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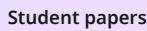
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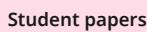
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Risk Capacity Calculation of Insurance Company Using Altman Z-Score Approach: Case Study of PT Jasa Raharja

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A R T I C L E   I N F O

A B S T R A C T

State-owned social insurance company PT Jasa Raharja plays a strategic role in financial stability through risk management. This study assesses its financial risk capacity from 2020 to 2024 using the Modified Altman Z-Score for Emerging Markets. Results show consistent placement in the Safe Zone, with Z-Scores ranging from 3.88 (2020) to 3.20 (2024), indicating very low bankruptcy risk. However, risk capacity in Rupiah declined significantly from IDR 9.53 trillion to IDR 6.28 trillion due to rising liabilities, especially technical reserves. This signals a narrowing financial safety margin, requiring enhanced asset efficiency and liability control to maintain long-term solvency.

A B S T R A K

PT Jasa Raharja sebagai perusahaan asuransi sosial milik negara memiliki peran strategis dalam menjaga stabilitas keuangan melalui pengelolaan risiko. Penelitian ini mengukur kapasitas risiko keuangan periode 2020–2024 menggunakan Modified Altman Z-Score for Emerging Markets. Hasil menunjukkan perusahaan konsisten berada di Zona Aman dengan Z-Score 3,88 (2020) hingga 3,20 (2024), menandakan risiko kebangkrutan sangat rendah. Namun, kapasitas risiko dalam Rupiah menurun dari Rp9,53 triliun menjadi Rp6,28 triliun akibat peningkatan liabilitas, terutama cadangan teknis. Hal ini mengindikasikan penyusutan margin keamanan finansial, sehingga diperlukan penguatan efisiensi aset dan pengendalian liabilitas untuk menjaga solvabilitas jangka panjang.

Introduction

In today's business landscape, marked by uncertainty, digital transformation, and regulatory pressures, a company's ability to manage risk is a key determinant of sustainability and competitiveness. One fundamental aspect of corporate risk management is risk capacity the maximum level of risk a company can bear without threatening its operational continuity. This concept reflects an organization's financial and structural resilience in the face of potential losses arising from market volatility, income fluctuations, or operational disruptions.

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In the financial services sector, including state-owned insurance companies such as PT Jasa Raharja, risk management is not merely a governance requirement but an integral part of sustainable business strategy. Insurance companies bear third-party risks and operate based on public trust, making even minor financial failures potentially disruptive to systemic stability. Therefore, accurately measuring risk capacity is critical as a tool to safeguard the company's financial health.

According to ISO 31000:2018 on Risk Management Guidelines, risk capacity refers to the maximum level of risk an organization can accept before its financial resources become insufficient to absorb the resulting negative impacts. Assessing risk capacity requires consideration of risk appetite, risk tolerance, and the organization's risk profile. In a corporate context, it is typically measured using quantitative approaches based on financial indicators reflecting solvency, liquidity, and profitability (Miller & Bromiley, 2022). However, in Indonesia, empirical academic studies on risk capacity measurement remain limited, particularly in the non-manufacturing service sector such as insurance. Most risk management research has focused on risk appetite frameworks, enterprise risk management maturity, or financial distress analysis, without explicitly linking them to the concept of risk capacity. Thus, a method that can translate risk capacity into a measurable and time-comparable quantitative indicator is needed.

One such model is the Altman Z-Score, a statistical formula developed by Edward I. Altman (1968) to assess corporate bankruptcy probability based on financial ratios. It combines five key ratios: working capital to total assets, retained earnings to total assets, EBIT to total assets, market value of equity to total liabilities, and sales to total assets, generating a composite Z-Score. This score classifies firms into three zones: Safe Zone ($Z > 2.99$), Grey Zone ($1.81 < Z < 2.99$), and Distress Zone ($Z < 1.81$). Although originally designed for U.S. manufacturing firms, contemporary studies suggest that the Z-Score is also effective in service sectors, financial institutions, and even public entities. For example, research by Spulbar, Cinciulescu, & Ene (2025) on Bucharest Stock Exchange firms found the Z-Score to be a strong predictive tool for bankruptcy and financial failure in service and utility companies. Similarly, Braunsberger & Aschauer (2025) affirmed the model's continued relevance in the digital era.

Using the Z-Score to assess the risk capacity of service companies such as Jasa Raharja has strong theoretical foundations. The Z-Score effectively measures a firm's "distance" from potential bankruptcy, while risk capacity reflects the ability to withstand risk pressure before reaching that point. In other words, the higher the Z-Score, the greater the firm's risk capacity. This relationship positions the Z-Score as a quantitative proxy for risk capacity, making it a valuable analytical tool within the risk management performance framework.

