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# Financial Distress Analysis of Retail Companies on IDX: Altman, Springate, and Zmijewski Models

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**Abstract**

The Indonesian retail sector has experienced digital disruption and shifting consumer preferences, making early detection of financial distress increasingly important. This study aims to compare financial distress predictions of retail companies listed on the Indonesia Stock Exchange (IDX) using the Altman Z-Score, Springate, and Zmijewski models for the 2021–2024 period. A quantitative descriptive method was applied using secondary data from audited annual reports of 24 retail companies selected through purposive sampling. Financial ratios were calculated based on each model and classified to assess bankruptcy risk. The findings show that most companies fall into the safe zone across the three models, indicating generally strong liquidity, profitability, and solvency. However, several firms, particularly GLOB, TELE, and TRIO, are consistently categorized as distress, reflecting structural financial weaknesses and a high probability of bankruptcy without corrective action. The results highlight the role of multiple prediction models to enhance early warning accuracy and support managerial and investment decisions.

**Kata Kunci:** Altman; Kesulitan Finansial; Perusahaan Retail; Springate; Zmijewski

**Abstrak**

Sektor ritel Indonesia menghadapi disrupsi digital dan perubahan preferensi konsumen sehingga deteksi dini financial distress menjadi semakin penting. Penelitian ini bertujuan membandingkan prediksi financial distress pada perusahaan ritel yang terdaftar di Bursa Efek Indonesia (BEI) melalui model Altman Z-Score, Springate, dan Zmijewski untuk periode 2021–2024. Metode deskriptif kuantitatif digunakan dengan data sekunder dari laporan keuangan tahunan auditan 24 perusahaan yang dipilih melalui purposive sampling. Rasio keuangan dihitung berdasarkan masing-masing model dan diklasifikasikan untuk menilai risiko kebangkrutan. Hasil penelitian menunjukkan bahwa sebagian besar perusahaan berada pada kategori aman di ketiga model, yang menandakan likuiditas, profitabilitas, dan solvabilitas yang relatif kuat. Namun, beberapa perusahaan seperti GLOB, TELE, dan TRIO secara konsisten berada pada kategori distress, menunjukkan kelemahan finansial struktural dan peluang kebangkrutan yang tinggi tanpa tindakan perbaikan. Temuan ini menegaskan pentingnya penggunaan beberapa model prediksi untuk meningkatkan akurasi peringatan dini serta mendukung keputusan manajerial dan investasi.

## INTRODUCTION

Indonesia is known as one of the fastest-growing emerging economies in Southeast Asia. Its economic expansion is supported by a large population, a rising middle-income class, and strong household consumption (Yulian et al., 2020). The retail sector contributes significantly to this growth because it connects producers and consumers, creates employment opportunities, and plays an important role in supporting national GDP (Prakoso et al., 2024). Retail performance is also often viewed as a reflection of people's purchasing power and overall economic stability (Muzanni & Yuliana, 2021).

Although its role is strategic, the Indonesian retail sector has faced increasing pressure in recent years. Rapid technological development, the growing use of e-commerce, and changes in consumer purchasing behavior toward online shopping have disrupted the operations of conventional retailers (Prasetiyani & Sofyan, 2020). Companies that are unable to adapt quickly experience declining profits and shrinking market share, which increases the risk of financial instability and potential bankruptcy (Wahyuningsih et al., 2021). These challenges became more pronounced during the COVID-19 pandemic when mobility restrictions, supply chain disruptions, and weakened purchasing power affected the sector (Marginingsih, 2022). Although recovery began to take shape in 2022, global inflation and demand fluctuations continued to pose challenges for retail businesses (Supriadi et al., 2022).

In general, companies aim to maintain profitability, improve performance, and maximize shareholder value (Fitriani & Muniarty, 2020). When these goals are not achieved, financial instability may arise and can develop into financial distress, which is the stage that often emerges before bankruptcy (Setiawan, 2021). Financial distress typically indicates weakening liquidity and solvency (Fahma & Setyaningsih, 2019). Even so, companies that are able to detect early warning signs of distress still have the opportunity to implement corrective actions before conditions worsen (Macpal & Nurmasari, 2024).

