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# Bankruptcy Prediction Analysis of PT Bukalapak.com Tbk Using Altman Z-Score and Springate S-Score Models for the 2022-2024 Period

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## Abstract

The rapid development of the digital technology industry in Indonesia has made e-commerce companies like PT Bukalapak Tbk face complex financial dynamics, including the potential risk of bankruptcy. This study aims to analyze and compare the potential bankruptcy of PT Bukalapak Tbk in the 2022–2024 period using two prediction models: the Altman Z-Score and the Springate S-Score. This study uses a quantitative approach with a descriptive-comparative method. The data used are secondary data in the form of PT Bukalapak Tbk's annual financial reports published on the Indonesia Stock Exchange and the company's official website. The analysis was conducted by calculating key financial ratios, which were then entered into the Altman and Springate formulas to obtain prediction scores. The calculation results show differences in trends between the two models. The Altman Z-Score model indicates that the company is in the gray zone to distress, indicating a potential risk of bankruptcy if financial structure improvements are not made. Meanwhile, the Springate S-Score model provides relatively more optimistic results with a tendency to be above the healthy threshold, although it still shows fluctuations in financial performance during the study period. These findings indicate that the sensitivity and focus of the variables used by each model influence the differences in prediction results. This research confirms that applying bankruptcy prediction models to digital technology companies requires considering the characteristics of industries with high operational costs but significant growth potential. The research findings are expected to contribute to company management, investors, and stakeholders in making strategic decisions based on financial risk analysis.

*Keywords:* Bankruptcy, Altman Z-Score, Springate S-Score, Financial Analysis, PT Bukalapak Tbk

## 1. Introduction

The development of the digital industry in Indonesia over the past decade has shown rapid growth, particularly through the emergence of e-commerce-based technology companies. One prominent company is PT Bukalapak Tbk, a pioneering local marketplace with a broad user base. However, increasingly fierce competition, coupled with global macroeconomic pressures and fluctuating profitability, has made the financial risks of technology companies, including Bukalapak, a significant concern. Bankruptcies of digital companies are not uncommon due to weak financial structures and failure to maintain sustainable business growth (Daubie, 2002). Therefore, bankruptcy prediction analysis is crucial for investors, creditors, and regulators to assess a company's medium- to long-term stability.

Bankruptcy prediction has long been an important topic in financial literature due to its ability to provide early warning of potential company failure. The Altman Z-Score and the Springate S-Score are two classic models widely used to measure an entity's financial health. The Altman Z-Score was first introduced in 1968 and has proven effective in identifying high-risk companies, particularly in the manufacturing sector, although its use has now expanded to various sectors (Altman, Iwanicz-Drozdowska, Laitinen, & Suvas, 2017). Meanwhile, the Springate S-Score, developed in 1978, also uses discriminant analysis with a focus on simpler financial ratios, making it easier to apply to companies with limited data (Wulandari & Hidayat, 2021). Comparing these two models is important to obtain a more comprehensive picture, as there are differences in sensitivity in detecting bankruptcy risk across industries (Susanti & Sutanto, 2020).

Several previous studies have demonstrated the effectiveness of the Z-Score and S-Score models in the context of Indonesian companies. For example, Prasetiyani (2020) found that the Altman Z-Score was able to predict the potential bankruptcy of retail companies with a high degree of accuracy, while Springate tended to produce lower results.

A more conservative approach. Another study by Octaviani (2021), which examined manufacturing companies on the Indonesia Stock Exchange, showed that both models provided consistent results in identifying companies with financial problems, but the Altman Z-Score was more sensitive to changes in liquidity. Meanwhile, a study by Aprilia

(2022), which examined technology startups in Indonesia, revealed that bankruptcy prediction models are important as an early warning system, as digital market uncertainty causes high volatility in companies' cash flows.

In the context of Bukalapak, the issue of business sustainability has become increasingly relevant following its 2021 IPO, which was initially greeted with enthusiasm but was later followed by significant stock price fluctuations and pressure on financial performance (Pangaribuan, 2025). This raises questions about the company's financial resilience to the dynamics of the digital industry. Recent research by Syamni (2018) confirms that the use of Z-Score and S-Score models can help investors understand the potential long-term risks of technology companies still facing profitability uncertainty. Therefore, this study has not only academic value but also practical relevance for investment decision-making.

Based on this description, this study aims to analyze the potential bankruptcy of PT Bukalapak Tbk for the 2022–2024 period using the Altman Z-Score and Springate S-Score models. By comparing the two models, this study is expected to provide an empirical contribution to the bankruptcy prediction literature in the technology sector and offer practical recommendations for relevant stakeholders.