Moreover, there is a practical urgency in applying this approach to state-owned service enterprises. Jasa Raharja, as part of Indonesia's social insurance ecosystem, holds a public mandate to provide compensation to traffic accident victims. Its business activities depend heavily on premium liquidity and short-term investments, both of which are highly sensitive to economic fluctuations and government fiscal policy. Therefore, a reliable risk capacity measurement is essential to ensure the company can fulfill claims obligations without compromising long-term stability.

In corporate risk management literature, risk capacity is often measured using solvency indicators or capital adequacy ratios from a regulatory standpoint. However, such approaches may not fully reflect the company's real ability to withstand market pressures. In contrast, the Altman Z-Score provides a holistic view by simultaneously considering dimensions of profitability, operational efficiency, capital structure, and asset productivity. As such, it can serve as an early warning system for risk management.

A prior study by Harahap et al. (2023) demonstrated that applying the Z-Score to Islamic financial institutions in Indonesia could detect potential performance deterioration two to three years before any visible distress signs emerged. Similar findings were reported by Chishti et al. (2024), who showed a significant positive relationship between Z-Score, firm value, and risk financing capacity in Pakistan's financial sector. These findings reinforce the argument that the Z-Score can be adapted across sectors, including service-based insurance companies.

Beyond methodological relevance, applying the Z-Score to Jasa Raharja also carries policy implications. As a state-owned insurer, Jasa Raharja is overseen by the Ministry of State-Owned Enterprises and the Financial Services Authority (OJK). OJK Regulation No. 17/POJK.05/2014 on Insurance Company Governance mandates integrated risk management systems aligned with financial oversight frameworks. Thus, incorporating the Z-Score into the company's risk management system can complement existing controls with a quantitative indicator that is easily interpretable by both management and regulators.

From an academic perspective, this study seeks to provide a conceptual contribution by linking two previously separate domains: corporate risk management and financial distress prediction models. This approach is based on the assumption that financial distress is the ultimate manifestation of failed risk management. Therefore, by measuring a firm's distance from distress using the Z-Score, we are effectively assessing its remaining risk capacity.

Practically, the findings of this study are expected to support Jasa Raharja's management in:
1. Calculating the company's Altman Z-Score for the 2020–2024 period.
2. Evaluating the company's risk capacity based on the Z-Score.

3. Exploring the implications of the analysis for insurance company risk management and strategy.

Literatur Review

Risk Capacity

The term *risk capacity* originates from the discipline of Enterprise Risk Management (ERM) as a key component within the risk management framework outlined in ISO 31000:2018 and the COSO ERM Framework (2017). Risk capacity is defined as the maximum level of risk that an organization can absorb without disrupting its business continuity or ability to achieve strategic objectives (COSO, 2017). In contrast to *risk appetite*, which reflects management's preference for the level of risk it is willing to accept, risk capacity is objective and depends on an organization's financial strength, capital structure, liquidity, and operational flexibility (Aven, 2016).

In the context of financial services and insurance companies, risk capacity has both financial and operational dimensions. Financial capacity is measured through indicators such as solvency, capital adequacy ratio, or liquidity coverage ratio; while operational capacity relates to the company's ability to maintain service quality and regulatory compliance under market stress (Linsmeier, 2018). According to Miller & Bromiley (2022), risk capacity measurement must consider external environmental dynamics, including changes in monetary policy, interest rate fluctuations, and systemic risks all of which can impact a firm's capital position.

In Indonesia, this concept has gained increasing relevance with the implementation of Financial Services Authority Regulation (POJK) No. 17/POJK.05/2014 on Insurance Company Governance, which emphasizes the importance of integrating risk management into business decision-making. Risk capacity is seen as the "safe boundary" within which firms can pursue expansion and diversification strategies. Therefore, objective measurement of risk capacity is essential to help management determine a realistic level of risk appetite.

Altman Z-Score Model

The Altman Z-Score model was first introduced by Edward I. Altman in 1968 through his seminal paper *"Financial Ratios, Discriminant Analysis, and the Prediction of Corporate Bankruptcy"* published in the *Journal of Finance*. The model uses multivariate discriminant analysis to combine five financial ratios into a single composite score (Z-score) designed to predict the probability of corporate bankruptcy within a two-year period.

