APPLICATION OF ALTMAN Z-SCORE METHOD IN PREDICTING FINANCIAL DISTRESS AT PT PINDAD FOR PERIOD 2019–2023

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ABSTRACT

PT Pindad, as a strategic state-owned enterprise, plays a crucial role in supporting Indonesia's national defense industry. This study aims to analyze the company's financial distress condition using the Altman Z-Score method and to forecast its 2024 financial position through time-series linear regression analysis conducted in Microsoft Excel. The analysis is based on financial statement data covering the period from 2019 to 2023.The findings reveal that PT Pindad consistently remained in the distress zone throughout the observation period, as indicated by its Z-Score results. Forecasting analysis further suggests a continued decline in financial performance in 2024 if no corrective measures are implemented. The Altman Z-Score model demonstrated an estimated predictive accuracy of 80% when compared with actual financial indicators, indicating that the model is relatively reliable in identifying potential financial distress conditions.However, this study is limited to a single company case study, which restricts the generalizability of the findings. Future research is recommended to conduct comparative analyses across multiple firms within the defense industry to provide broader insights. To improve long-term financial sustainability, recommended recovery strategies include debt restructuring, stricter capital expenditure control, operational cost efficiency, and optimization of marketing strategies and asset utilization.

Keywords: *Financial Distress; Altman Z-Score; Financial Performance*

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INTRODUCTION

Global economic growth and increasingly intense competition have created significant pressure on companies to maintain business sustainability (Chien et al., 2021). Firms are required to adapt quickly and efficiently to changing market dynamics in order to remain competitive (Fitri, 2020). However, not all firms succeed in maintaining financial stability. Even well-established companies can experience financial distress and ultimately bankruptcy if they fail to respond effectively to external and internal challenges (Oktaviani & Purwanto, 2021). This issue is particularly critical in strategic industries such as defense, where financial stability is directly linked to national security (Sipahutar, 2023).

In Indonesia, the defense industry plays a vital role in supporting sovereignty through the production of main weapon systems (alutsista). PT Pindad (Persero), a state-owned enterprise, is the primary producer of land-based defense systems and has a strategic role in supporting the operational readiness of the Indonesian National Armed Forces (TNI AD) (Rezki et al., 2022). Despite its strategic importance, PT Pindad has faced indications of financial distress. The Audit Board of Indonesia (BPK) reported that from 2020 to 2023, the company experienced financial distress due to weak liquidity, increasing liabilities, and inefficiencies in financial management, although in 2019 it was still considered financially healthy (BPK, 2024). The financial condition of PT Pindad during the 2019–2023 period is presented in Table 1.

Table 1
Real Financial Condition of PT Pindad Based on BPK (2019–2023)

Year	Real Condition (BPK)
2019	Not Distress
2020	Distress
2021	Distress
2022	Distress
2023	Distress

Source: BPK, 2025

This table shows the actual financial condition of PT Pindad according to the Audit Board of Indonesia (BPK). It reveals that although the company was still considered financially healthy in 2019, it consistently experienced financial distress from 2020 to 2023 (BPK, 2024). This dataset serves as the benchmark to evaluate the accuracy of the Altman Z-Score model. Paradoxically, PT Pindad's financial statements show a steady increase in sales and profits from 2019 to 2023. According to the 2025 Annual Report of PT Pindad, sales increased from IDR 3,398.78 billion in 2019 to IDR 7,977.77 billion in 2023, accompanied by a rise in profit from IDR 101.08 billion to IDR 120.77 billion. Nevertheless, this growth was not followed by improved financial stability, as the company's liabilities expanded significantly. Short-term liabilities grew from IDR 4,838.04 billion in 2019 to IDR 10,561.42 billion in 2023, while long-term liabilities escalated sharply in 2022 by 334% before slightly declining in 2023. These figures indicate that revenue growth was not sufficient to balance the rising debt burden, creating liquidity pressure. The detailed trends in sales, profit, and their respective growth rates from 2019 to 2023 are presented in Table 2.