**Tabel 1:** Reserch Gap

| Author | Variable | Method | Using | |
|---|---|---|---|---|
| | | | Z-Score Altman | Springate |
| Nur Aini, et al., 2022. | Prediction Analysis Bankruptcy Using Altman Method Z-Score | Z-Score Altman | Yes | - |
| Utami, T. W. and Hardana, A. 2022. | Prediction Analysis Bankruptcy by using Altman Z-Score Method at PT. Indofood Sukses Prosperous, Tbk | Z-Score Altman | Yes | - |
| Putri, D. R. O., Mursalini, W. I., and Nasrah, R. 2023. | Prediction Analysis Bankruptcy Using the Springate Model (S-Score) in Sub-Sector Companies Retail on the Indonesia Stock Exchange 2016-2020 | Springate | - | Yes |
| This research. | Prediction Analysis Bankruptcy of PT Bukalapak.com Tbk Using Models Altman Z-Score and Springate S-Score Period 2022-2024 | Z-Score Altman and Springate | Yes | Yes |

## 2. Literature Review

### 2.1 Bankruptcy

Bankruptcy is understood as a condition in which an entity is no longer able to meet its financial obligations, resulting in material disruption to the company's operational continuity. In accounting and finance literature, bankruptcy is often analyzed as a process that begins with a decline in profitability and liquidity indicators, leading to an inability to meet short-term and long-term obligations (Beaver, 1966; Ohlson, 1980). Modern empirical studies confirm that the causes of bankruptcy are multifactorial, involving internal weaknesses such as management and capital structure, as well as external factors such as shocks. macroeconomics, technological change, and industrial competition, so that early detection requires modeling that accommodates various financial and non-financial dimensions.

### 2.2 Bankruptcy Prediction

Bankruptcy prediction is an effort to provide early signals regarding the possibility of a company's financial failure. This prediction is important because it can assist management in developing rescue strategies and protecting the interests of investors, creditors, and other stakeholders (Karamzadeh, 2013). Bankruptcy prediction models are generally developed using financial ratios that represent aspects of profitability, liquidity, solvency, and activity (Altman, 1968; Ohlson, 1980). According to Grice and Ingram (2001), the accuracy of a prediction model is highly dependent on the

suitability of the variables to the characteristics of the industry being analyzed. In the context of emerging markets, model adjustments are crucial to make predictions more relevant to local conditions (Fasano, 2019).

### 2.3 Altman Z-Score Model

The Altman Z-Score has been one of the most influential and widely used bankruptcy prediction models since its introduction in 1968. This model combines five key financial ratios to produce a score that can be used to classify companies into three categories: healthy, bankruptcy-prone, and bankrupt (Altman, 1968). Although originally developed for manufacturing companies, subsequent research has shown that this model can be modified for various types of industries (Grice & Ingram, 2001). In Indonesia, the application of the Modified Altman Z-Score has demonstrated relevance in assessing the financial health of digital companies, including PT Bukalapak Tbk, which received a negative score and indicated potential distress (Ika, 2021).

### 2.4 Springate S-Score Model

The Springate S-Score was developed in 1978 using multivariate discriminant analysis with four financial ratio variables. This model is considered simpler than the Z-Score, but still has good accuracy in detecting potential bankruptcy (Springate, 1978). According to research by Pramesti (2023), the Springate model is effective in identifying distress risk in Indonesian digital companies, with approximately 40% of the study sample showing scores below the threshold. This aligns with the findings of Fasano (2024) who stated that the S-Score is more adaptive to companies with dynamic cost structures, such as technology-based companies.

## 3. Research Methods

### 3.1 Types and Approaches of Research

This research is quantitative with a descriptive-comparative approach. The quantitative approach was chosen because it measures and analyzes financial ratios numerically to obtain a company's bankruptcy prediction score. Meanwhile, the descriptive-comparative approach aims to describe the financial condition of PT Bukalapak Tbk and compare bankruptcy prediction results using two models, the Altman Z-Score and the Springate S-Score, for the period 2022–2024.

### 3.2 Research Objects and Subjects

The object of this research is the consolidated financial statements of PT Bukalapak Tbk published through the Indonesia Stock Exchange (IDX) and the company's official website for the periods of 2022, 2023, and 2024. The research subjects are the financial ratios needed to calculate the Altman Z-Score and Springate S-Score, including working capital, total assets, retained earnings, EBIT, equity, sales, and liabilities.

### 3.3 Data Sources

The data used is secondary data in the form of audited and officially published annual and quarterly financial statements of PT Bukalapak Tbk. Secondary data was chosen because it is objective, reliable, and publicly accessible through the official IDX website (www.idx.co.id ).