The general formula (for publicly traded manufacturing firms) is:

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5$$

di mana:

$$X_1 = \frac{\text{Working Capital}}{\text{Total Assets}}$$

$$X_2 = \frac{\text{Retained Earnings}}{\text{Total Assets}}$$

$$X_3 = \frac{\text{EBIT}}{\text{Total Assets}}$$

$$X_4 = \frac{\text{Market Value of Equity}}{\text{Total Liabilities}}$$

$$X_5 = \frac{\text{Sales}}{\text{Total Assets}}$$

The commonly used discriminant zones in the Altman Z-Score model are:

Z > 2.99: Safe Zone

1.81 < Z < 2.99: Grey Zone

Z < 1.81: Distress Zone

Over time, Altman (1983; 1995) modified his original model to accommodate non-manufacturing firms, private companies, and entities operating in emerging markets. The updated models known as the Z′-Score (for private companies) and Z″-Score (for emerging markets) replace the market value of equity component with book value, due to data limitations in many countries.

In this study, the measurement of risk capacity for insurance companies in Indonesia employs the Modified Altman Z-Score for Emerging Markets. This model was chosen based on the unique financial structure characteristics of insurance firms in developing countries, including Indonesia, which differ significantly from

manufacturing firms in developed markets in terms of asset composition, funding structures, and premium income volatility.

Altman (1995) developed this modification to address the limitations of the classic Z-Score model, which relies on market value of equity and sales-to-total-assets ratio two variables that are less relevant for service sectors and markets with high volatility. This modified model is known as the Z″-Score (Emerging Market Model) and is formulated as follows:

$$Z = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$$

$$X_1 = \frac{\text{Working Capital}}{\text{Total Assets}}$$

$$X_2 = \frac{\text{Retained Earnings}}{\text{Total Assets}}$$

$$X_3 = \frac{\text{EBIT}}{\text{Total Assets}}$$

$$X_4 = \frac{\text{Book Value of Equity}}{\text{Total Liabilities}}$$

The commonly used discriminant zones in the modified model are as follows:
Z > 2.6: Safe Zone
1.1 < Z < 2.6: Grey Zone
Z < 1.1: Distress Zone

Relationship Between Altman Z-Score and Risk Capacity

Conceptually, the relationship between the Z-Score and risk capacity can be explained through corporate finance perspectives. The Z-Score measures the probability of financial distress, while risk capacity refers to the level of risk a firm can tolerate before entering a state of distress. Therefore, a high Z-Score reflects a large risk capacity buffer, whereas a low Z-Score indicates a shrinking risk tolerance (Sharma & Kumar, 2020).

Within the ERM framework, the Z-Score can serve as a quantitative indicator to assess risk-bearing capacity an organization's ability to absorb losses without compromising its financial stability (Khan & Ahmed, 2019). This aligns with the concept of capital buffers in the banking industry, where minimum capital levels are determined based on the firm's ability to withstand risk.

Furthermore, a study by Ansari et al. (2023) emphasizes that the Altman Z-Score can be integrated into the Risk Assessment Matrix to define threshold limits for credit and operational risks. When a firm's Z-Score approaches the lower boundary, it is considered to have reached its maximum risk capacity and must adjust its mitigation strategies accordingly.

Research Methods

Research Data

The object of this study is PT Jasa Raharja, a state-owned social insurance company engaged in third-party liability insurance for victims of traffic and public transportation accidents. The selection of Jasa Raharja as a single case study is based on the following considerations:

1. Jasa Raharja is the only national social insurance company in Indonesia with a public service function and a risk-based claims management business model, making it highly relevant for analysis within the context of risk capacity.
2. The company consistently publishes audited annual financial reports, available on its official website (www.jasaraharja.co.id).
3. Financial data is consistently available over a five-year period (2020–2024), allowing for a longitudinal analysis of trends in risk capacity.

Thus, the research sample consists of the financial data of PT Jasa Raharja (Persero) over five consecutive years (2020–2024), obtained from the company's annual reports.

Type and Source of Data

The type of data used in this study is secondary data, which has been officially published by PT Jasa Raharja. The primary data sources are the Annual Financial Reports from 2020 to 2024 issued by the company. The collected data includes key variables used in the Modified Altman Z-Score formula, namely:

Total assets;
Working capital;
Retained earnings;
Earnings before interest and taxes (EBIT);
Book value of equity;
Total liabilities.

Data Analysis Technique

The data analysis was conducted through the following systematic steps:

1. Calculation of Ratio Components
   Each financial ratio variable (X_1, X_2, X_3, X_4) was calculated using the annual financial data of PT Jasa Raharja from 2020 to 2024.
2. Z-Score Calculation
   The calculated ratios were applied to the Modified Altman Z-Score formula to obtain the Z-Score for each respective year.
3. Financial Zone Classification
   The resulting Z-Scores were classified based on threshold values (distress, grey, or safe zone) and used to compute the annual risk capacity in Indonesian Rupiah.
4. Trend Analysis (Time Series Analysis)
   A time series analysis of the Z-Scores and risk capacity values from 2020 to 2024 was conducted to identify trends in the increase or decrease of risk capacity.

