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FINANCIAL PERFORMANCE AND FINANCIAL DISTRESS ASSESSMENT OF PT KRAKATAU STEEL (PERSERO) TBK (2020–2024)

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ABSTRACT

The financial performance and financial distress status of PT Krakatau Steel (Persero) Tbk with stock code KRAS will be evaluated in this research for a five-year period during 2020 to 2024. Although KRAS experienced a temporary financial recovery in 2020 following debt structuring, they continued not to make money and raise concerns over their financial sustainability. The financial performance analysis of KRAS will be conducted in this research. The research adopts a case study methodology using a quantitative technique with secondary data obtained from financial statements where financial performance is measured using financial ratios with a focus on profitability, liquidity, solvency, and activity, with DuPont analysis used in combination with Return on Equity analysis. Financial distress is measured using a total of three major Financial Distress models: Altman Z-Score, Ohlson O-Score, and Zmijewski X-Score with comparisons based on ASEAN Steel firms. The results show a serious problem in profit margins, with Net Profit Margin, Return on Assets, and Return on Equity becoming negative in 2023-2024 because of increasing production costs, reduced pricing power, weak efficiency, and high leverage levels. Liquidity remains a persistent problem, although leverage positions appear to be high because of financial distress. The DuPont analysis shows that profit margins is declining from Return on Equity, which is worsened by high leverage positions. All three distress models classify KRAS as distressed during all years, which shows increasing distress in the last two years. The practical significance of this study lies in the fact that it's empirical data of how financial performance analysis and financial distress analysis can be integrated and used in state-owned companies in capital-intensive sectors. The results can be used as a source of evidence-based insight into which managers and policymakers can rely on when designing a strategy for such companies.

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1. INTRODUCTION

The manufacturing sector plays a central role in Indonesia's economic development, contributing significantly to national gross domestic product, employment creation, and industrial competitiveness. Within this sector, the steel industry is one of strategic backbones that supports infrastructure development, construction, automotive manufacturing, shipbuilding, and energy-related industries. As an upstream industry, steel production generates multiplier effects across supply chains, making its sustainability a critical concern for policymakers and industry stakeholders.

Although this industry is strategic, it faces structural issues such as overcapacity, competition based on lower prices, high energy usage, and capital-hungry technology. According to OECD, global steel production capacity has consistently exceeded demand, which presses steel prices. Steel firms operating in emerging market face many challenges such as higher production costs and less access to technology [1].

In Indonesia, local demand for steel is driven by major construction projects and industrial expansion. On the other hand, local capacity has not been sufficient to meet this demand. Moreover, local demand for steel remains heavily reliant on imports. Empirical studies have found that less than 45% of local demand for steel in Indonesia is met by local production, and this remaining demand is fulfilled through imports from such countries as China, Japan, and South Korea.

PT Krakatau Steel (Persero) Tbk, or KRAS, is a major integrated steel producer in Indonesia and a state-owned enterprise with a dual role: financial sustainability and ensuring steel supply security in Indonesia. Founded in 1970, the organization includes an integrated production process from iron making to a downstream product of finished steel. Being a state-owned enterprise, financial performance is an important consideration not just in shareholder value but in national resilience.

Despite its strategic position, Krakatau Steel has experienced persistent financial difficulties over the past decade. Between 2012 and 2019, the company recorded continuous annual losses, ending in liquidity pressure and increased leverage. In response, a comprehensive debt restructuring was implemented in 2020, covering more than USD 2 billion in liabilities. This restructuring temporarily restored profitability in 2020. However, the recovery is still unsustainable. From 2021 onward, the company returned to recurring losses in 2023 and 2024.

The persistence of these losses suggests that Krakatau Steel's challenges are structural rather than cyclical. High leverage, declining profit margins, weak asset utilization, and exposure to global steel overcapacity continue to pressure financial performance. In academic terms, these conditions correspond to financial distress, defined as a state in which a firm experiences declining profitability, deteriorating liquidity, and increased risk of insolvency [2], [4], [5].

Early identification and diagnosis of financial distress are important, especially for capital-intensive firms and state-owned enterprises, where financial failure drives systemic economic consequences. Financial ratio analysis, DuPont decomposition, and bankruptcy prediction models have been widely applied as early warning systems to detect deteriorating financial conditions. However, empirical studies emphasize that relying on a single analytical framework may provide an incomplete assessment, especially in volatile industries.