### 3.4 Data Collection Techniques

The data collection technique used documentation, namely downloading the official financial reports of PT Bukalapak Tbk for the 2022–2024 period. The data collected included balance sheets, profit and loss statements, and cash flow statements. Next, the data is sorted according to the needs of calculating financial ratios relevant to the two bankruptcy prediction models.

### 3.5 Data Analysis Techniques

Data analysis was carried out in several stages as follows:

#### 3.5.1. Altman Z-Score Model Calculation

The Altman Z-Score is a bankruptcy prediction model using a multivariate discriminant formula that combines five financial ratios. The formula used is:

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

Information:

- $X_1 = \frac{\text{Working Capital}}{\text{Total Assets}} \rightarrow$ measures liquidity relative to assets.
- $X_2 = \frac{\text{Retained Earnings}}{\text{Total Assets}} \rightarrow$ measure cumulative profitability.
- $X_3 = \frac{\text{EBIT}}{\text{Total Assets}} \rightarrow$ measures the ability to generate profit before interest Total Assets Total Assets and taxes from assets.
- $X_4 = \frac{\text{Market Value of Equity}}{\text{Book Value of Total Liabilities}} \rightarrow$ measure solvency.
- $X_5 = \frac{\text{Sales}}{\text{Total Assets}} \rightarrow$ measure the efficiency of asset use.

Interpretation of Altman scores (for non-manufacturing/emerging markets adjustment):
- $Z < 1.81$: potential bankruptcy (distress zone).
- $1.81 \leq Z \leq 2.99$: grey area.
- $Z > 2.99$: healthy (safe zone).

### 3.5.2. Springate S-Score Model Calculation

The Springate S-Score was developed through discriminant analysis using four financial ratio variables. The formula is:

$$S = 1.03X_1 + 3.07X_2 + 0.66X_3 + 0.4X_4$$

Information:
- $X_1 = \frac{\text{Working Capital}}{\text{Total Assets}} \rightarrow$ liquidity.
- $X_2 = \frac{\text{EBIT}}{\text{Total Liabilities}} \rightarrow$ profitability to debt.
- $X_3 = \frac{\text{EBT}}{\text{Current Liabilities}} \rightarrow$ ability to pay current liabilities.
- $X_4 = \frac{\text{Sales}}{\text{Total Assets}} \rightarrow$ efficiency of asset use.

Springate score interpretation:
- $S < 0.862$: The company is predicted to potentially go bankrupt.
- $S \geq 0.862$: the company is considered healthy.

### 3.5.3. Model Comparison and Interpretation

After the scores were calculated using both models, the next step was to compare the prediction results for each year (2022–2024). This comparison aimed to identify the consistency and differences in the prediction results between Altman and Springate, as well as to analyze the trend of PT Bukalapak Tbk's bankruptcy risk over time.

### 3.5.4. Validation and Critical Analysis

The calculation results will be analyzed by comparing the company's financial trends (net profit/loss, revenue growth, operating expenses) with the score results. Critical analysis is conducted to determine the appropriateness. Model predictions with the reality of company conditions, as well as assessing the strengths and weaknesses of each model in the context of the digital technology industry in Indonesia.

## 4 Results and Discussion

### 4.1 Data Description

This study uses financial report data from PT Bukalapak.com Tbk for the 2022-2024 period obtained from the Indonesia Stock Exchange. The data covers 12 quarterly periods (Q1 2022 - Q4 2024) to provide a dynamic overview

of the company's financial performance. The financial components used include current assets, current liabilities, total assets, retained earnings, EBIT, EBT, market value of equity, total liabilities, and sales.