The analysis process was performed manually and with the assistance of Microsoft Excel to ensure the accuracy of calculations and consistency across periods.

Result and Discussion

Result

Description of Financial Data Used in the Analysis

Based on the data obtained from the annual financial reports of PT Jasa Raharja (Persero) for the period 2020 to 2024, published through the company's official website and reports submitted to the Financial Services Authority (OJK), a comprehensive overview of the company's financial performance over the past five years was compiled. This data serves as the basis for calculating the Modified Altman Z-Score. A summary of the Income Statement over the five-year period is presented as follows:

Table 1. A summary of the Income Statement 2020-2024

Description	2024	2023	2022	2021	2020
REVENUES					
Net Premium Income	5,726,334	5,704,476	5,354,080	5,142,332	4,868,452
Investment Income	1,017,124	953,52	1,021,201	974,166	976,175
Net Other Income	962,6	929,631	971,164	438,469	437,88
Total Revenue	**7,706,058**	**7,587,627**	**7,346,445**	**6,554,967**	**6,282,507**
Expenses	(6,166,734)	(6,040,301)	(5,544,708)	(4,576,532)	(4,430,589)
Profit Before Income Tax	**1,539,324**	**1,547,326**	**1,801,737**	**1,978,435**	**1,851,918**
Income Tax Expense	-205,863	-250,125	-285,141	-348,2	-343,021
Net Profit for the Year	**1,333,461**	**1,297,201**	**1,516,596**	**1,630,235**	**1,508,897**

Other Comprehensive Income	-274,114	-104,613	-119,772	-130,758	-65,742
Total Comprehensive Income for the Year	**1,059,347**	**1,192,588**	**1,396,824**	**1,499,477**	**1,443,155**

In general, Jasa Raharja's financial performance shows a stable trend with relatively increasing revenue each year following the COVID-19 pandemic. The main source of income is net premium revenue, which rose from Rp 4.866 trillion in 2020 to Rp 5.728 trillion in 2024, accompanied by a significant contribution from investment income, which exceeded Rp 1 trillion in 2024. This performance reflects effective investment portfolio management, serving as one of the pillars of the company's financial resilience.

The financial position data (Balance Sheet) includes details of the company's Assets, Liabilities, and Equity, providing an in-depth view of its capital structure and financial health over time. A summary of the balance sheet over the past five years is presented as follows:

In Million Rupiah

Description	2024	2023	2022	2021	2020
ASSETS					
Cash and Bank	Rp 495,328	Rp 647.039	Rp 450.326	Rp 255.249	Rp 290.633
Investments	Rp 14,650,285	Rp 14,253,571	Rp 15,565,760	Rp 14.312.132	Rp 14.174.138
Current Assets	Rp 1,845.611	Rp 2.601.879	Rp 2.198.128	Rp 1.525.257	Rp 1.899.451
Fixed Assets	Rp 862.468	Rp 868.890	Rp 789.086	Rp 795.074	Rp 820.414
Other Assets	Rp 520.518	Rp 482.850	Rp 473.922	Rp 404.849	Rp 425.564
Total Assets	**Rp 18.374.228**	**Rp 18.207.187**	**Rp 19.026.896**	**Rp 17.293.181**	**Rp 17.309.567**
LIABILITIES					
Claims Payable	Rp 9.911	Rp 33.770	Rp 11.796	Rp 9.798	Rp 22.384
Reinsurance Payable	Rp 203.933	Rp 166.703	Rp 150.741	Rp 105.661	Rp 84.466
Taxes Payable	Rp 148.889	Rp 121.943	Rp 174.029	Rp 173.656	Rp 112.386
Technical Reserves	Rp 4.590.629	Rp 4.528.774	Rp 4.434.077	Rp 971.535	Rp 4.411.073
Other Liabilities	Rp 1.692.490	Rp 1.602.686	Rp 2.426.156	Rp 4.234.071	Rp 1.105.694
Total Liabilities	**Rp 6.645.450**	**Rp 6.453.876**	**Rp 7.196.799**	**Rp 5.494.721**	**Rp 5.746.803**
EQUITY					
Owners of Parent Entity	Rp 11.636.429	Rp 11.667.898	Rp 11.752.308	Rp 11.724.593	Rp 11.492.988
Non-Controlling Interest	Rp 92.547	Rp 85.413	Rp 77.789	Rp 73.867	Rp 69.776
Total Equity	**Rp 11.728.976**	**Rp 11.753.311**	**Rp 11.830.097**	**Rp 11.798.460**	**Rp 11.562.764**
Total Liabilities and Equity	**Rp 18.374.228**	**Rp 18.207.187**	**Rp 19.026.896**	**Rp 17.293.181**	**Rp 17.309.567**

Figure 1. A summary of the balance sheet 2020-2024

Total assets peaked in 2022, reaching Rp 19.02 trillion, before declining and stagnating in the following years to Rp 18.37 trillion in 2024, primarily due to fluctuations in the investment portfolio. On the liabilities side, there was a significant upward trend, rising from Rp 5.74 trillion in 2020 to Rp 6.64 trillion in 2024, with the most notable increase occurring in technical reserves, indicating a rising potential for future obligations.