Table 2
Sales and Profit Performance of PT Pindad (2019–2023)

Year	Profit/Loss (Rp Billion)	% Change	Sales (Rp Billion)	% Change
2019	101.08	–	3,398.78	–
2020	6.63	-93%	3,503.47	3%
2021	73.57	1010%	4,612.00	32%
2022	101.68	38%	6,439.05	40%
2023	120.77	19%	7,977.77	24%

Source: Annual Report PT Pindad, 2025

The table shows a consistent increase in sales from 2019 to 2023, with significant growth of 32% in 2021 and 40% in 2022. However, profit performance fluctuated sharply, dropping by 93% in 2020 due to pandemic-related pressures before rebounding in subsequent years. This indicates that rising sales did not automatically translate into sustainable profitability, pointing to underlying structural financial challenges. To further examine these structural financial challenges, Table 3 presents the company's liabilities trend from 2019 to 2023.

Table 3
Liabilities of PT Pindad (2019–2023)

Year	Short-Term Liabilities (Rp Billion)	% Change	Long-Term Liabilities (Rp Billion)	% Change
2019	4,838.04	–	588.65	–
2020	5,747.75	19%	576.49	-2%
2021	6,583.42	15%	528.36	-8%
2022	7,666.97	16%	2,294.80	334%
2023	10,561.42	38%	1,418.58	-38%

Source: Annual Report PT Pindad, 2025

This table shows that PT Pindad's liabilities increased significantly during 2019–2023. Short-term liabilities more than doubled, from Rp4,838.04 billion in 2019 to Rp10,561.42 billion in 2023. The sharpest rise occurred in 2023 (+38%). Long-term liabilities also fluctuated, with a peak in 2022 due to debt restructuring. These figures highlight the company's mounting financial burden, which directly affects liquidity and solvency ratios. This condition is further reflected in financial ratios. PT Pindad's current ratio declined from 121.22% in 2019 to 108.28% in 2023, while the cash ratio fell from 16.67% to 8.15% in the same period. Meanwhile, Return on Equity (ROE) dropped from 9.36% in 2019 to only 2.94% in 2023. These trends reinforce the findings of BPK, suggesting that the company faced difficulties in generating sufficient returns relative to its equity and struggled to meet its short-term obligations despite revenue growth.

Previous studies have analyzed PT Pindad's financial performance using the Ministry of State-Owned Enterprises' decree framework (Sukma & Ruhenda, 2022), which confirmed that the company entered financial distress starting in 2020. However, there has been limited research that applies bankruptcy prediction models such as the Altman Z-Score to state-owned enterprises in the defense industry. Altman's Z-Score, first developed in 1968 and later revised in 1983, integrates multiple financial ratios liquidity, retained earnings, profitability, leverage, and asset efficiency into a single predictive

index (Altman & Hotchkiss, 1998). The model has been proven to achieve accuracy rates up to 80–90% in predicting financial distress (Dolinšek & Kovač, 2024).

Therefore, this study aims to analyze PT Pindad's financial condition during 2019–2023 using the Altman Z-Score model and to evaluate its predictive accuracy against the real conditions reported by BPK. By identifying the early signs of financial distress and comparing them with actual financial performance, this research seeks to provide both theoretical and practical contributions. Theoretically, it enriches the application of Altman Z-Score in the defense industry, which is still underexplored in the Indonesian context. Practically, it offers insights for PT Pindad's management and policymakers to design preventive strategies to maintain financial stability in a highly strategic industry.

LITERATURE REVIEW

Financial Distress

Financial distress is generally understood as the final stage of corporate failure that may ultimately lead to bankruptcy or liquidation (Srimindarti et al., 2020). This condition reflects the financial instability of a company when its available cash is insufficient to meet short-term obligations, resulting in delays or even defaults in repayment within the stipulated timeframe (Wahyuningsih et al., 2022). The status of a company shifting between financial distress and non-distress is a dynamic process influenced by fluctuations in financial ratios, economic indicators, and other financial factors (Lau, 2021).

