

Bankruptcy Risk Analysis of PT Garuda Indonesia Tbk Using the Altman Z-Score Model for the Period 2015 – 2024

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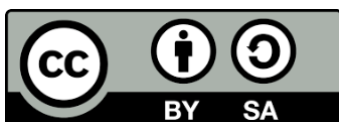
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Abstract

This study aims to analyze the financial ratios that are components of the Altman Z-Score model, calculate the Altman Z-Score value, and evaluate the potential bankruptcy risk of PT Garuda Indonesia (Persero) Tbk for the period 2015–2024. The study was conducted to determine the company's financial health as a form of early detection of the possibility of financial distress and the risk of corporate bankruptcy. The research method used is descriptive research with a quantitative approach. The data used are secondary data in the form of the annual financial report of PT Garuda Indonesia (Persero) Tbk for the period 2015–2024 obtained from the company's official reports and the Indonesia Stock Exchange. The analysis technique is carried out by calculating the financial ratios that are components of the Altman Z-Score, namely Working Capital to Total Assets (X1), Retained Earnings to Total Assets (X2), Earnings Before Interest and Taxes (EBIT) to Total Assets (X3), Market Value of Equity to Total Liabilities (X4), and Sales to Total Assets (X5). Furthermore, the Z-Score value is calculated and classified into healthy, gray zone, or distress categories. The results of the study indicate that most of PT Garuda Indonesia's financial ratios are in an unhealthy condition. The X1 and X2 ratios consistently show negative values, indicating weak liquidity and prolonged accumulation of losses. The Altman Z-Score calculation results show that during the 2015–2024 period, the company was consistently in the distress zone or at risk of bankruptcy. The Z-Score value experienced a significant decline during the 2020–2021 pandemic, with the lowest value reaching -3.984 in 2021. Despite improvements after restructuring in 2022–2024, the company's financial condition still does not demonstrate the characteristics of a healthy company. Thus, PT Garuda Indonesia still needs to strengthen its liquidity, profitability, and capital structure to achieve long-term business sustainability.

Keywords: Bankruptcy, Financial Distress, Altman Z-Score



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INTRODUCTION

The Indonesian economy experienced quite complex dynamics between 2015 and 2024. Prior to 2020, national economic growth was relatively stable at around 5% per year. However, the COVID-19 pandemic that occurred in 2020 caused an economic contraction and had a significant impact on various sectors, particularly air transportation, tourism, and international trade. This situation indicates that national economic activity is highly vulnerable to external shocks that affect people's mobility and business activity.

One company significantly impacted is PT Garuda Indonesia (Persero) Tbk, the national airline and a State-Owned Enterprise (BUMN) that plays a strategic role in supporting connectivity across Indonesia. Mobility restrictions during the pandemic have led to a drastic decline in passenger numbers, resulting in a significant drop in the company's revenue. Meanwhile, the company continues to face significant operational costs and financial obligations.

This condition is reflected in the development of the company's current assets and current liabilities. In 2015, Garuda Indonesia had current assets of USD 1.01 billion and current liabilities of USD 1.20 billion. However, in subsequent periods, current liabilities tended to increase faster than current assets. The peak occurred in 2021, when current assets were only USD 305.73 million, while current liabilities reached USD 5.77 billion. After restructuring, conditions began to improve, with current assets increasing to USD 801.15 million in 2022 and USD 553.91 million in 2024, although current liabilities remained relatively high at USD 1.17 billion.