### 4.2 Altman Z-Score Model Calculation Results

**Tabel 2:** Altman Z-Score Calculation Results for PT. Bukalapak.com Tbk

| Period | X1 | X2 | X3 | X4 | X5 | Z-Score | Classification |
|---|---|---|---|---|---|---|---|
| Q1 2022 | 0.862 | 0.131 | 0.364 | 21.871 | 0.02 | 15.56 | Safe Zone |
| Q2 2022 | 0.861 | -0.022 | 0.26 | 18.172 | 0.05 | 12.814 | Safe Zone |
| Q3 2022 | 0.774 | -0.196 | 0.132 | 15.597 | 0.089 | 10.538 | Safe Zone |
| Q4 2022 | 0.773 | -0.268 | 0.083 | 29.738 | 0.132 | 18.8 | Safe Zone |
| Q1 2023 | 0.625 | -0.315 | -0.083 | 27.148 | 0.038 | 16.51 | Safe Zone |
| Q2 2023 | 0.687 | -0.285 | -0.014 | 26.478 | 0.081 | 16.346 | Safe Zone |
| Q3 2023 | 0.865 | -0.305 | 0.082 | 26.665 | 0.125 | 16.642 | Safe Zone |
| Q4 2023 | 0.742 | -0.333 | 0.052 | 28.18 | 0.117 | 17.293 | Safe Zone |
| Q1 2024 | 0.616 | -0.337 | -0.021 | 22.295 | 0.045 | 13.685 | Safe Zone |
| Q2 2024 | 0.61 | -0.377 | -0.029 | 20.99 | 0.096 | 12.797 | Safe Zone |
| Q3 2024 | 0.715 | -0.363 | -0.023 | 14.711 | 0.133 | 9.234 | Safe Zone |
| Q4 2024 | 0.678 | -0.414 | -0.062 | 11.78 | 0.18 | 7.278 | Safe Zone |

*Source: Processed data, 2025*

The calculation results show that all periods were in the Safe Zone (Z-Score > 2.99), with the highest score being 18,800 (Q4 2022) and the lowest being 7,278 (Q4 2024). Despite consistently healthy performance, there was a significant decline of 61.3% over two years, indicating a deterioration in financial condition.

Component X4 (Market Value of Equity/Total Liabilities) provides a dominant contribution with a value of 11,780-29,738, indicating a still large market capitalization compared to liabilities. The X2 (Retained Earnings/Total Assets) and X3 (EBIT/Total Assets) components have been negative since 2022-2023, reflecting accumulated losses and an inability to generate operating profit.

### 4.3 Springate S-Score Model Calculation Results

**Tabel 3:** Springate S-Score Calculation Results for PT. Bukalapak.com Tbk

| Period | S1 | S2 | S3 | S4 | S-Score | Classification |
|---|---|---|---|---|---|---|
| Q1 2022 | 0.862 | 8.066 | 8.62 | 0.02 | 31.349 | Healthy |
| Q2 2022 | 0.861 | 5.509 | 9.992 | 0.05 | 24.327 | Healthy |
| Q3 2022 | 0.774 | 2.14 | 5.395 | 0.089 | 10.964 | Healthy |
| Q4 2022 | 0.773 | 2.493 | 4.762 | 0.132 | 11.645 | Healthy |
| Q1 2023 | 0.625 | -1.073 | 0.692 | 0.038 | -0.859 | Potential for Bankruptcy |
| Q2 2023 | 0.687 | -0.454 | -1.378 | 0.08 | -1.564 | Potential for Bankruptcy |
| Q3 2023 | 0.865 | -0.901 | -0.493 | 0.125 | -2.15 | Potential for Bankruptcy |
| Q4 2023 | 0.742 | -1.702 | -1.057 | 0.17 | -5.093 | Potential for Bankruptcy |
| Q1 2024 | 0.616 | -0.849 | -2.155 | 0.045 | -4.921 | Potential for Bankruptcy |

| | | | | | | |
|---|---|---|---|---|---|---|
| Q2 2024 | 0.61 | -1.082 | -0.056 | 0.096 | -2.691 | Potential for Bankruptcy |
| Q3 2024 | 0.715 | -0.688 | -0.976 | 0.133 | -1.968 | Potential for Bankruptcy |
| Q4 2024 | 0.678 | -1.402 | -0.566 | 0.18 | -3.908 | Potential for Bankruptcy |

*Source: Processed data, 2025*

The Springate model shows contrasting results with Altman's. In 2022, it was still in the Healthy category (S-Score > 0.862), but from Q1 2023 to Q4 2024, the entire period showed a negative score (-0.859 to -5.093), classifying the company as Potentially Bankrupt. This drastic change is due to the negative S2 (EBIT/Total Liabilities) and S3 (EBT/Current Liabilities) components since 2023.

### 4.4 Comparison and Discussion

**Tabel 4.3** Comparison of Prediction Results

| Period | Altman Z-Score | Springate S-Score | Consistency |
|---|---|---|---|
| 2022 (Q1–Q4) | Safe Zone | Healthy | ✓ Consistent |
| 2023 (Q1–Q4) | Safe Zone | Potential for Bankruptcy | ✗ Inconsistent |
| 2024 (Q1–Q4) | Safe Zone | Potential for Bankruptcy | ✗ Inconsistent |

*Source: Processed data, 2025*

The inconsistency of the results of the two models in the 2023-2024 period was due to differences in measurement focus:

- **Altman Z-Score Model** nature forward-looking by incorporating market valuation through the X4 component. A high market capitalization (12.89 trillion in Q4 2024) provides a substantial cushion even in the event of operational losses. This model is more relevant for public companies with strong access to capital markets.
- **Springate S-Score Model** nature backward-looking and is highly sensitive to actual profitability. The large weighting of S2 (3.07) causes negative EBIT to significantly lower the score. This model is more conservative in assessing a company's operational capabilities.

