained earnings, and earnings before interest and tax.

The assessment based on the Decree of the Minister of State-Owned Enterprises No. KEP-100/MBU/2002 indicates that PT Wijaya Karya Tbk was categorized as less healthy in 2019–2020 and unhealthy afterward, while PT Waskita Karya Tbk was less healthy in 2019 and deteriorated to unhealthy during 2020–2024.

Despite differences in classification due to different assessment indicators, both methods show a consistent trend of declining financial performance, supported by a positive and significant Spearman Rank correlation.

Research Limitations and Contributions

This study has several limitations. First, it only uses historical financial data from annual reports and therefore does not fully capture external factors such as government policies and infrastructure project dynamics. Second, the observations are limited to two state-owned construction companies over a six-year period, which restricts the generalization of the findings.

Despite these limitations, this study contributes by providing a comparative analysis between the Altman Z-Score method and the Decree of the Minister of State-Owned Enterprises No. KEP-100/MBU/2002. The study offers empirical evidence regarding the consistency and relevance of both methods in assessing corporate financial conditions.

Suggestions

Future research should expand the scope by including more companies and longer observation periods to obtain a more comprehensive understanding of financial distress. Further studies may also combine the Altman Z-Score and the SOE decree method with other bankruptcy prediction models such as Springate, Zmijewski, or Grover. Practically, the findings can help management identify potential financial distress and improve liquidity, profitability, and capital structure. For investors and stakeholders, the results may support better financial risk assessment and decision-making.

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