Financial distress can also be defined as a situation where a company experiences negative operating income, net income, and cash flow, which serve as early warning signals of financial difficulties (Altman, 1968). This condition may hinder the company's ability to meet financial obligations such as trade payables, bank loans, and employee salaries (Suprihatin et al., 2022). In summary, financial distress can be defined as a state of financial failure with the potential to lead to bankruptcy and liquidation, characterized by difficulties in meeting financial obligations. Since financial distress is inherently dynamic, firms must continuously improve financial performance to restore their condition to health. Consequently, financial distress functions as an early warning system to anticipate potential bankruptcy or liquidation in the future (Srimindarti et al., 2020).

Altman Z-Score

The Altman prediction model, known as the Altman Z-Score or Altman test, has a primary advantage in its simplicity, as it only requires financial statement data such as the balance sheet and income statement (Liang et al., 2020). Edward I. Altman, a finance professor at New York University, first introduced this model through his research Financial Ratios, Discriminant Analysis, and the Prediction of Corporate Bankruptcy in 1968 (Altman, 1968). This study presented the Z-Score as a tool to assess bankruptcy potential using a set of financial ratios incorporated into a discriminant equation. Altman adopted Multiple Discriminant Analysis (MDA) to overcome the weaknesses of conventional ratio analysis, which tended to evaluate each ratio separately. MDA itself is a statistical technique that assists in classification and prediction based on qualitative variables, such as distinguishing between bankrupt and non-bankrupt firms.

Initially, Altman evaluated 22 financial ratios grouped into five categories: liquidity, profitability, leverage, solvency, and activity. Over time, the model underwent several revisions. There are three main versions of the Altman Z-Score model:

1. Original model (1968):
   Designed for publicly traded manufacturing firms, using five financial ratios with a cut-off score of < 1.81 as the bankruptcy threshold.
2. Revised model (1983):
   Applicable to both public and private manufacturing firms, where X4 is adjusted to the book value of equity to book value of debt, and the bankruptcy threshold is < 1.23.
3. Modified model (1995):
   Applicable across industries, excluding X5 (sales/total assets) due to its instability, and setting the bankruptcy threshold at < 1.10 (Altman & Hotchkiss, 1998).

From these analyses, Altman identified five key ratios that proved most effective in predicting bankruptcy, which were integrated into the Z-Score discriminant function. Since PT Pindad is a private manufacturing firm, this study applies the Revised Z-Score model (1983):

$$Z = 0{,}717X_1 + 0{,}847X_2 + 3{,}107X_3 + 0{,}420\,X_4 + 0{,}998\,X_5$$

i. X_1 = Working Capital to Total Assets.
ii. X_2 = Retained Earnings to Total Assets.
iii. X_3 = Earnings Before Interest and Taxes (EBIT) to Total Assets.
iv. X_4 = Book Value of Equity to Book Value of Total Liabilities.
v. X_5 = Sales to Total Assets.

Accuracy of the Altman Z-Score Prediction Model

In studies of financial distress prediction, accuracy measurement is essential to evaluate how reliable the model is in capturing the financial condition of a company. According to Altman (2013), accuracy can be assessed by comparing predicted results with actual financial conditions, such as firms that underwent delisting. One common approach is calculating prediction accuracy by dividing the number of correct classifications by the total sample size, multiplied by 100%. Correct classifications refer to cases where the Z-Score prediction aligns with the firm's actual distress or non-distress condition, while the total sample represents all firms under analysis.

In addition to accuracy, error rates must be considered, namely Type I and Type II errors. Type I error occurs when the model predicts a firm as healthy, while in reality, it is distressed. Conversely, Type II error occurs when the model predicts a firm as distressed, but in reality, it remains healthy. Understanding these potential errors allows researchers and practitioners to evaluate the reliability of the Altman Z-Score model in identifying financial distress and anticipating bankruptcy risk.