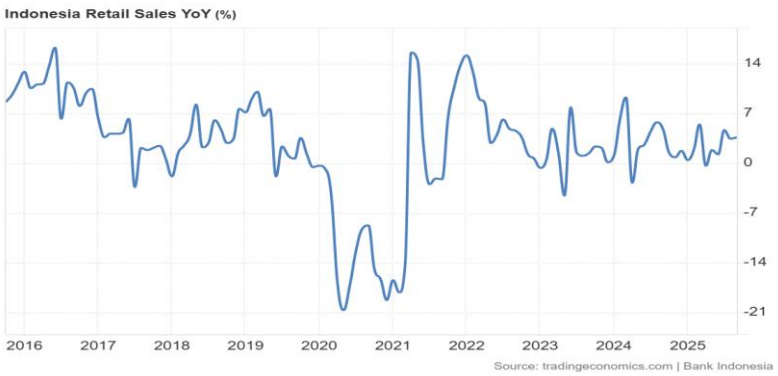


**Figure. 1 Indonesia Retail Sales YoY (%) 2016–2025**

Source: tradingeconomics.com (2025)

Retail sales data from TradingEconomics (2025) show that the sector experienced a sharp downturn in 2020, with sales falling to below minus twenty percent. Although gradual recovery occurred between 2021 and 2024, the data illustrate how vulnerable the retail industry is to external shocks. This highlights the importance of predicting financial distress for various stakeholders such as management, investors, creditors, and regulators, especially

considering that corporate bankruptcy has broad social and economic consequences (Purwaningsih & Pernamasari, 2024). One common method for assessing financial health is the analysis of financial ratios, which helps identify early indications of declining performance (Martini et al., 2023).

Several models have been developed to analyze a company's potential financial stability and predict bankruptcy risk. The Altman Z-Score model uses indicators of profitability, liquidity, leverage, and market value to categorize a company's financial condition. The Springate model also assesses financial distress but places stronger emphasis on liquidity and profitability ratios. Meanwhile, the Zmijewski model applies statistical regression to estimate bankruptcy probability based on profitability, leverage, and liquidity. Although all three models are widely used, comparative studies that focus on Indonesian retail companies remain limited.

Previous empirical studies have explored these models in various contexts. Rahmah & Yusaniah (2022) used the Altman, Springate, and Zmijewski models to analyze MPPA, LPPF, and RALS and found that MPPA consistently experienced financial distress while the other companies remained stable. Ghoni et al. (2025) analyzed 204 observations from 35 companies in Southeast Asia using the Altman Z-Score and reported that financial distress increased during the pandemic while the model's predictive accuracy declined during crisis conditions. Natasya et al. (2025) used the three models to assess PT Sri Rejeki Isman Tbk and found that the company shifted from stable conditions in 2016 to 2020 to severe distress in 2021 as liabilities increased and profitability weakened.

Although these studies provide valuable insights, research that simultaneously compares the Altman, Springate, and Zmijewski models using updated post-pandemic data specifically for Indonesian retail companies is still scarce. Most previous studies rely on data prior to the pandemic, focus on a limited number of companies, or examine only one model. This gap is important because digital transformation and changes in consumer behavior have significantly reshaped the retail landscape. Findings from crisis periods, such as those reported by Ghoni et al. (2025), also suggest that prediction models may perform differently during periods of severe economic disruption, which emphasizes the need for more current and sector-specific assessments.

To address these limitations, the present study provides novelty by applying the Altman, Springate, and Zmijewski models simultaneously to a broader sample of Indonesian retail companies using financial data from 2021 to 2024. This approach offers a more comprehensive and contemporary picture of bankruptcy risk in the post-pandemic environment. It captures the financial challenges that companies face as they navigate increasing competition, ongoing digital transformation, and evolving consumer expectations. By comparing multiple prediction models across several companies, the study aims to present a deeper and more relevant analysis of financial distress within the Indonesian retail sector.

Based on this research gap, the purpose of this study is to analyze and compare the financial distress predictions of retail companies listed on the Indonesia Stock Exchange using the Altman Z-Score, Springate, and Zmijewski models during 2021 to 2024. The comparison seeks to identify similarities and differences across the three models and determine which

model provides the most reliable early warning indicator for the Indonesian retail sector. The novelty of this study lies in its use of three prediction models combined with recent financial data in a sector undergoing substantial digital transformation and post-pandemic recovery. The findings are expected to enrich the existing literature and provide practical insights for management, investors, and policymakers in efforts to support the financial stability of Indonesia's retail industry.