This study aims to provide a comprehensive evaluation of the financial performance and financial distress condition of PT Krakatau Steel (Persero) Tbk during the 2020–2024 period. Specifically, this research addresses three main questions: (1) how Krakatau Steel's financial performance has evolved over the observation period; (2) to what extent does the company exhibit financial distress as measured by established bankruptcy prediction models; and (3) what key internal financial factors drive the company's persistent losses. By integrating financial ratio analysis, DuPont analysis, and three financial distress models: Altman Z-Score, Ohlson O-Score, and Zmijewski X-Score. This study provides a holistic diagnostic framework and contributes empirical insights relevant for managers, policymakers, and academics.

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2. RESEARCH METHODS

This study adopts a quantitative case study approach focusing on PT Krakatau Steel (Persero) Tbk. Secondary data are obtained from the company's audited annual financial statements for the 2020–2024 period. Financial performance is assessed through profitability, liquidity, solvency, and activity ratios, followed by DuPont decomposition of ROE.

Financial distress is evaluated using three models: Altman Z-Score, Ohlson O-Score, and Zmijewski X-Score. To contextualize the results, benchmarking analysis is conducted against selected publicly listed steel companies in ASEAN. The combined approach allows for both firm-specific diagnosis and regional comparison.

2.1. Financial Ratios

Table 1. Financial Ratio Analysis

Ratio	Name
Profitability Ratio	Net Profit Margin, Gross Profit Margin, Operating Profit Margin, Return on Assets, Return on Equity
Liquidity Ratio	Current Ratio & Quick Ratio
Solvency Ratio	Debt-to-Equity Ratio, Debt-to-Asset Ratio
Efficiency Ratio	Total Asset Turnover, Inventory Turnover

Financial ratio analysis is used to assess the financial health of Krakatau Steel in four dimensions as mentioned in Table 1. This analysis highlights year-to-year variations and identifies whether recurring losses stem from liquidity issues, poor asset utilization, or excessive leverage.

2.2. Altman Z-Score

A multiple discriminant model combining five financial ratios to classify firms into safe, grey, or distress zones. Particularly relevant for manufacturing companies. Altman Z-Score is calculated with a formulation below:

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5 \quad (1)$$

Where every variable consists of financial ratio metrics such:

$$X_1 = \frac{Working\ Capital}{Total\ Assets}, X_2 = \frac{Retained\ Earnings}{Total\ Assets}, X_3 = \frac{EBIT}{Total\ Assets}$$

$$X_4 = \frac{Market\ Value\ of\ Equity}{Book\ Value\ of\ Total\ Liabilities}, \text{ and } X_5 = \frac{Sales}{Total\ Assets} \text{ [3], [6]} \quad (2)$$

And Z-Score results interpretation are:

Table 2. Z-Score Interpretation

No	Score	Zone
1	$Z < 1.81$	Distress
2	$1.81 \leq Z < 2.9$	Grey
3	$Z \geq 2.99$	Safe

2.3. Zmijewski X-Score

The Zmijewski X-Score, developed by Zmijewski (1984), emerged as a response to methodological issues observed in earlier bankruptcy prediction models. Zmijewski proposed a probit regression model to estimate the likelihood of financial distress. Using this framework, Zmijewski generates the following model:

$$X = -4.3 - 4.5_{x1} + 5.7_{x2} - 0.004_{x3} \quad (3)$$

Where each variable represents financial ratios in ROA, Leverage, and Liquidity with the following details:

$$X1 = ROA\left(\frac{Net\ Income}{Total\ Assets}\right) \quad (4)$$

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$$X2 = Leverage\ \left(\frac{Total\ Liabilities}{Total\ Assets}\right) \quad (5)$$

$$X3 = Liquidity\ \left(\frac{Current\ Assets}{Current\ Liabilities}\right) \quad (6)$$

Table 3. X-Score Interpretation

Interpretation	Meaning
X-Scores > 0	Indicate a higher probability of financial distress
X-Scores < 0	Suggest relative financial stability

2.4. Ohlson O-Score

The Ohlson O-Score, introduced by James Ohlson (1980), represents a significant methodological advancement in the prediction of corporate financial distress. Ohlson employed a logit regression model to estimate the probability of corporate bankruptcy.