Linear Trend Regression in Time Series Forecasting

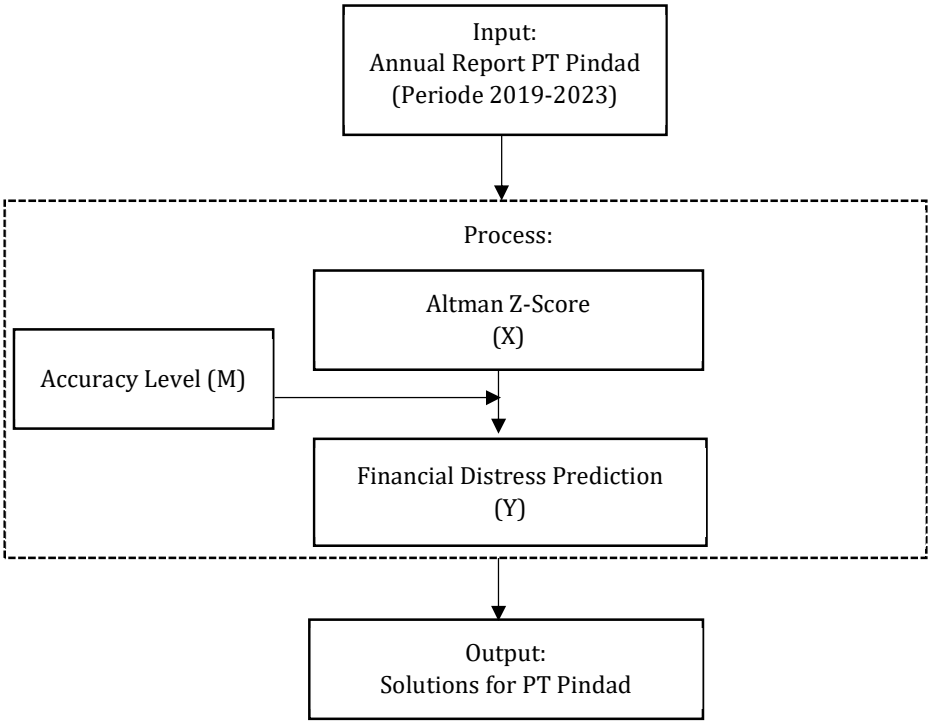
Time series analysis is widely applied to predict financial performance based on the relationship between variables and time as the sole influencing factor (Rini & Ananda, 2022). The first step is identifying historical patterns to build a model. Regression is a commonly used technique in prediction and forecasting. While prediction may focus on past, present, or future values, forecasting specifically emphasizes estimating future values from chronological data. A commonly applied time series method is the linear trend regression, which captures long-term data patterns represented by a straight line or smoothed curve (Hanke & Wichern, 2014). This approach works by fitting a trend line

to historical data, which can then be projected forward to predict future financial conditions over the medium to long term (Aviantara, 2023).

For example, Mansor et al. (2023) in Visualising the Optimistic, Realistic, and Pessimistic Financial Distress Outlooks for Airport Operations in Malaysia, applied the Altman Z-Score to measure financial distress risk and projected it ten years ahead using both linear trend regression and ARIMA models. They further used Multivariate Generalized Linear Model (MGLM) simulations to create optimistic, realistic, and pessimistic scenarios. Similarly, Rini and Ananda (2022) compared several time series forecasting models, including Moving Average, Weighted Moving Average, Exponential Smoothing, and Linear Trend, concluding that the linear trend model produced the most accurate forecasts. These findings underscore that linear trend regression can serve as a practical and reliable predictive tool for projecting financial distress in future socio-economic contexts.