Meanwhile, total equity remained relatively stable, though it declined slightly from its peak of Rp 11.83 trillion in 2022 to Rp 11.72 trillion in 2024. Collectively, these changes indicate a shift in the company's capital structure, where liabilities have grown at a faster rate than assets and equity over the observed period.

Results of Financial Ratio Calculations for the Modified Altman Z-Score

The following are the calculated values of each financial component used in the Z-Score computation:

Table 2. Key Financial Items

Item	2024	2023	2022	2021	2020
Net Working Capital	1.978.806	2.926.502	2.311.888	1.491.391	1.960.848
Retained Earning	207.552	242.655	260.838	241.424	1.503.626
EBIT	1.539.324	1.547.326	1.801.737	1.978.435	1.851.918
Total Aset	18.374.228	18.207.187	19.026.896	17.293.181	17.309.567
BV of Equity	12.003.090	11.857.924	11.949.869	11.929.218	11.628.506
Total Liabilitas	**6.645.252**	**6.453.876**	**7.196.799**	**5.494.721**	**5.746.803**

The results of the Modified Altman Z-Score component ratio calculations over the five-year period (2020–2024) are presented in the table below, consisting of four variables: X1 (Net Working Capital/Total Assets), X2 (Retained Earnings/Total Assets), X3 (EBIT/Total Assets), and X4 (Book Value of Equity/Total Liabilities).

Table 3. Financial Ratios (Variables)

Year	X1	X2	X3	X4
2024	0.11	0.01	0.08	1.81
2023	0.16	0.01	0.08	1.85
2022	0.12	0.01	0.09	1.66
2021	0.09	0.01	0.11	2.17
2020	0.11	0.09	0.11	2.03

X1 Ratio (Net Working Capital / Total Assets) shows a fluctuating trend during the analysis period, indicating changes in the company's short-term liquidity. The highest figure was recorded in 2023 at 0.16, indicating that the company's ability to finance current assets with working capital was at its best that year. However, this ratio experienced a significant decline to 0.11 in 2024. Although the trend fluctuated between 0.09 and 0.16, the value generally remained at a positive level, indicating that the company consistently maintained adequate net working capital to support its operations.

X2 Ratio (Retained Earnings / Total Assets) shows a very high level of stability throughout the 2021 to 2024 period, with values consistently at 0.01. Only in 2020 did this ratio reach 0.09. The extremely low and stable value of 0.01 over the last four years indicates that the contribution of retained earnings (accumulated profit) to the company's total assets is relatively small and has not experienced significant growth. This may indicate that most of the company's profits are distributed as dividends or that reinvestment has not yet been significantly reflected in this ratio.

X3 Ratio (EBIT / Total Assets) measures the efficiency of assets in generating operating income (EBIT). This ratio remained relatively stable, ranging between 0.08 and 0.11. The highest figures were recorded in 2021 and 2020 (each at 0.11) and the lowest in 2024 and 2023 (each at 0.08). The decline from 0.11 to 0.08 in the last two years indicates a decrease in operational efficiency or an increase in operating expenses relative to total assets.

X4 Ratio (Book Value of Equity / Total Liabilities) is a key indicator of solvency and is sensitive to investor perception. The highest value was achieved in 2021 at 2.17, followed by 2020 at 2.03, indicating that the book value of equity at that time exceeded total liabilities by more than twice, reflecting a strong level of solvency. However, a continuous decline occurred after 2021, reaching 1.66 in 2022, rising slightly to 1.85 in 2023, then dropping to 1.81 in 2024. This downward trend reflects a relative increase in total liabilities or a decline in the market's valuation of equity, which may signal an increased risk of default (solvency) from a market perspective.

Results of Modified Altman Z-Score Calculation

The results of the Modified Altman Z-Score (Z-Score) calculation show a fluctuating trend but consistently remain within the Safe Zone, defined by Z-Scores above 2.60. This indicates that during the period from 2020 to 2024, the company was in a financially sound and relatively stable condition, with a very low risk of bankruptcy.