The basic form is $P(fail) = \frac{1}{1+e^{-y}}$,
$where\ y = \beta 0 + \beta 1SIZE + \beta 2TLTA + \beta 3WCTA + \beta 4CLCA + \beta 5OENEG + \beta 6NITA + \beta 7FUTL + \beta 8INTWO + \beta 9CHIN$

The Ohlson model produces the logit score Y_{it}: (7)

$$Y_{it} = -1.32 - 0.407SIZE_{it} + 6.03SIZE_{it} - 1.43WCTA_{it} + 0.076CLCA_{it} - 1.72OENEG_{it} - 2.37NITA_{it} - 1.83FUTL_{it} + 0.285$$

Ohlson's (1980) model generates a probability of bankruptcy (P), ranging from 0 to 1. The general interpretive guidelines are:

Low Probability of Distress: Lower estimated values of P (<0.38) indicate a relatively lower likelihood that the firm will fail within the specified prediction.

High Probability of Distress: Higher estimated values of P (>0.38) reflect an increased likelihood of bankruptcy based on the firm's leverage, liquidity, performance, and size characteristics

2.5. DuPont Decomposition

The DuPont Analysis, first developed by the DuPont Corporation in the early twentieth century, represents one of the most enduring frameworks in financial performance evaluation. Unlike simple ratio analysis, which may isolate only one dimension of performance, the DuPont framework integrates profitability, activity, and leverage, thereby offering a holistic view of corporate performance. The formula can be expressed as:

ROE = Net Profit Margin x Total Asset Turnover x Equity Multiplier (8)

Substituting each component:

$$ROE = \left(\frac{Net\ Income}{Sales}\right) x \left(\frac{Sales}{Total\ Assets}\right) x \left(\frac{Total\ Assets}{Equity}\right) \quad (9)$$

Where:

Net Profit Margin (NPM) measures profitability,
Total Asset Turnover (TAT) reflects operational efficiency,
Equity Multiplier (EM) captures the effect of financial leverage

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3. RESULTS AND DISCUSS

This section presents and discusses the empirical findings of the study by integrating financial performance analysis, DuPont decomposition, financial distress assessment, and regional benchmarking. The discussion emphasizes structural patterns and interprets the results in relation to prior studies on financial distress in capital-intensive and state-owned enterprises.

3.1. Financial Performance Analysis

The financial ratio analysis reveals a clear deterioration in Krakatau Steel's overall financial performance during the 2020-2024 period

Table 4. Financial Ratio KRAS 2020-2024

Category	Ratio	2020	2021	2022	2023	2024
Profitability	Net Profit Margin	2%	2%	1%	-9%	-16%
	Return on Assets	1%	1%	1%	-5%	-5%
	Return on Equity	5%	8%	4%	-26%	-36%
Liquidity	Current Ratio	0.27	0.31	0.41	0.29	0.26
Solvency	Debt-to-Equity Ratio (DER)	4.4x	3.4x	3.1x	3.0x	3.5x
Activity	Total Asset Turnover	0.9x	1.2x	1.0x	0.7x	0.7x

From a profitability perspective, the company experienced a temporary recovery in 2020 following its debt restructuring, as reflected in positive operating and net profit margins. However, this improvement was not sustained. From 2021 onward, profitability indicators weakened significantly, with Net Profit Margin (NPM), Return on Assets (ROA), and Return on Equity (ROE) turning sharply negative in 2023–2024.