Research Framework

To provide a clearer understanding of the research process, this study develops a research framework that illustrates the relationship among variables. The independent variable (X) is the Altman Z-Score, which serves as the primary measurement tool in assessing the financial condition of PT Pindad. The dependent variable (Y) is financial distress prediction, representing the company's potential state of distress or non-distress. Meanwhile, the accuracy level (M) functions as a moderating variable, assessing how reliable the Altman Z-Score is in predicting financial distress. This framework reflects the analytical process of the study, as presented in Figure 1.



Source: Processed by Researchers, 2025

Figure 1
Conceptual Framework

METHOD

This study employed a quantitative-descriptive approach, which aims to assess and predict the financial condition of PT Pindad using the Altman Z-Score model and time series regression analysis. The scope of the study is limited to financial distress prediction of PT Pindad for the period 2019–2023. The population in this study is the annual financial reports of PT Pindad. The sample was determined using a saturated sampling technique, in which all members of the population are included as research samples (Paramita et al., 2021). Thus, the sample consists of five annual reports of PT Pindad covering the period 2019–2023. The data type used in this study is secondary data, obtained from PT Pindad's official website. The data collection methods applied are documentation and literature study to support the theoretical foundation.

The data analysis methods consist of two stages. First, the Altman Z-Score is applied to predict the financial distress condition. The Z-Score is calculated based on five financial ratios: 1)Working Capital to Total Assets (X_1); 2)Retained Earnings to Total Assets (X_2); 3)Earnings Before Interest and Taxes to Total Assets (X_3); 4)Book Value of Equity to Book Value of Total Debt (X_4) ; and 5)Sales to Total Assets (X_5).The results are then classified into three categories: distress zone ($Z < 1.81$), grey zone ($1.81 \leq Z \leq 2.99$), and safe zone ($Z > 2.99$). Second, to strengthen the predictive analysis, a time series regression (linear trend method) is employed using Microsoft Excel. This method projects the future trend of PT Pindad's Z-Score values based on the historical data from 2019–2023, thereby providing an outlook on potential financial distress in the coming years.

RESULTS AND DISCUSSION

The calculation of financial ratios (X_1–X_5) was applied to the Altman Z-Score formula, with each ratio weighted according to the 1983 revised model. The classification threshold follows Altman (2013), where firms with $Z > 2.90$ are considered financially healthy, $1.23 < Z < 2.90$ are in the gray area, and $Z < 1.23$ are categorized as in distress. The results for PT Pindad during 2019–2023 are presented in Table 4.

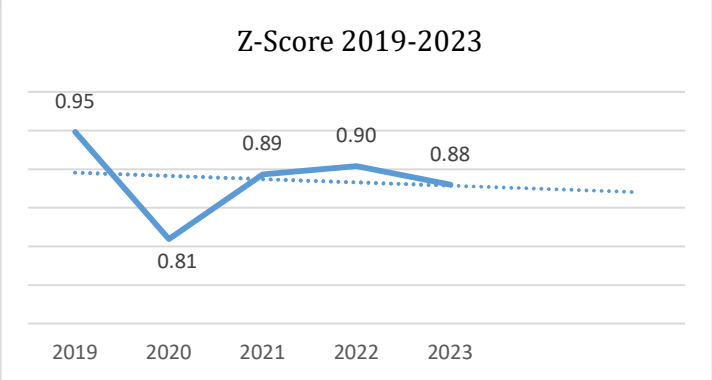
Table 4
Altman Z-Score Results of PT Pindad (2019–2023*)*

Year	X_1	X_2	X_3	X_4	X_5	Z-Score	Category
2019	0.1490	0.0627	0.0588	0.2696	0.4933	0.95	Distress Zone
2020	0.1065	0.0528	0.0460	0.2240	0.4526	0.81	Distress Zone
2021	0.0759	0.0560	0.0542	0.2095	0.5362	0.89	Distress Zone
2022	0.1705	0.0428	0.0384	0.3702	0.4717	0.90	Distress Zone
2023	0.1002	0.0429	0.0423	0.3701	0.4860	0.88	Distress Zone