Table 4. Altman Z-Score Calculation Components

Year	X1 (6.56)	X2 (3.36)	X3 (6.72)	X4 (1.05)	Z Score
2024	0.71	0.04	0.56	1.90	3.20
2023	1.05	0.04	0.57	1.93	3.60
2022	0.80	0.05	0.64	1.74	3.22
2021	0.57	0.05	0.77	2.28	3.66
2020	0.74	0.29	0.72	2.12	3.88

Overall, although the company consistently does not exhibit any serious bankruptcy risk, the declining trend in the Z-Score from its peak in 2020 to its lowest value in 2024 indicates a reduction in the financial safety margin, which requires further attention from management.

To measure the company's risk capacity (i.e., the threshold of financial performance decline before entering a distress condition), the analysis was extended using the Solver tool in Microsoft Excel. The objective was to calculate the optimal Z-Score value at the distress threshold as defined by the Modified Altman Z-Score, which is Z < 1.10.

By setting the final Z-Score at 1.10 (the lower bound of the Grey Zone, or the threshold for entering the Distress Zone) as the target, and allowing each financial component forming ratios X1 to X4 to adjust accordingly to meet the target, the optimal component ratios under distress conditions were obtained as follows:

Table 5. Altman Z-Score Calculation

Year	X1 (6.56)	X2 (3.36)	X3 (6.72)	X4 (1.05)	Z Score
2024	0.44	0.04	0.55	0.07	1.10
2023	0.46	0.04	0.55	0.04	1.10
2022	0.41	0.05	0.61	0.03	1.10
2021	0.40	0.05	0.71	-0.06	1.10
2020	0.38	0.29	0.64	-0.21	1.10

These results represent the critical threshold for each component ratio. The values indicate how far each ratio can decline (or increase, depending on the case) from its current level before the company would theoretically enter the high-risk (distress) category.

In the context of the Altman Z-Score, risk capacity is calculated by projecting the movement in Rupiah value for each financial component that forms the ratios: X1 (Working Capital), X2 (Retained Earnings), X3 (EBIT), and X4 (Book Value of Equity / Total Liabilities). The difference between the current financial component values (healthy condition) and the values at the distress threshold is then summed to obtain the aggregate value in Rupiah.

The total Rupiah value derived from the sum of the differences in each financial component reflects the company's Risk Capacity, representing the maximum financial loss that can still be tolerated without falling into financial distress.

Table 6. Z-Score Threshold & Risk Capacity Analysis

Year	Safe Zone	Grey Zone	Distress Zone	Z Score	Risk Capacity (Million)
2020	Z > 2.6	1.1 < Z < 2.6	Z < 1.1	3.88	9,537,661
2021	Z > 2.6	1.1 < Z < 2.6	Z < 1.1	3.66	8,212,332
2022	Z > 2.6	1.1 < Z < 2.6	Z < 1.1	3.22	6,452,307

The Risk Capacity values listed in the final column represent the monetary measure of the financial cushion. These figures indicate the maximum allowable loss the company can incur in a given year before its Z-Score falls to the distress threshold (Z < 1.1). A high Risk Capacity confirms a strong solvency position. However, management must continue to monitor the downward trend in the Z-Score over time, as a declining risk capacity although still within the Safe Zone signals a narrowing financial safety margin.

Interpretation of PT Jasa Raharja's Risk Capacity Based on Z-Score

The relationship between the Z-Score and Risk Capacity is direct: the higher the Z-Score, the greater the company's Risk Capacity. The calculated Z-Scores for PT Jasa Raharja, which consistently remain within the Safe Zone ranging from 3.20 to 3.88 during the 2020–2024 period, definitively indicate that the company possesses a substantial and strong risk capacity.

This implies that the company has a significant financial cushion, measured in Rupiah, to absorb operational losses or unexpected shocks resulting from market fluctuations or claims, without causing its Z-Score to fall below the distress threshold.
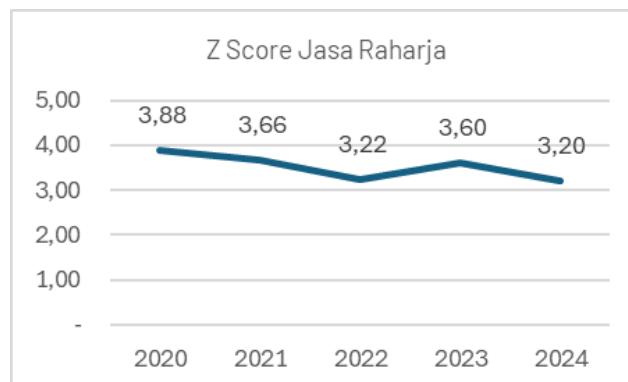

Figure 2. Z Score Jasa Raharja

Nevertheless, the declining trend in the Z-Score from its peak of 3.88 in 2020 to 3.20 in 2024 signals a reduction in Risk Capacity over the period. This decrease indicates that the gap between the company's current financial condition and the distress threshold is narrowing. In other words, the Risk Capacity in Rupiah, as calculated in 2024, is lower than in 2020.