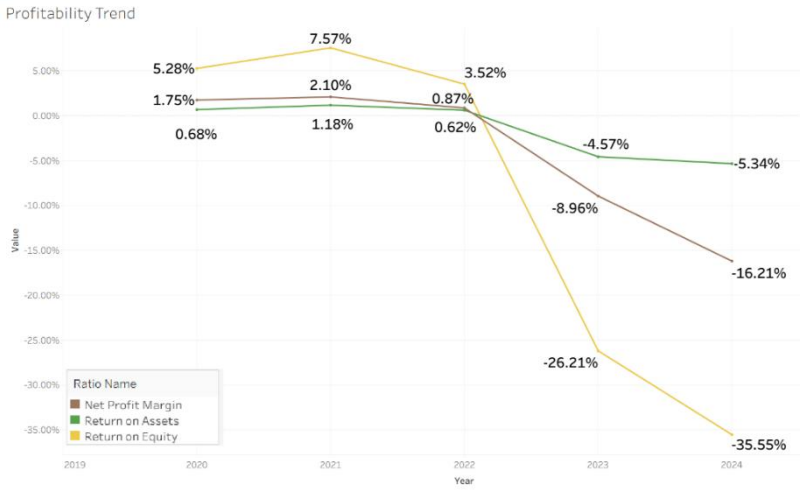


Figure 1. Profitability Trend

This pattern indicates that the company's core operations were unable to generate returns to cover production costs and financing expenses, suggesting declining competitiveness and structural inefficiencies. Liquidity ratios consistently remained below average benchmarks throughout the observation period.

Table 5. Liquidity Ratios KRAS 2020-2024

Ratio	2020	2021	2022	2023	2024
Current Ratio	0.27	0.31	0.41	0.29	0.26
Quick Ratio	0.75	0.41	0.33	0.19	0.18
Cash Ratio	0.14	0.06	0.03	0.05	0.05

The persistently low liquidity indicators imply that Krakatau Steel relied heavily on short-term liabilities to finance its operations. Although the restructuring temporarily eased cash flow pressure, liquidity improvements were marginal and fragile. This persistent liquidity weakness indicates increased short-term solvency risks and limited financial deterioration, particularly in industries characterized by volatile demand and long operating cycles.

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Table 6. Solvency Ratios KRAS 2020-2024

Ratio	2020	2021	2022	2023	2024
Debt-to-Equity Ratio	4.4	3.4	3.1	3.0	3.5
Debt-to-Asset Ratio	0.87	0.84	0.83	0.83	0.85

The dominance of liabilities in the company's capital structure reflects a high dependence on external financing. While restructuring reduced immediate debt service burdens, the continued erosion of equity due to recurring losses amplified leverage risk over time.
Activity ratios further confirm declining operational efficiency as it can be seen from Table 4 about activity ratios KRAS during 2020 – 2024 period.

Table 7. Activity Ratios KRAS 2020-2024

Ratio	2020	2021	2022	2023	2024
Total Asset Turnover	0.97	1.2	1.0	0.7	0.7
Inventory Turnover	8.4	7.8	6.9	6.4	5.1

The weakening Total Asset Turnover in early years indicates underutilization of the company's extensive asset base. This finding suggests that Krakatau Steel's large-scale production facilities were not translated into healthy revenue generation, reinforcing the view that structural inefficiencies rather than temporary market fluctuations underlie the company's performance deterioration. Overall, the financial ratio analysis demonstrates that Krakatau Steel's financial distress is rooted in the interaction of weak profitability, persistent liquidity constraints, high leverage, and declining asset productivity. These findings are consistent with prior empirical studies that identify profitability deterioration and leverage escalation as primary precursors of financial distress in manufacturing firms.

3.2. DuPont Decomposition

DuPont analysis provides deeper insight into the structural drivers of Krakatau Steel's declining Return on Equity (ROE)

Table 8. DuPont Decomposition KRAS 2020-2024

Year	NPM	TAT	EM	ROE
2020	2%	0.39	7.77	5.3%
2021	2%	0.56	6.43	7.6%
2022	1%	0.71	5.72	3.5%
2023	-9%	0.51	5.74	-26.2%
2024	-16%	0.33	6.65	-35.6%

The DuPont results indicate that Krakatau Steel's declining ROE is structurally driven, with profitability weakness as the dominant factor and high leverage acting as an amplifying mechanism

3.3. Altman Z-Score

The Altman Z-Score analysis consistently places Krakatau Steel within the distress zone throughout the 2020–2024 period.

Table 9. Altman Z-Score KRAS 2020-2024

Year	Z-Score	Classification
2020	-0.2	Distress
2021	-0.2	Distress
2022	-0.5	Distress
2023	-1.2	Distress
2024	-1.4	Distress

Although the Z-Score showed improvement in 2020 following restructuring, even though the score remained below compared to threshold associated with financial safety. Subsequent declines in the Z-Score during

2023-2024 reflect the combined effects of deteriorating profitability, weak working capital, and high leverage.