In the context of the digital technology industry, these two results reflect a "strategy"growth over profit" which is commonly applied by companiese-commerceOperating losses are considered investments for market share acquisition and technology development. High market valuations reflect investors' expectations of long-term potential, not current profitability.

#### 4.4.1 Validation with the Company's Actual Conditions

Crosscheck with the actual conditions of PT Bukalapak shows that both models provideearly warningvalid with different characteristics:

**Altman Z-Score Model Prediction Validation**: Altman's model, which predicted the company would remain in the Safe Zone, proved accurate in the short term T Bukalapak remained operational until early 2025 without formal bankruptcy. However, the company recorded a loss of IDR 1.38 trillion in 2023, and its financial condition continued to deteriorate, in line with a downward trend in its Z-Score from 18,800 (Q4 2022) to 7,278 (Q4 2024).

Bukalapak's market capitalization in January 2022 was recorded at IDR 38.13 trillion, which then experienced a significant decline to around IDR 12.89 trillion in Q4 2024 (a 66.2% decrease). This decline in market valuation was the main factor in the Z-Score deterioration, although it still provided. Cushion quite large compared to total liabilities.

Springate S-Score Model Prediction Validation: Early warning Springate's model of potential bankruptcy since Q1 2023 has been proven valid through a series of corporate actions undertaken by the company:

1.**Layoffs and Restructuring**: Bukalapak will lay off less than 5 percent of its employees in August 2023, followed by a restructuring plan and employee layoffs in October 2024.

2.**Business Line Closure**: Bukalapak plans to cease operations and close a number of business lines or subsidiaries due to continued losses, and in January 2025 announced the closure of physical product sales services starting in February 2025.

3.**Sustainable Operating Losses**: Losses reached IDR 0.59 trillion as of September 2024, indicating an inability to generate the operating profit predicted by the Springate Model through consistently negative S2 and S3 components.

These actual conditions validate that while the company isn't formally bankrupt (supporting Altman), operational financial difficulties are very real (supporting Springate). Drastic measures like closing the physical product marketplace its core e-commerce business demonstrate the severity of the operational problems predicted by the Springate Model as early as 2023.

## 5 Conclussion and Suggestions

This study analyzes the financial condition of PT Bukalapak.com Tbk for the 2022-2024 period using the Altman Z-Score and Springate S-Score methods. Both models provide contrasting but complementary results in assessing the company's bankruptcy potential. The Altman Z-Score model consistently classifies PT Bukalapak in the Safe Zone category throughout the period with scores ranging from 7,278 to 18,800, driven primarily by its high market capitalization relative to total liabilities, reflected in the X4 component value between 11,780 and 29,738. However, there was a significant deterioration with a 61.3% decrease in the Z-Score from Q4 2022 to Q4 2024, reflecting weakening fundamentals as evidenced by consistently negative retained earnings and EBIT values from 2022-2023. In contrast, the Springate S-Score model shows a drastic change from a healthy status in 2022 with scores ranging from 10.964 to 31.349 to a potential bankruptcy zone starting in Q1 2023 with negative scores ranging from -0.859 to -5.093, which is caused by negative EBIT and EBT components throughout the period.

The inconsistency between the two models stems from fundamental differences in measurement philosophy. Altman employs a forward-looking approach incorporating market valuations that provide a substantial cushion even in the event of operating losses, making it more relevant for public companies with strong capital market access. Springate adopts a backward-looking approach that is highly sensitive to actual profitability, taking a more conservative stance in assessing immediate operational viability. Validation with actual company conditions confirmed the accuracy of both models in their respective contexts. The Altman model proved accurate in predicting no formal bankruptcy until early 2025, despite a 66.2% market capitalization decline and losses reaching IDR 1.38 trillion in 2023. The Springate model's early warning was proven valid through a series of corporate distress actions, including employee layoffs in August 2023 and October 2024, business line closures, and the critical decision in January 2025 to cease core marketplace operations effective February 2025.

Research findings indicate that the two models serve complementary functions. Altman assesses long-term sustainability by incorporating capital market access and investor expectations, while Springate evaluates immediate operational health and financial viability. Bukalapak's actual situation, characterized by sustained losses, drastic restructuring, and the closure of core business operations, validates both predictions within their respective measurement frameworks and confirms the seriousness of the operational challenges the company faces.

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