## METHODS

This study applies a quantitative descriptive research design to assess the financial distress level of retail companies listed on the Indonesia Stock Exchange (IDX). The method focuses on numerical financial data without manipulating variables so that the financial condition of each company can be measured objectively. The analysis uses three financial distress prediction models, namely Altman Z-Score, Springate, and Zmijewski, to classify and compare the financial health of the selected companies.

The research uses secondary data obtained from the audited annual financial statements of IDX retail companies. The population consists of all companies in the retail sector, while the sample is determined using purposive sampling to ensure completeness and relevance of the data. The sample includes companies that are listed under the Retail Trade subsector, publish complete annual financial statements during the observation period, and remain continuously listed on the IDX. The list of companies that meet these criteria is presented below.

**Table 1**
**List of Sample Retail Companies Listed on the IDX**

| Company | Code |
|---|---|
| PT Aspirasi Hidup Indonesia Tbk | ACES |
| PT Autopedia Sukses Lestari Tbk | ASLC |
| PT Mitra Angkasa Sejahtera Tbk | BAUT |
| PT Bintang Oto Global Tbk | BOGA |
| PT Industri dan Perdagangan Bintraco Dharma Tbk | CARS |
| Catur Sentosa Adiprana Tbk | CSAP |
| PT Caturkarda Depo Bangunan Tbk | DEPO |
| PT Electronic City Indonesia Tbk. | ECII |
| Erajaya Swasembada Tbk | ERAA |
| PT Globe Kita Terang Tbk | GLOB |
| Indomobil Sukses Internasional Tbk | IMAS |
| Matahari Department Store Tbk | LPPF |
| PT Map Aktif Adiperkasa Tbk | MAPA |
| PT Mitra Adiperkasa Tbk | MAPI |
| PT Mitra Pinasthika Mustika Tbk. | MPMX |
| PT Putra Mandiri Jembar Tbk | PMJS |
| Ramayana Lestari Sentosa Tbk | RALS |
| PT Gaya Abadi Sempurna Tbk | SLIS |
| Sona Topas Tourism Industry Tbk | SONA |

| | |
|---|---|
| PT Omni Inovasi Indonesia Tbk | TELE |
| Trikomsel Oke Tbk | TRIO |
| PT Damai Sejahtera Abadi Tbk | UFOE |
| PT Yelooo Integra Datanet Tbk. | YELO |
| PT Mega Perintis Tbk. | ZONE |

Data were collected using documentation by extracting financial indicators required for the three prediction models from the financial statements. The analysis was conducted by calculating the financial ratios based on the formulas of each model and interpreting the results according to their classification criteria to determine whether a company is in a safe, grey, or distress condition. The classification results from the three models were compared to obtain a comprehensive overview of the financial stability of retail companies listed on the IDX.

## RESULTS

### Altman Z-Score Model

The Altman Z-Score model predicts bankruptcy using multiple discriminant analysis and combines financial ratios that represent profitability, liquidity, leverage, and solvency (Altman, 1968). The model was later adjusted for non-manufacturing firms to improve accuracy across sectors (Altman, 2000). Formula:

$$Z = 6{,}56X1 + 3{,}26X2 + 6{,}72X3 + 1{,}05X4$$

X1 = Working Capital / Total Assets
X2 = Retained Earnings / Total Assets
X3 = EBIT / Total Assets
X4 = Book Value of Equity / Total Liabilities
Classification:
Z > 2,6 = Safe Zone
1,1 < Z < 2,6 = Grey Zone
Z < 1,1 = Distress Zone