Component-level interpretation suggests that low earnings before interest and taxes relative to total assets and negative retained earnings were key contributors to the depressed Z-Score. At the component level, the persistently low Z-Score is primarily driven by weak profitability and liquidity conditions. Low EBIT relative to total assets (X3) reflects deteriorating operating performance, while negative retained earnings (X2) indicate cumulative losses that eroded the firm's capital base. In addition, weak working capital relative to total assets (X1) signals persistent liquidity constraints. Although asset turnover (X5) remained relatively stable, its contribution was insufficient to offset the adverse effects of profitability and leverage-related components, resulting in a sustained distress classification.

3.4. Zmijewski X-Score

Consistent with the findings from the Altman models, the Zmijewski X-Score classifies Krakatau Steel as financially distressed throughout the period

Table 10. Zmijewski X-Score KRAS 2020-2024

Year	X-Score	Classification
2020	0.58	Distress
2021	0.40	Distress
2022	0.32	Distress
2023	0.56	Distress
2024	0.73	Distress

Negative returns on assets and elevated debt ratios were the dominant factors driving the distress classification. Within the Zmijewski framework, persistent negative returns on assets play a central role in driving the distress classification, indicating that the company is unable to generate good earnings from its asset base. High leverage worsens this condition by increasing financial risk and sensitivity to operating losses. The interaction between weak profitability and elevated leverage reinforces the X-Score distress signal, suggesting that Krakatau Steel's financial vulnerability is structurally rooted rather than the result of short-term fluctuations.

The persistence of adverse X-Score values suggests that Krakatau Steel's financial distress is not episodic but sustained. The Zmijewski X-Score results display a high degree of consistency across the 2020-2024 period, with the company remaining in the distress category in every year of observation. The absence of any sustained improvement indicates that financial vulnerability is persistent rather than episodic, reinforcing the interpretation that Krakatau Steel's distress condition is structural in nature.

3.5. Ohlson O-Score

The Ohlson O-Score results further confirm the presence of elevated financial distress risk at Krakatau Steel

Table 11. Ohlson O-Score KRAS 2020-2024

Year	O-Score	Classification
2020	0.028	Lower Bankruptcy
2021	0.034	Lower Bankruptcy
2022	0.051	Higher Bankruptcy
2023	0.094	Higher Bankruptcy
2024	0.121	Higher Bankruptcy

The model indicates a high probability of financial distress across the observation period, with worsening signals in the final two years. Key drivers of the O-Score include persistent net losses, high leverage ratios, and weak liquidity conditions. The elevated Ohlson O-Score probability is primarily driven by continuous profitability weakness, as reflected in negative returns on assets, which significantly increase distress risk within the model framework.

High leverage further amplifies this risk by increasing financial obligations relative to the company's asset base. On the other hand, weak liquidity indicates limited short-term financial flexibility. Together, these

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variables reinforce the probability-based distress signal, suggesting that Krakatau Steel's financial vulnerability is rooted in structural operating and balance-sheet weaknesses rather than temporary fluctuations. The probabilistic nature of the Ohlson model highlights the magnitude and progression of distress risk

3.6. Benchmarking Analysis

Benchmarking analysis reveals that Krakatau Steel underperforms most selected ASEAN steel peers across key financial dimensions

Table 12. Financial Ratio Benchmarking of PT Krakatau Steel and ASEAN Steel Peers (2024)

Company	NPM (%)	ROA (%)	ROE (%)	Current Ratio	DER	TAT
KRAS	-16%	-5%	-36%	0.26	3.5627	0.793
GGRP	35%	15%	18%	2.32	0.0497	0.863
ANNJ	-11%	-9%	-26%	0.77	0.1905	1.003
GJS	-8%	-9%	-9%	5.94	0.0006	0.978
HSG	1%	3%	5%	1.64	0.0000	0.978

The comparative benchmarking indicates that Krakatau Steel underperforms most ASEAN steel peers across key profitability and leverage indicators, reflecting weaker cost efficiency and a more fragile capital structure relative to regional competitors (see Table 12). Compared with regional competitors, Krakatau Steel exhibits weaker profitability ratios, reflecting inferior cost efficiency and pricing power.