Table 1. Data on Current Assets and Current Liabilities of PT Garuda Indonesia for the Period 2015 – 2024 (Expressed in US Dollars, unless otherwise stated)

No.	Year	Current assets	Current Liabilities
1.	2024	553,908,871	1,173,272,782
2.	2023	653,772,901	1,165,155,552
3.	2022	801,153,825	1,681,029,672
4.	2021	305,725,029	5,771,313,185
5.	2020	536,547,176	4,294,797,755
6.	2019	1,133,892,533	3,395,880,889
7.	2018	1,079,945,126	3,061,396,001
8.	2017	986,741,627	1,921,846,147
9.	2016	1,165,133,302	1,563,576,121
10.	2015	1,007,848,005	1,195,849,121

Source: Financial Report of PT Garuda Indonesia Tbk



Figure 1. Data on Current Assets and Current Liabilities of PT Garuda Indonesia for the Period 2015 - 2024

The data shows that the company's ability to meet short-term obligations has been under significant pressure, particularly during the pandemic. Although the Indonesian economy has begun to recover since 2022, with economic growth returning above 5%, Garuda Indonesia's financial condition has not fully recovered due to its high debt burden, which still needs to be resolved through various restructuring programs.

In addition to the impact of the pandemic, the aviation industry also faces challenges such as fluctuating aviation fuel prices, high operational costs, and increasing competition from low-cost carriers. Yet, as Indonesia's flag carrier, Garuda Indonesia plays a vital role in supporting public mobility, tourism development, trade, and national economic integration. Therefore, the company's business sustainability is a concern for various parties, including the government, investors, and the public.

One widely used method for assessing financial health and predicting potential corporate bankruptcy is the Altman Z-Score. Developed by Altman (1968), this model combines several financial ratios to measure the probability of corporate bankruptcy. This method was chosen because of its high level of accuracy and its widespread use in financial research and practice.

Based on these conditions, this study aims to analyze the financial health of PT Garuda Indonesia (Persero) Tbk using the Altman Z-Score method for the period 2015–2024. The study period was chosen because it covers conditions before the pandemic, during the pandemic, and the post-pandemic recovery period, thus providing a more comprehensive picture of the company's financial resilience in the face of economic turmoil. Formulation of the problem: a. What are the values of Garuda Indonesia's financial ratios that are components of the Altman Z-Score during the 2017–2023 period? b. What is the Altman Z-Score value of PT Garuda Indonesia Tbk during that period? c. Is PT Garuda Indonesia Tbk in the healthy, bankruptcy-prone, or at risk of bankruptcy category based on the Altman Z-Score calculation results?

LITERATURE REVIEW

Understanding the Altman Z-Score

According to (Andika, 2024), the Altman Z-Score method is a financial ratio-based analysis approach used to estimate the likelihood of a company experiencing failure or bankruptcy. This method combines several commonly used financial ratios, each with a different weighting according to its level of influence in predicting the company's financial condition.

Meanwhile, according to (Cındık & Armutlulu, 2021), the Altman Z-Score is a bankruptcy prediction model first introduced by Edward Altman in 1968. This model was developed using the Multivariate Discriminant Analysis (MDA) approach as the basis for analysis to identify the likelihood of a company going bankrupt. In its application, the Altman model uses five financial ratios as indicators to assess a company's financial health and estimate the likelihood of bankruptcy.

Based on this opinion, it can be concluded that the Altman Z-Score method is an analytical tool used to assess a company's financial health and predict potential bankruptcy through a combination of several financial ratios. This method helps companies and investors detect early signs of financial distress so that anticipatory action can be taken early.

Development of the Altman Z Score Model

The Altman Z-Score model is known as one of the bankruptcy prediction methods widely used in financial management. Since its introduction by Edward I. Altman in 1968, this model has undergone continuous development and refinement to improve its predictive capabilities for various types of companies and diverse economic conditions. These changes

were made because the original model was deemed necessary to adapt to the increasingly complex dynamics of the business world.

The Altman model was developed to be applicable not only to manufacturing companies but also to non-manufacturing companies, private companies, and companies operating in various countries with different economic characteristics. These adjustments demonstrate the need to improve the model's relevance and accuracy in identifying potential financial distress.