Source: Processed data, 2025

The results indicate that PT Pindad consistently remained in the distress zone ($Z < 1.23$) throughout the period 2019–2023. In 2019, the Z-Score was 0.95, already signaling high financial risk. This deteriorated further to 0.81 in 2020, before slightly improving to 0.89 in 2021 and 0.90 in 2022. However, the score dropped again to 0.88 in 2023. Despite minor fluctuations, the scores never reached the gray zone ($1.23 \leq Z \leq$

2.99), reinforcing that PT Pindad persistently faced financial distress conditions. A graphical representation of the Z-Score trend from 2019 to 2023 is provided in Figure 2.



Source: Processed data, 2025

Figure 2
Z-Score Trend of PT Pindad (2019–2023)

The Figure 2 shows that although the Z-Score fluctuated across the period, the regression trend line slopes downward, indicating a long-term decline in financial stability. This suggests structural weaknesses in the company's financial performance that may continue in the future. To strengthen the analysis, a time series regression (linear trend method) was applied to forecast the Z-Score for 2024. The regression output is presented in Table 5.

Table 5
Regression Coefficients for Z-Score Forecasting

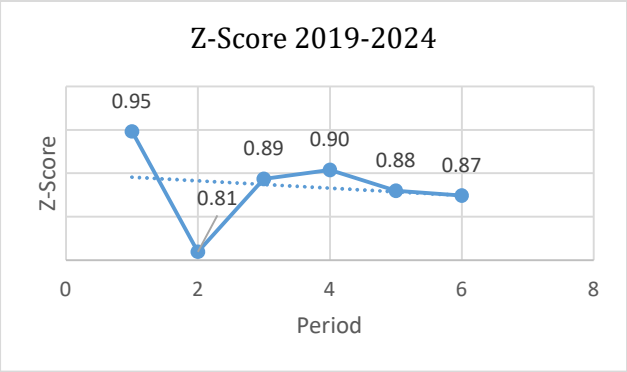
Coefficients	Value
Intercept	0.8997
Period	-0.0042

Source: Processed data, 2025

Based on the regression equation:

$$Y_6 = 0{,}8997 + (-0{,}0042 \times 6) = 0{,}8997 - 0{,}0252 = 0{,}8745$$

The projected Z-Score for 2024 is 0.87, which remains in the distress zone (<1.23). This reinforces that PT Pindad is likely to face continued financial distress unless corrective measures are undertaken.



Source: Processed data, 2025

Figure 3
Z-Score Trend of PT Pindad (2019–2023)

The Figure 3 illustrates the fluctuating trend of PT Pindad's Z-Score from 2019 to 2023, reflecting the company's financial condition based on the Altman Z-Score model. The solid blue line represents the actual Z-Score values for each year, while the dashed line depicts the linear regression trend projecting the forward trajectory. The downward slope of the regression line indicates a long-term declining tendency, reinforcing the evidence that PT Pindad's financial structure remains fragile and at high risk of financial distress in the future.

The underlying cause of this persistent condition can be traced to several weak components of the Z-Score is liquidity (X_1) declined from 0.1490 in 2019 to 0.1002 in 2023, showing reduced ability to cover short-term obligations. Retained earnings to total assets (X_2) decreased from 0.0627 to 0.0429, indicating weaker internal financing capacity. Profitability (X_3) fell from 0.0588 to 0.0423, reflecting declining efficiency in generating operating income from assets. Solvency (X_4) improved slightly to 0.3701 in 2023, but the effect was insufficient to offset weaknesses in other ratios. Asset turnover (X_5) remained relatively stagnant, from 0.4933 in 2019 to 0.4860 in 2023, showing inefficiency in generating sales from assets. Among these, profitability (X_3) is identified as the most influential variable. This finding is further supported by the comparison between the predicted and actual conditions presented in Table 6.