**Table 2**
**Altman Z-Score Model Calculation Results**

| Code | 2021 | 2022 | 2023 | 2024 | Average | Category |
|---|---|---|---|---|---|---|
| ACES | 10,62 | 12,18 | 11,50 | 11,44 | 11,44 | Safe |
| ASLC | -2,16 | 12,28 | 8,62 | 8,59 | 6,83 | Safe |
| BAUT | 4,01 | 9,14 | 8,52 | 8,68 | 7,59 | Safe |
| BOGA | 3,71 | 3,57 | 5,70 | 4,10 | 4,27 | Safe |
| CARS | 0,35 | 0,98 | 0,40 | 0,86 | 0,65 | Distress |
| CSAP | 1,48 | 1,36 | 1,35 | 1,19 | 1,34 | Distress |
| DEPO | 5,73 | 5,94 | 4,26 | 3,92 | 4,96 | Safe |
| ECII | 5,47 | 4,52 | 3,99 | 3,86 | 4,46 | Safe |
| ERAA | 4,86 | 3,21 | 2,97 | 3,03 | 3,52 | Safe |
| GLOB | -522,64 | -897,91 | -1137,60 | -1263,54 | -955,42 | Distress |
| IMAS | -0,41 | -0,23 | 0,33 | 0,67 | 0,09 | Distress |
| LPPF | 3,43 | 3,74 | 1,57 | 3,01 | 2,94 | Safe |
| MAPA | 5,82 | 6,87 | 5,56 | 5,38 | 5,91 | Safe |
| MAPI | 2,50 | 3,93 | 3,57 | 3,86 | 3,46 | Safe |

| | | | | | | |
|---|---|---|---|---|---|---|
| MPMX | 3,87 | 5,28 | 5,42 | 5,29 | 4,97 | Safe |
| PMJS | 4,57 | 5,51 | 5,22 | 5,13 | 5,11 | Safe |
| RALS | 8,15 | 8,67 | 9,00 | 8,77 | 8,65 | Safe |
| SLIS | 5,89 | 7,08 | 9,60 | 11,23 | 8,45 | Safe |
| SONA | 13,35 | 5,69 | 7,06 | 7,86 | 8,49 | Safe |
| TELE | -99,44 | -201,57 | -347,17 | -533,67 | -295,46 | Distress |
| TRIO | -364,59 | -422,59 | -364,52 | -453,86 | -401,39 | Distress |
| UFOE | 1,04 | 1,71 | 1,67 | 2,79 | 1,80 | Grey |
| YELO | 159,28 | 2,44 | 36,72 | 37,85 | 59,07 | Safe |
| ZONE | 3,93 | 5,12 | 4,39 | 3,89 | 4,33 | Safe |

Source: Data Processed by Author (2025)

Based on Table 2, most retail companies listed on the IDX during 2021 to 2024 fall into the Safe category, reflecting stable financial conditions and low bankruptcy risk. Companies such as ACES, BAUT, BOGA, DEPO, ECII, ERAA, MAPA, MPMX, PMJS, RALS, SLIS, SONA, and ZONE consistently achieved high Z-Scores, indicating strong liquidity and profitability. In contrast, CARS, CSAP, GLOB, IMAS, TELE, and TRIO were categorized as Distress, with GLOB, TELE, and TRIO showing extremely negative scores that indicate severe and persistent financial difficulties. UFOE was the only company in the Grey category, showing uncertain financial prospects.

**Springate Model**

The Springate model was developed using multiple discriminant analysis to simplify distress prediction and focuses on profitability, liquidity, and efficiency metrics (Springate, 1978). Formula:

$$S = 1.03X1 + 3.07X2 + 0.66X3 + 0.4X4$$

X1 = Working Capital / Total Assets

X2 = EBIT / Total Assets

X3 = EBT / Current Liabilities

X4 = Sales / Total Assets

Classification:

S ≥ 0,862 = Safe Zone

S < 0,862 = Distress Zone

**Table 3**

**Springate Model Calculation Results**

| Code | 2021 | 2022 | 2023 | 2024 | Average | Category |
|---|---|---|---|---|---|---|
| ACES | 2,18 | 2,22 | 2,26 | 2,31 | 2,25 | Safe |
| ASLC | 0,07 | 0,83 | 1,05 | 1,31 | 0,81 | Distress |
| BAUT | 1,15 | 1,28 | 1,18 | 0,59 | 1,05 | Safe |
| BOGA | 0,76 | 0,79 | 1,26 | 0,69 | 0,87 | Safe |
| CARS | 0,29 | 0,94 | 0,92 | 1,01 | 0,79 | Distress |
| CSAP | 0,95 | 0,90 | 0,79 | 0,74 | 0,85 | Distress |
| DEPO | 1,31 | 1,37 | 0,98 | 0,94 | 1,15 | Safe |
| ECII | 0,80 | 0,86 | 0,90 | 0,87 | 0,86 | Distress |
| ERAA | 2,42 | 1,72 | 1,67 | 1,71 | 1,88 | Safe |
| GLOB | -38,92 | -73,32 | -99,78 | -115,27 | -81,82 | Distress |
| IMAS | 0,08 | 0,17 | 0,28 | 0,32 | 0,21 | Distress |