Based on its development, the Altman Z-Score model is divided into three main forms: the original model, the revised model, and the modified model. Each model has characteristics and formulas tailored to specific types of companies. These three models will be further explained in the following subsections.

a. Initial Altman Z Score Model

The Altman Z-Score model was first introduced by Edward I. Altman in 1968 as a tool to estimate the potential for bankruptcy in publicly traded manufacturing companies in the United States. This model was developed using a multivariate discriminant analysis (MDA) approach that utilizes five key financial ratios as indicators for assessing a company's condition. These ratios reflect the company's liquidity, profitability, operational effectiveness, and solvency. The lower the Z-Score value, the greater the company's risk of financial distress, potentially leading to bankruptcy (Altman, 1968). The following is the initial Altman Z-Score model equation.

$$Z = 1.2(X1) + 1.4(X2) + 3.3(X3) + 0.6(X4) + 1.0(X5)$$

Source: (Abadi & Misidawati, 2023:38)

Information :

X1 = Working Capital / Total Assets

X2 = Retained Earnings / Total Assets

X3 = Earnings before Interest and Tax / Total Assets

X4 = Market Value of Equity / Total Liabilities

X5 = Sales / Total Assets

Table 2. Classification Cut-of point Model Altman Z Score Initial

Z Score Value	Interpretation
$Z < 1.81$	Company in distress/bankrupt condition
$1.81 < Z < 2.99$	Companies in a grey zone/vulnerable condition
$Z > 2.99$	The company is in a non-distress/healthy condition

b. Revised Altman Z Score Model

In 1983, Edward Altman refined the Altman Z-Score model, which he had previously developed, to make it applicable to private companies. This revision was made because non-public companies generally lack information on the market value of equity, unlike listed companies. Therefore, in this revised model, variable X4, which originally used the ratio between the market value of equity and the book value of liabilities, was changed to the ratio between the book value of equity and the book value of liabilities. This change aimed to make the model more applicable to companies that lack stock market value data.

The following is the equation for the Revised Altman Z Score model:

$$Z = 0.717(X1) + 0.874(X2) + 3.107(X3) + 0.420(X4) + 0.998(X5)$$

Source: (Abadi & Misidawati, 2023:38)

Information :

X1 = Working Capital / Total Assets

X2 = Retained Earnings / Total Assets

X3 = Earnings before Interest and Tax / Total Assets X4 =

Book value of equity / Book value of liabilities X5 = Sales / Total Assets

Table 3. Altman Z Score Model Cut-of point Classification Revised

Z Score Value	Interpretation
$Z < 1.20$	Company in distress / bankrupt
$0.20 < Z < 2.90$	Companies in a grey zone / vulnerable condition
$Z > 2.90$	The company is in a non-distress / healthy condition

c. Modified Altman Z Score Model

In 1995, Edward Altman further developed the Z-Score model to adapt its application to non-manufacturing companies and companies operating in developing countries. This adjustment was made because the operational characteristics of companies outside the manufacturing sector differ from those of manufacturing companies. In this modified model, the X5 variable, measured by the Sales / Total Assets ratio, was no longer used. This variable removal was based on the assumption that the sales to total assets ratio does not adequately reflect the condition of companies whose business activities do not focus on physical production processes. The following is the equation for the Modified Altman Z-Score model:

$$Z = 6.56(X1) + 3.26(X2) + 6.72(X3) + 1.05(X4)$$

Source: (Abadi & Misidawati, 2023:38)

Information :

X1 = Working Capital / Total Assets

X2 = Retained Earnings / Total Assets

X3 = Earnings before Interest and Tax / Total Assets

X4 = Book value of equity / Book value of liabilities

Table 4. Modified Altman Z Score Model Cut-of point Classification

Z Score Value	Interpretation
$Z < 1.1$	Company in distress / bankrupt
$1.1 < Z < 2.6$	Companies in a grey zone / vulnerable condition
$Z > 2.6$	The company is in a non-distress / healthy condition

Altman Z-Score Ratio

The Z-Score is a value generated by calculating a number of financial ratios that have been weighted according to their contribution to predicting a company's condition. This value is used to assess the likelihood or probability of a company experiencing financial difficulties and potentially going bankrupt. According to Sartono (in Andika, 2024), the Z-discriminant model (Zeta) developed by Altman is used as an analytical tool for measure conditions health financecompany througha combination of several financial indicators.