DuPont benchmarking indicates that while several ASEAN steel companies benefit from stronger margins or more efficient asset utilization, Krakatau Steel's ROE is primarily constrained by margin compression and high leverage

Table 13. DuPont's Comparative Table Steel Peers (2024)

Company	Net Profit Margin	Total Asset Turnover	Equity Multiplier	ROE (%)
KRAS	-16%	0.33	6.65	-35.6%
GGRP	34%	-1.17	-26.00	1044.2%
ANNJ	-11%	0.83	2.76	-26.2%
GJS	-8%	1.02	1.06	-9.1%
HSG	1%	2.01	1.79	4.7%

Financial distress model benchmarking further shows that peer companies generally occupy safer or grey zones, whereas Krakatau Steel remains within distress category.

Table 14. Cross-Company Distress Classification

Company	Altman Z-Score	Ohlson O-Score	Zmijewski X-Score	Classification
KRAS	Distress	High Probability	Distress	Financial Distress
GGRP	Grey	Low Probability	Non-Distress	Financial Healthy
ANNJ	Distress	Low Probability	Non-Distress	Financial Healthy
GJS	Safe	Low Probability	Non-Distress	Financial Healthy
HSG	Safe	Low Probability	Non-Distress	Financial Healthy

The cross-company comparison shows that Krakatau Steel is consistently classified as financially distressed across all three models, while several ASEAN peers remain in non-distress categories (see Table 14). This contrast suggests that the company's distress condition is not solely driven by industry-wide factors but reflects firm specific structural weaknesses.

4. CONCLUSION AND SUGGESTIONS

The findings of this study highlight that Krakatau Steel's financial distress is fundamentally structural in nature. The interaction of weak profitability, inefficient asset utilization, and high leverage worsen financial sustainability. The results of the financial performance analysis provide a clear economic foundation for the distress signals generated by the Altman Z-Score, Ohlson O-Score, and Zmijewski X-Score models. Persistent profitability deterioration, reflected in negative margins and declining returns on assets and equity,

directly weakened internal capital generation and eroded the firm's equity base. At the same time, chronically weak liquidity constrained short-term financial flexibility, while increased leverage amplified financial risk. These weak performances are consistently captured by the distress models explaining the strong alignment of distress classifications observed across different methodologies. External pressures, including global steel overcapacity and import competition, further increase these internal weaknesses but are not the only reason for the company's poor performance.

The internal financial weaknesses identified in this study are impacted by complicated external industry conditions. The global steel industry during the observation period was characterized by persistent overcapacity, volatile raw material prices, and import competition, especially from lower-cost producers in the region. In Indonesia, government interventions and fluctuating infrastructure demand also contributed to pricing pressure and margin compression. These external factors strengthen Krakatau Steel's structural challenges, limiting the effectiveness of internal restructuring efforts and reinforcing the distress signals captured by the financial distress models. From a practical standpoint, the results highlight the limitations of debt restructuring as a standalone solution. Without improvements in operational efficiency, cost control, and asset productivity, financial restructuring is unlikely to deliver sustained recovery and just be a temporary solution to KRAS.

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NOMENCLATURE

Nomenklatur disertai arti dari semua persamaan matematika ataupun nomenklatur lain di alam artikel, dituliskan pada bagian ini.

ROA	the meaning of Return on Assets
ROE	the meaning of Return on Equity
NPM	the meaning of Net Profit Margin

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GPM	the meaning of Gross Profit Margin
OPM	the meaning of Operating Profit Margin
CR	the meaning of Current Ratio
QR	the meaning of Quick Ratio
DER	the meaning of Debt-to-Equity Ratio
DAR	the meaning of Debt-to-Asset Ratio
TAT	the meaning of Total Asset Turnover
IT	the meaning of Inventory Turnover
EM	the meaning of Equity Multiplier
Z-Score	the meaning of Altman Z-Score Model
O-Score	the meaning of Ohlson O-Score Model
X-Score	the meaning of Zmijewski X-Score Model
EBIT	the meaning of Earning Before Interest and Taxes
WC	the meaning of Working Capital
TA	the meaning of Total Assets
TL	the meaning of Total Liabilities
TE	the meaning of Total Equity
P	the meaning of Probability of Bankruptcy
KRAS	the meaning of PT. Krakatau Steel Tbk
SOE	the meaning of State-Owned Enterprise
ASEAN	the meaning of Association of Southeast Asian Nations