| | | | | | | |
|---|---|---|---|---|---|---|
| LPPF | 1,22 | 1,73 | 0,98 | 1,38 | 1,33 | Safe |
| MAPA | 1,21 | 2,04 | 1,24 | 1,57 | 1,51 | Safe |
| MAPI | 0,82 | 1,48 | 1,23 | 1,21 | 1,19 | Safe |
| MPMX | 0,51 | 0,74 | 0,72 | 0,72 | 0,67 | Distress |
| PMJS | 1,63 | 2,00 | 1,62 | 1,34 | 1,65 | Safe |
| RALS | 0,91 | 1,25 | 1,14 | 1,13 | 1,11 | Safe |
| SLIS | 1,50 | 1,81 | 1,94 | 1,56 | 1,70 | Safe |
| SONA | -0,81 | 0,20 | 1,07 | 1,31 | 0,44 | Distress |
| TELE | 0,38 | -3,89 | -21,89 | -40,83 | -16,56 | Distress |
| TRIO | -11,94 | -17,02 | -15,54 | -21,07 | -16,39 | Distress |
| UFOE | 0,84 | 0,96 | 1,00 | 1,07 | 0,97 | Safe |
| YELO | 13,81 | 0,93 | 1,56 | 0,64 | 4,24 | Safe |
| ZONE | 1,01 | 1,56 | 1,16 | 0,80 | 1,13 | Safe |

Source: Data Processed by Author (2025)

Table 3 shows that most companies also fall into the Safe category based on the Springate model. ACES, BAUT, BOGA, DEPO, ERAA, LPPF, MAPA, MAPI, PMJS, RALS, SLIS, UFOE, YELO, and ZONE recorded average scores above the threshold, indicating good operating efficiency. However, ASLC, CARS, CSAP, ECII, GLOB, IMAS, MPMX, SONA, TELE, and TRIO were categorized as Distress. The extremely low scores of GLOB, TELE, and TRIO reflect serious instability and a high risk of business failure. Compared to the Altman model, the Springate approach identifies a higher number of companies as Distress, suggesting a higher level of sensitivity in detecting early financial warning signs.

**Zmijewski Model**

The Zmijewski model adopts a probit regression approach to estimate the probability of financial distress based on profitability, leverage, and liquidity (Zmijewski, 1984). Formula:

$$X = -4.3 - 4.5X1 + 5.7X2 - 0.004X3$$

X1 = Net Income / Total Assets

X2 = Total Liabilities / Total Assets

X3 = Current Assets / Current Liabilities

Classification:

X > 0 = Distress Zone

X ≤ 0 = Safe Zone

**Table 4**
**Zmijewski Model Calculation Results**

| Code | 2021 | 2022 | 2023 | 2024 | Average | Category |
|---|---|---|---|---|---|---|
| ACES | -3,45 | -3,72 | -3,62 | -3,64 | -3,61 | Safe |
| ASLC | 0,22 | -3,74 | -3,50 | -3,57 | -2,65 | Safe |
| BAUT | -1,65 | -3,25 | -3,10 | -2,94 | -2,73 | Safe |
| BOGA | -2,01 | -1,70 | -2,02 | -1,69 | -1,86 | Safe |
| CARS | 1,21 | 0,22 | -0,13 | -0,69 | 0,15 | Distress |
| CSAP | -0,24 | -0,20 | -0,45 | -0,37 | -0,32 | Safe |
| DEPO | -2,55 | -2,62 | -2,20 | -2,07 | -2,36 | Safe |