a. Working Capital / Total Assets

This ratio is used to assess a company's liquidity level by comparing its working capital to its total assets. Working capital is calculated by the difference between its current assets and its current liabilities. This ratio reflects a company's ability to meet

short-term obligations using its available current resources. The higher the ratio, the better the company's ability to maintain its liquidity. Conversely, a negative ratio indicates a working capital deficit, which could signal a serious liquidity problem.

$$WCTA = \frac{\text{Working Capital}}{\text{Total Aset}}$$

b. *Retained Earnings/Total Assets*

This ratio is used to describe the amount of retained earnings a company has accumulated since the start of operations compared to its total assets. This indicator reflects a company's ability to generate historical profitability from its business activities over a specific period. A high ratio indicates a company has relatively large profit reserves that can be used to support business development and anticipate potential future losses. Conversely, a low ratio indicates a company tends to rely more heavily on external funding sources, such as debt or additional capital from investors.

$$RETA = \frac{\text{Retained Earning}}{\text{Total Aset}}$$

c. *Earnings Before Interest and Taxes (EBIT)/Total Assets*

This ratio is used to measure a company's ability to generate operational profits through the utilization of its total assets. The indicator used is Earnings Before Interest and Taxes (EBIT), which reflects the company's operational performance before being affected by financing costs or tax obligations. The higher the ratio, the better the company's ability to generate profits from its operations. Conversely, a negative ratio indicates operational losses that could impact the company's performance and require further action.

$$EBITA = \frac{\text{Earning Before Interest and Taxes}}{\text{Total Aset}}$$

d. *Market Value of Equity/Book Value of Total Liabilities*

This ratio is used to assess a company's solvency by comparing the market value of equity with its total liabilities. The market value of equity is obtained by multiplying the share price by the number of shares outstanding. This ratio reflects a company's ability to meet its financial obligations based on its equity value. The higher the ratio, the greater the company's ability to cover its total liabilities, thus lowering the risk of bankruptcy. Conversely, a low ratio indicates a high proportion of debt relative to the company's capabilities, which could indicate future financial problems.

$$MVEBVL = \frac{\text{Market Value of Equity}}{\text{Total Liabilities}}$$

e. *Sales/Total Assets*

This ratio is used to assess a company's efficiency in utilizing its assets to generate sales. This indicator indicates the extent to which a company's assets can be optimally utilized to generate revenue. A high ratio indicates that the company is effectively managing and utilizing its assets to support operational activities. Conversely, a low ratio indicates that the company's resource utilization is not optimal, potentially impacting the company's profitability and long-term performance.

$$STA = \frac{Sales}{Total Asset}$$

RESEARCH METHODS

Types of research

The type of research used in this study is descriptive research with a quantitative approach. Descriptive research was chosen because it aims to provide a systematic, factual, and accurate picture of the financial condition of PT Garuda Indonesia Tbk during the research period. Through this study, the researcher attempts to describe the values of financial ratios that are components of the Altman Z-Score model and interpret the results of these calculations to determine the company's financial health level. A quantitative approach was used because this study relies on data in the form of figures from the company's officially published annual financial reports. This quantitative data is then analyzed using the Altman Z-Score model to produce values that can be used as a basis for assessing the company's financial condition. With this approach, the research results are expected to be more objective, measurable, and accountable.

Population and Sample

The population used in this study is all annual financial reports of PT Garuda Indonesia (Persero) Tbk. The sample in this study was determined using a purposive sampling technique, namely the selection of samples based on certain criteria relevant to the research objectives. The criteria used are the audited annual financial reports of PT Garuda Indonesia Tbk and officially published on the Indonesia Stock Exchange (IDX) and the company's official website. Therefore, this study sample is the financial reports of PT Garuda Indonesia Tbk for 10 years, namely the period 2015–2024.

The use of purposive sampling was deemed appropriate because this research required specific data that aligns with the bankruptcy analysis model used. This also ensured that the processed data was academically sound.