Table 6
Comparison of Altman Z-Score Prediction and Actual Condition (2019–2023)

Year	Z-Score	Predicted Category	Actual Condition (BPK)	Result
2019	0.95	Distress	Non-distress	False
2020	0.81	Distress	Distress	True
2021	0.89	Distress	Distress	True
2022	0.90	Distress	Distress	True
2023	0.88	Distress	Distress	True

Source: Processed data, 2025

From five observation years, four predictions were correct (2020–2023), producing an accuracy level of 80%. There were no Type I Errors (misclassifying a distressed firm as healthy), but one Type II Error occurred in 2019 when the model

classified PT Pindad as distressed, although BPK considered it non-distressed. The Type II Error rate is therefore 20%. The results show that PT Pindad consistently faced financial distress from 2019 to 2023 and is projected to remain in the distress zone in 2024. This condition reflects structural weaknesses in liquidity, internal funding, and profitability, which must be addressed urgently to prevent potential bankruptcy.

This condition is primarily driven by the weak performance of most of the components that make up the Altman Z-Score. The liquidity ratio (X_1), represented by working capital to total assets, showed fluctuations but tended to decline from 0.1490 in 2019 to 0.1002 in 2023. This indicates that the proportion of net working capital relative to total assets has gradually diminished. In practical terms, it means the company's ability to meet its short-term obligations has weakened, thereby increasing liquidity risk. Similarly, the retained earnings to total assets ratio (X_2) declined from 0.0627 in 2019 to 0.0429 in 2023, demonstrating a shrinking capacity of the company to rely on internally generated funds to finance its operations and expansion. This reflects a growing dependence on external sources of financing, particularly debt, which further burdens the company with interest expenses and exacerbates financial pressure.

The profitability ratio (X_3), measured by EBIT to total assets, also consistently decreased from 0.0588 to 0.0423 over the same period. This decline illustrates a reduced ability of the company to generate operating income from its total asset base, signaling inefficiencies in operational management and suboptimal utilization of resources. Such conditions worsen the medium- to long-term financial outlook of the company. On the other hand, the book value of equity to total liabilities ratio (X_4) improved significantly from 0.2095 in 2021 to 0.3701 in 2023. This suggests a relative strengthening of equity compared to total debt, which can be seen as a positive indicator of solvency. However, despite this improvement, the overall financial condition of the company remained weak, as the gains in solvency were overshadowed by deteriorating liquidity, profitability, and internal financing capacity. The sales to total assets ratio (X_5) remained relatively stable but displayed a slight downward trend, from 0.4933 in 2019 to 0.4860 in 2023. Although the decline may appear minor, it nonetheless indicates that the company has not been able to optimize its assets in generating sales revenue. This limited efficiency in asset utilization further constrains growth potential and reinforces the overall weak financial structure.

Among all components, EBIT to total assets (X_3) emerges as the most influential variable in determining the Z-Score. This is evident from its coefficient weight of 3.107, the highest among all variables in the Altman formula. The high weight underscores that even a small decline in profitability exerts a disproportionately large impact on the company's overall Z-Score. Therefore, both theoretically—according to Altman's model—and empirically—based on PT Pindad's case—profitability serves as the dominant driver behind the continuous decline in the Z-Score and the primary indicator of financial distress. Overall, the data reveal that PT Pindad has been under considerable financial strain. Weak liquidity (X_1), declining profitability (X_3), limited internal financing (X_2), and stagnant asset efficiency (X_5) have collectively prevented improvements in solvency (X_4) from producing a significant impact on the company's overall financial health.

As a result, PT Pindad can be categorized as being in a state of financial distress, with heightened risks of liquidity and solvency challenges if immediate corrective measures are not implemented. This conclusion is further reinforced by the audit findings of the Supreme Audit Agency (BPK) and the company's own disclosures regarding its high cost of funds, both of which signal severe financial pressure. Consequently, the

application of the Altman Z-Score model in this study is highly relevant, as it effectively illustrates the company's financial condition and forecasts potential financial difficulties in the future.