This decline should be a key concern for risk management, because even though the company remains within the Safe Zone, a shrinking Risk Capacity limits the firm's ability to absorb large future losses.
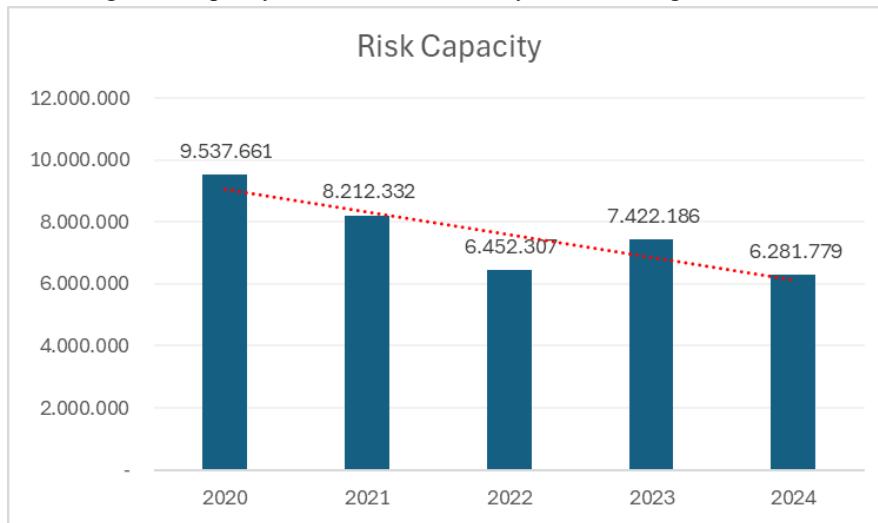

Figure 3. Risk Capacity 2020-2024

The decline in Risk Capacity by approximately Rp 3.25 trillion, from Rp 9.54 trillion in 2020 to Rp 6.28 trillion in 2024, is a critical indicator. This confirms that although the company remains within the Safe Zone (Z-Score > 2.60), its resilience to potential operational and market losses has significantly weakened.

The reduction in Risk Capacity reflects a negative shift in the component ratios forming the Z-Score, such as a relative increase in liabilities or a decline in asset efficiency (EBIT). If this trend continues, it could increase the company's sensitivity to future economic shocks.

Conclusion and Suggestion

Conclusion

Based on the financial data analysis over the five-year period from 2020 to 2024 using the Modified Altman Z-Score method and Risk Capacity measurement, several key conclusions can be drawn regarding the company's financial health and risk resilience:

Overall Financial Health

The company demonstrates strong financial health, as the Z-Score consistently remains in the Safe Zone, ranging from 3.20 to 3.88. This indicates a high level of solvency and a very low risk of bankruptcy throughout the 2020–2024 period. However, there is a noticeable declining trend in the Z-Score from its peak of 3.88 (2020) to 3.20 (2024), suggesting a narrowing financial safety margin.

Risk Capacity (in Rupiah)

The measurement confirms that the company has a substantial financial cushion to absorb losses. However, consistent with the Z-Score trend, Risk Capacity also shows a significant and sustained decline, from its highest value of Rp 9,537,661 million (2020) to the lowest at Rp 6,281,779 million (2024) a decrease of approximately Rp 3.25 trillion, indicating a considerable reduction in the company's ability to withstand major market or operational losses.

Changes in the Statement of Financial Position

The decline in both the Z-Score and Risk Capacity is accompanied by notable shifts in the Balance Sheet:
1. Liabilities show a significant upward trend, especially in Technical Reserves, which increases the risk of future obligations.
2. Total Assets and Equity tend to stagnate or decline from their peak in 2022.

In conclusion, while the company remains in a safe financial condition, strategic actions are needed to control liability growth and improve asset efficiency (operational profitability) to reverse the declining trend in the Z-Score and Risk Capacity before the financial safety margin reaches a critical point.

Suggestion

Strengthening Liability Management, Especially Technical Reserves

Management should regularly evaluate the reserve-setting methods to ensure they remain conservative yet efficient. This includes improving actuarial data quality, refining claims projection models, and controlling future obligations so they do not outpace the growth of assets and equity.