Data collection technique

This study uses secondary data, obtained indirectly through official documents. The secondary data used are the annual financial reports of PT Garuda Indonesia (Persero) Tbk for the 2015–2024 period. The data were obtained from:

- The official website of PT Garuda Indonesia (Persero) Tbk.
- Indonesia Stock Exchange (IDX) via the website www.idx.co.id.
- Other relevant publications and financial reports.

Data Analysis Techniques

Data analysis in this study uses a quantitative approach with the following steps:

- Calculating Financial Ratios: Working Capital to Total Assets (X1), Retained Earnings to Total Assets (X2), Earnings Before Interest and Taxes (EBIT) to Total Assets (X3), Market Value of Equity to Total Liabilities (X4), Sales to Total Assets (X5).
- Calculating the Altman Z-Score The formula used is:

$$Z=1.2X1+1.4X2+3.3X3+0.6X4+1.0X5$$

Calculation results Z-Score will show the company's financial condition category:

- $Z > 2.99 \rightarrow$ Healthy
- $1.81 < Z < 2.99 \rightarrow$ Grey Area (prone to bankruptcy)

3) $Z < 1.81 \rightarrow$ Risk of bankruptcy

c. Interpretation of Results

The resulting Z-scores were then analyzed to determine PT Garuda Indonesia Tbk's financial position for the period 2015–2024. The results of this analysis will provide an overview of the company's potential bankruptcy risk.

RESULT AND DISCUSSION

Research result

The initial version of the Altman Z-Score calculation (1968) was carried out to assess the potential bankruptcy of PT Garuda Indonesia (Persero) Tbk for the period 2015 – 2024. This model uses five financial ratios, namely X1 (Working Capital to Total Assets), X2 (Retained Earnings to Total Assets), X3 (EBIT to Total Assets), X4 (Capital Market Value to Total Debt), and X5 (Sales to Total Assets). The Z value is then determined based on Altman's original formula and classified into three categories: Distress Zone ($Z < 1.81$), Grey Zone ($1.81 < Z < 2.99$), and Non-distress Zone ($Z > 2.99$).

Table 2. Results of the Altman Z Score Calculation for the Initial Version (1968)

Year	X1	X2	X3	X4	X5	Z-Score	Category
2015	-0.057	-0.065	0.053	0.246	1,153	1,316	Distress
2016	-0.107	-0.058	0.028	0.239	1,034	1,062	Distress
2017	-0.248	-0.118	-0.019	0.203	1,110	0.707	Distress
2018	-0.477	-0.162	-0.038	0.152	1,042	0.207	Distress
2019	-0.508	-0.178	0.032	0.248	1,026	0.421	Distress
2020	-0.348	-0.302	-0.189	0.058	0.138	-1,291	Distress
2021	-0.760	-1,031	-0.551	0.003	0.186	-3,984	Distress
2022	-0.141	-0.589	0.697	0.000	0.337	1,644	Distress
2023	-0.076	-0.509	0.103	0.051	0.437	0.002	Distress
2024	-0.094	-0.529	0.060	0.049	0.516	-0.108	Distress

Source: Processed data (2025)