Based on the calculation of ratios X_1 to X_5 in the Altman Z-Score model for PT Pindad during 2019–2023, the company consistently remained in the distress zone, with Z-Scores ranging from 0.81 to 0.95, far below the safe threshold of 1.81. This reflects weak liquidity (X_1), profitability (X_3), and internal financing capacity (X_2), combined with stagnant asset efficiency (X_5). Although solvency (X_4) slightly improved in the last two years, it was insufficient to strengthen the company's overall financial condition. These findings indicate a persistent financial distress condition that may lead to bankruptcy if corrective actions are not undertaken.

The primary strategy required is debt restructuring, as low liquidity is mainly caused by current assets dominated by inventories and long-term receivables, which cannot be quickly converted into cash. At the same time, short-term liabilities have increased sharply. Debt restructuring may include extending loan tenors, negotiating lower interest rates, or consolidating loans to ease short-term cash flow pressures. In addition, capital expenditure management is necessary due to the low retained earnings ratio (X_2). PT Pindad should allocate capital expenditure only to projects that directly improve efficiency and profitability, while non-productive assets can be monetized through leasing or partnerships to generate additional cash and reduce dependence on debt.

To address declining profitability (X_3), the company must enforce cost-cutting strategies by applying lean manufacturing, focusing on high-margin contracts, and maximizing the utilization of fixed assets to reduce idle capacity. From the perspective of solvency (X_4), debt-to-equity conversion or state capital injection (PMN) could be considered, given PT Pindad's status as a state-owned enterprise. These strategies would strengthen equity without adding financial burdens from interest expenses, thereby reducing the debt-to-equity ratio. Finally, asset and sales optimization (X_5) is essential to increase the company's ability to generate revenue from its assets. This can be achieved by focusing on high-margin defense products, diversifying into civilian markets with stable demand, utilizing idle facilities, and implementing digitalized supply chain systems to improve asset turnover. Among these measures, the most crucial efforts are debt restructuring and operational cost efficiency. Debt restructuring provides immediate relief to short-term liquidity pressures, while cost efficiency strengthens profitability and operational performance. Together, these two strategies are the most effective in improving the Z-Score and preventing prolonged financial distress.

CONCLUSION AND SUGGESTION

This study aimed to analyze and predict the financial distress of PT Pindad (Persero) during 2019–2023 using the Altman Z-Score model, assess its predictive accuracy, and identify preventive strategies to overcome financial distress. The findings revealed that PT Pindad consistently remained in the distress zone for five consecutive years, with Z-Scores ranging from 0.95 in 2019 to 0.88 in 2023, and projected to decline further to 0.87 in 2024 based on the linear trend forecast. These results indicate that the company has been under significant financial pressure throughout the observation period. The accuracy test demonstrated that the Altman Z-Score achieved an accuracy rate of 80% when compared to actual conditions, with no Type I error and only one instance of Type II error, suggesting that this model is a reliable tool for predicting financial distress in state-owned manufacturing companies.

The analysis of Z-Score components further highlights the need for corrective strategies. PT Pindad's weaknesses in liquidity, profitability, retained earnings, and asset efficiency demand urgent actions, while improvements in solvency have not been sufficient to restore overall financial health. Therefore, the company should prioritize debt restructuring to ease short-term liquidity pressure, implement strict capex management to optimize limited internal financing, and carry out cost-cutting initiatives to enhance profitability. In addition, restructuring the capital structure through debt conversion and state equity participation, as well as asset and marketing optimization, are essential to strengthen long-term sustainability. These strategies, if integrated, may help improve the company's financial resilience and support its ability to move out of financial distress.

For future research, it is suggested to compare the Altman Z-Score with alternative prediction models such as Springate, Zmijewski, or Ohlson to evaluate consistency and robustness of predictions. Moreover, combining financial ratio analysis with qualitative factors, such as industry dynamics, government support, and managerial effectiveness, could provide a more comprehensive understanding of financial distress risks in state-owned enterprises.

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