Optimizing Asset Structure and Increasing Asset Efficiency

The company is advised to enhance the quality of its asset portfolio through productive, secure, and liquid investments, and improve operational efficiency so that existing assets contribute optimally to profitability and equity growth.

Capital Strengthening and Additional Risk Buffers

To maintain and enhance risk capacity, the company may consider capital strengthening strategies, such as increasing retained earnings, adopting a more selective dividend policy, and developing sustainable revenue sources to widen the financial safety margin.

Integrating Z-Score Results into the Company's Risk Management Framework

The Z-Score and Risk Capacity calculations should not be used solely for ex-post evaluation, but should be integrated into business planning, risk appetite setting, and stress testing processes providing management with quantitative tools for making strategic decisions related to risk and solvency.

Suggestions for Future Research:

1. Compare Jasa Raharja's Risk Capacity with other insurance companies (both social and commercial) for benchmarking purposes.
2. Combine the Modified Altman Z-Score with other indicators, such as Risk-Based Capital (RBC) or Enterprise Risk Management (ERM) approaches, to obtain a more comprehensive view of the company's risk profile and financial resilience.

References

Altman, E. I. (1968). Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy. The Journal of Finance, 23(4), 589–609. https://doi.org/10.1111/j.1540-6261.1968.tb00843.x

Altman, E. I. (1995). The Revised Altman Z'-Score Model for Emerging Markets. New York University, Stern School of Business.

Altman, E. I., & Hotchkiss, E. (2020). Corporate Financial Distress, Restructuring, and Bankruptcy: Analyze Leveraged Finance and Distress Debt (4th ed.). Hoboken, NJ: John Wiley & Sons.

Altman, E. I., Iwanicz-Drozdowska, 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. https://doi.org/10.1111/jifm.12053

Brealey, R. A., Myers, S. C., & Allen, F. (2020). Principles of Corporate Finance (13th ed.). New York, NY: McGraw-Hill Education.

Brigham, E. F., & Ehrhardt, M. C. (2022). Financial Management: Theory & Practice (17th ed.). Cengage Learning.

Ghozali, I. (2021). Aplikasi Analisis Multivariate dengan Program IBM SPSS 26 (10th ed.). Semarang: Badan Penerbit Universitas Diponegoro.

Harahap, L. R., Rachman, T., & Siregar, D. A. (2023). Penggunaan Metode Altman Z-Score dalam Analisis Risiko Keuangan pada PT BTPN Syariah Tbk. Jurnal Ilmu Manajemen dan Bisnis, 10(1), 34–46.

Hidayat, M., & Fauzan, M. (2023). Analisis Prediksi Financial Distress Menggunakan Metode Altman Z-Score pada Perusahaan Asuransi di Indonesia. Jurnal Riset Akuntansi dan Keuangan Indonesia (JRAK), 8(2), 101–112.

IFRS Foundation. (2023). IFRS 15: Revenue from Contracts with Customers. London: IFRS Foundation.

Ikatan Akuntan Indonesia (IAI). (2020). Pernyataan Standar Akuntansi Keuangan (PSAK) No. 72: Pendapatan dari Kontrak dengan Pelanggan. Jakarta: Dewan Standar Akuntansi Keuangan.

Kasmir. (2022). Analisis Laporan Keuangan (Revisi ke-12). Jakarta: PT RajaGrafindo Persada.

Mulyani, A., & Ramadhani, F. (2022). Analisis Prediksi Financial Distress pada Perusahaan Asuransi di Indonesia Menggunakan Model Altman Z-Score. Jurnal Akuntansi dan Manajemen, 19(3), 276–288.

PT Jasa Raharja (Persero). (2020–2024). Laporan Keuangan Tahunan PT Jasa Raharja (Persero). Jakarta: PT Jasa Raharja. Diakses melalui https://www.jasaraharja.co.id

Otoritas Jasa Keuangan (OJK). (2024). Laporan Perkembangan Industri Asuransi Indonesia Tahun 2024. Jakarta: Otoritas Jasa Keuangan.

Spulbar, C., Cinciulescu, D., & Ene, C. C. (2025). Altman Z-Score Modeling and Financial Risk Analysis: Evidence from Emerging Markets. Studies in Business and Economics, 20(2), 314–340. https://doi.org/10.2478/sbe-2025-0025

Subramanyam, K. R., & Wild, J. J. (2014). Financial Statement Analysis (11th ed.). New York, NY: McGraw-Hill Education.

Tandelilin, E. (2017). Portofolio dan Investasi: Teori dan Aplikasi (Edisi Revisi). Yogyakarta: Kanisius.

Weston, J. F., & Brigham, E. F. (2020). Essentials of Managerial Finance (15th ed.). New York: Holt, Rinehart and Winston.