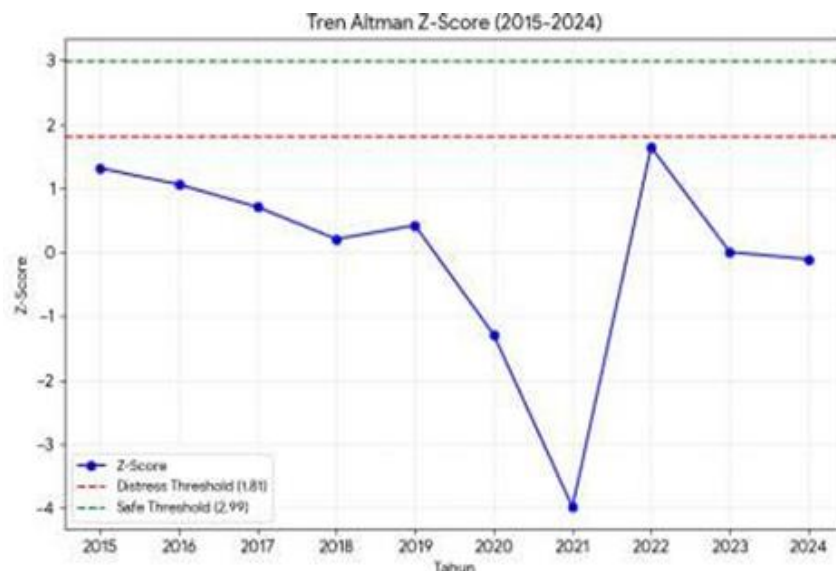


Figure 2. Results of the Initial Version of the Altman Z Score Calculation (1968)

Based on the Altman Z-Score calculation for PT Garuda Indonesia (Persero) Tbk during the 2015–2024 period, the company's Z-Score consistently falls within the distress category. From 2015–2019, the Z-Score ranged from 0.207 to 1.316, indicating the company's financial condition was below the safe limit, although it still exhibited relatively moderate

fluctuations. The highest Z-Score during this period occurred in 2015 at 1.316, while the lowest value before the pandemic occurred in 2018 at 0.207.

Entering 2020 and 2021, the Z-Score experienced a very significant decline, reaching -1.291 and -3.984, respectively. This sharp decline reflects severe financial pressure, influenced by weakening operational performance and profitability, in line with the impact of the COVID-19 pandemic on the aviation industry. During this period, all ratio components (X1 to X5) showed deteriorating performance, particularly the profitability and liquidity ratios.

In the post-restructuring period, 2022–2024, the Z-Score showed improvement compared to the crisis period, but still fell short of the distress category. In 2022, the Z-Score recorded 1.644, the highest during the post-pandemic observation period, but still below the threshold for a healthy company. In 2023 and 2024, the Z-Score decreased again to 0.002 and -0.108, respectively, indicating that despite performance recovery efforts, the company's overall financial condition still faces the risk of financial distress.

Overall, these results indicate that during the ten years of observation, PT Garuda Indonesia (Persero) Tbk has not shown a stable and healthy financial condition based on the Altman Z-Score model, so that the company is still at risk of bankruptcy and requires financial management and sustainable recovery strategies.

Research Discussion

As a State-Owned Enterprise (BUMN), PT Garuda Indonesia (Persero) Tbk has distinct characteristics compared to purely private companies, primarily due to the government's involvement and responsibility in maintaining business continuity. Therefore, the research findings, which indicate a state of distress during the 2015–2024 period, have not only managerial implications but also public policy implications.

First, the prolonged financial distress demonstrates the need for the government, through the Ministry of State-Owned Enterprises, to strengthen its oversight and governance of SOEs. Tighter oversight of financing structures, risk management, and expansion strategies is necessary to prevent excessive debt accumulation and inefficient investment decisions.

Second, the restructuring policies implemented, including debt restructuring and operational efficiency, need to be accompanied by good corporate governance reforms. The government, as the majority shareholder, needs to ensure transparent financial reporting, professional management, and the implementation of accountability principles to ensure the recovery process is not temporary.

Third, in the context of a strategic industry like aviation, the government needs to consider industry ecosystem policies, not just the rescue of a single entity. Support for the national aviation industry through tariff regulations, tax incentives, aviation fuel policies, and pioneering route arrangements will have a direct impact on Garuda's operational performance. In other words, the company's financial stability is closely linked to the macro and sectoral policies implemented by the government.

Fourth, the results of this study also have implications for state capital participation (PMN) policy. PMN should not only serve as a short-term liquidity support but should also be accompanied by measurable performance targets based on financial ratios and business sustainability indicators. Evaluations based on bankruptcy prediction models such as the Altman Z-Score can be used as a tool for periodically monitoring the effectiveness of this policy.

Fifth, more broadly, these findings indicate the importance of structural reform of SOEs to ensure they are not only oriented toward public service functions but also achieve competitiveness and financial sustainability. Without fundamental improvements, government

intervention risks creating moral hazard, where companies rely on state support without undergoing comprehensive internal transformation.