| | | | | | | |
|---|---|---|---|---|---|---|
| ECII | -2,84 | -2,66 | -2,58 | -2,58 | -2,66 | Safe |
| ERAA | -2,29 | -1,30 | -1,06 | -1,21 | -1,46 | Safe |
| GLOB | 383,76 | 610,50 | 707,53 | 732,65 | 608,61 | Distress |
| IMAS | -0,01 | -0,05 | -0,06 | 0,02 | -0,03 | Safe |
| LPPF | -0,28 | -0,26 | 0,85 | 0,31 | 0,15 | Distress |
| MAPA | -2,27 | -2,76 | -2,28 | -2,24 | -2,39 | Safe |
| MAPI | -1,15 | -1,79 | -1,56 | -1,72 | -1,56 | Safe |
| MPMX | -2,41 | -2,91 | -2,93 | -2,89 | -2,79 | Safe |
| PMJS | -2,35 | -2,68 | -2,64 | -2,67 | -2,58 | Safe |
| RALS | -2,80 | -2,98 | -3,06 | -3,01 | -2,96 | Safe |
| SLIS | -1,85 | -2,18 | -3,01 | -3,35 | -2,60 | Safe |
| SONA | -3,29 | -1,90 | -2,32 | -2,78 | -2,57 | Safe |
| TELE | 110,99 | 207,23 | 202,65 | 277,95 | 199,71 | Distress |
| TRIO | 250,65 | 225,93 | 215,44 | 263,11 | 238,78 | Distress |
| UFOE | -1,15 | -1,35 | -1,40 | -1,37 | -1,32 | Safe |
| YELO | -4,94 | -2,03 | -4,21 | -4,19 | -3,84 | Safe |
| ZONE | -1,73 | -2,14 | -1,73 | -1,47 | -1,77 | Safe |

Source: Data Processed by Author (2025)

According to Table 4, the majority of companies reported negative average Zmijewski scores and were categorized as Safe. Firms such as ACES, ASLC, BAUT, BOGA, CSAP, DEPO, ECII, ERAA, IMAS, MAPA, MAPI, MPMX, PMJS, RALS, SLIS, SONA, UFOE, YELO, and ZONE demonstrated stable profitability and solvency. Conversely, CARS, GLOB, LPPF, TELE, and TRIO were classified as Distress. The extremely high positive scores of GLOB, TELE, and TRIO indicate severe solvency problems and align with the Altman and Springate classifications.

## DISCUSSION

The results of this research align with financial distress theory, which emphasizes that declining profitability, weakening liquidity, and increasing leverage are strong early indicators of a company's deteriorating condition. The Altman and Springate models show high sensitivity in detecting changes in profitability and working capital, while the Zmijewski model captures deeper solvency issues. These theoretical foundations help explain why certain companies repeatedly fall into the distress category, as their financial structures no longer support stable operations.

The findings are consistent with previous research, including Rahmah & Yusaniah (2022), Natasya et al. (2025), and Ghoni et al. (2025), which also reported that retail companies are vulnerable to financial distress due to intense competition, shifts in consumer buying behavior, and the acceleration of digital transformation. Similar to earlier studies, this research demonstrates that using a single prediction model may not provide a comprehensive assessment because each method highlights different financial dimensions.

A notable finding from this study is the consistent distress classification of GLOB, TELE, and TRIO across all three models. This consistency indicates serious structural weaknesses, such as sustained operational losses, poor working capital management, and

excessive reliance on debt. These factors suggest that the three companies face a substantial risk of bankruptcy if corrective measures are not implemented promptly.

In contrast, companies such as ACES, DEPO, ERAA, MAPA, PMJS, and RALS show strong and stable financial performance throughout the 2021–2024 period. Their ability to adapt to digital transformation, maintain operational efficiency, and manage supply chains effectively may contribute to their resilience. These companies demonstrate how strategic adaptation can strengthen financial stability even amid sectorwide challenges.

The implications of this study are twofold. From a theoretical standpoint, the use of multiple prediction models strengthens the validity of bankruptcy assessments by capturing different aspects of financial health. From a practical perspective, managers can use these findings to enhance financial strategies and implement preventive measures, investors can identify firms with higher risk exposure, and regulators can monitor companies with persistent financial instability more closely to prevent broader economic impacts.

## CONCLUSION

This study examined the financial condition and bankruptcy risk of retail companies listed on the Indonesia Stock Exchange using the Altman, Springate, and Zmijewski models for the 2021 to 2024 period. The results of the three models consistently show that most companies fall into the Safe category, indicating a stable financial condition supported by strong liquidity, profitability, and solvency. This finding reflects that, in general, the retail sector remained financially stable during the study period. Nevertheless, several companies, particularly GLOB, TELE, and TRIO, were consistently categorized as Distress across all models, which implies persistent and structural financial problems that place them at a high risk of bankruptcy if no corrective measures are taken. The study concludes that using more than one bankruptcy prediction model provides a more comprehensive assessment of financial stability. The results are valuable both for management in improving financial strategies and for investors in evaluating investment risk within the retail industry.

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