Based on the Altman Z-Score analysis of PT Garuda Indonesia (Persero) Tbk for the 2015–2024 period, it can be concluded that the company was in persistent financial distress, even before the COVID-19 pandemic. Although post-crisis restructuring has shown temporary improvement, the company's financial stability has not fully recovered and remains in the risk zone.

These findings emphasize that state-owned enterprise rescue policies cannot be merely reactive or short-term, but must be directed toward comprehensive structural reform. The government, through the Ministry of State-Owned Enterprises, needs to integrate equity participation, debt restructuring, and governance strengthening policies within a measurable and sustainable business transformation framework. Performance evaluations based on objective financial indicators, including bankruptcy prediction models such as the Altman Z-Score, should serve as a regular monitoring tool to ensure the effectiveness of policy interventions.

Furthermore, a balance between public service functions and financial sustainability principles is necessary to prevent companies from becoming overly dependent on state fiscal support. Governance reform, management professionalization, and setting performance targets based on financial ratios are key prerequisites for restoring investor confidence and strengthening companies' capital structures in the long term.

Thus, the success of Garuda Indonesia's recovery is not only determined by the company's internal strategy, but also by the consistency and discipline of government policies in encouraging the transformation of SOEs into healthy, efficient, and competitive entities.

CONCLUSIONS

Based on the analysis of financial ratios that are components of the Altman Z-Score at PT Garuda Indonesia (Persero) Tbk during the period 2015–2024, it can be concluded that most of the company's financial ratios are in an unhealthy condition and reflect serious financial pressure. The X1 (Working Capital to Total Assets) and X2 (Retained Earnings to Total Assets) ratios show consistently negative values, indicating weak short-term liquidity and prolonged accumulation of losses. The X3 (EBIT to Total Assets) ratio experienced sharp fluctuations, with a significantly negative value during the crisis period and began to improve post-restructuring. The X4 (Market Value of Equity to Total Liabilities) ratio was at a very low level, even reaching zero in 2022 due to the suspension of stock trading, reflecting declining market confidence. Meanwhile, the X5 (Sales to Total Assets) ratio showed a drastic decline during the pandemic and only began to recover gradually after 2022, although it has not yet returned to pre-crisis levels.

The Altman Z-Score calculation results for PT Garuda Indonesia Tbk for the 2017–2023 period show that the company's Z-Score is generally below the safe limit, with the lowest point occurring in 2020–2021 due to the impact of the COVID-19 pandemic and increasing operational and financial pressures. The Z-Score began to show improvement in 2022–2023, in line with the implementation of restructuring and operational performance recovery, but this improvement remains limited.

Based on the Altman Z-Score criteria, it can be concluded that PT Garuda Indonesia Tbk is in the risk category of bankruptcy (distress zone) during the period 2015–2024, especially in the period 2020–2022. Although there are early indications of recovery in 2023, the company's financial condition does not fully demonstrate the characteristics of a healthy company. Therefore, PT Garuda Indonesia (Persero) Tbk still requires continuous strengthening in the aspects of liquidity, profitability, and capital structure to escape the risk of bankruptcy and achieve business sustainability (going concern) in the long term.

The management of PT Garuda Indonesia Tbk is advised to strengthen its liquidity and capital structure, particularly through improvements in working capital and retained earnings, given that the X1 and X2 ratios remained negative throughout the study period. This strengthening effort can be achieved through controlling short-term liabilities, optimizing current assets, and implementing operational policies aimed at increasing sustainable profitability.

Management needs to improve operational efficiency and asset utilization, as reflected in the X3 and X5 ratios, which, although improving post-restructuring, still exhibit fluctuations. A turnaround strategy focused on route optimization, cost efficiency, and increased operating income is expected to accelerate financial performance recovery and improve the Altman Z-Score in the future. For investors and stakeholders, the results of this study can be used as a consideration in making investment decisions, particularly in assessing the bankruptcy risk of PT Garuda Indonesia Tbk. Despite early indications of recovery, investors are advised to consider the development of post-restructuring financial performance, the stability of operating profit, and the sustainability of policy support for the company before making long-term investment decisions. Future research is recommended to combine the Altman Z-Score method with other bankruptcy prediction models, such as Springate, Zmijewski, or Grover, to obtain more comprehensive and robust analysis results. Furthermore, future researchers can extend the observation period, particularly during the post-recovery phase, to evaluate the long-term effectiveness of restructuring strategies. Future research is also recommended to include non-financial variables, such as government policies, aviation industry conditions, and macroeconomic factors, to provide a more comprehensive picture of the bankruptcy risk and business sustainability of PT Garuda Indonesia Tbk.

REFERENCES

- Abadi, A., & Misidawati, D. (2023). Financial statement analysis and corporate bankruptcy prediction. Deepublish.
- Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *Journal of Finance*, 23(4), 589–609.
- Altman, E. I., Hotchkiss, E., & Wang, W. (2023). Corporate financial distress, restructuring, and bankruptcy (4th ed.). Wiley.
- Altman, E. I., Iwanicz-Drozowska, M., Laitinen, E. K., & Suvas, A. (2017). Financial distress prediction in an international context: A review and empirical analysis of Altman's Z-Score model. *Journal of International Financial Management & Accounting*, 28(2), 131–171.
- Andika, F. (2024). Bankruptcy prediction analysis using the Altman Z-Score model in transportation sector companies. *Indonesian Journal of Management and Business*, 10(1), 45–58.
- Beaver, W. H. (1966). Financial ratios as predictors of failure. *Journal of Accounting Research*, 4, 71–111.
- Cındık, Z., & Armutlulu, İ. H. (2021). Revisiting bankruptcy prediction models: Evidence from emerging markets. *International Journal of Financial Studies*, 9(3), 1–20.
- Dewi, A. (2020). Bankruptcy prediction analysis using the Altman Z-Score model in transportation companies in Indonesia. *Journal of Management and Accounting*, 7(2), 112–123.
- Hanafi, M. M., & Halim, A. (2018). Financial statement analysis (6th ed.). UPP STIM YKPN.
- Harahap, S. S. (2015). Critical analysis of financial statements (11th ed.). Rajawali Pers.
- Indonesia Stock Exchange. (2024). Issuer financial and annual reports. <https://www.idx.co.id>
- Kasmir. (2019). Financial statement analysis. PT RajaGrafindo Persada.

- Munafi'ah, S., Wulandari, T., & Prasetyo, B. (2021). Financial reports: Concepts, presentation, and analysis. CV Budi Utama.
- Ohlson, J. A. (1980). Financial ratios and the probabilistic prediction of bankruptcy. *Journal of Accounting Research*, 18(1), 109–131.
- Platt, H. D., & Platt, M. B. (2002). Predicting corporate financial distress: Reflections on choice-based sample bias. *Journal of Economics and Finance*, 26(2), 184–199.
- PT Garuda Indonesia (Persero) Tbk. (2024). Annual report of PT Garuda Indonesia (Persero) Tbk 2015–2024. PT Garuda Indonesia (Persero) Tbk.
- Saputra, R. (2021). Predicting the potential bankruptcy of PT Garuda Indonesia Tbk using the Altman Z-Score. *Scientific Journal of Accounting and Business*, 6(1), 45–56.
- Setiawan, H., & Amanah, N. (2018). Bankruptcy potential analysis of mining sector companies on the IDX using the Altman Z-Score model. *Multiparadigma Accounting Journal*, 9(3), 467–479.
- Springate, G. L. V. (1978). Predicting the possibility of failure in a Canadian firm using financial ratio analysis [Unpublished MBA research project]. Simon Fraser University.
- Weston, J. F., & Copeland, T. E. (2010). *Financial management* (9th ed.). Erlangga.
- Wruck, K. H. (1990). Financial distress, reorganization, and organizational efficiency. *Journal of Financial Economics*, 27(2), 419–444.
- Zmijewski, M. E. (1984). Methodological issues related to the estimation of financial distress prediction models. *Journal of Accounting Research*, 22, 59–82.