



A Comparative Study of Financial Distress in Sharia-Listed Transportation and Logistics Companies: Insights from the Altman Z - score Model During and After COVID-19

Muhammad Ramizal Syahidin¹, Fifi Hakimi², Faricha Maf'ula³, Dita Pratiwi Kusumaningtyas⁴, Elvina Assadam⁵

*¹Universitas Muhammadiyah Lamongan, Indonesia, mramizal2@gmail.com

²Universitas Muhammadiyah Lamongan, Indonesia, fifi_hakimi@umla.ac.id

³Universitas Muhammadiyah Lamongan, Indonesia, faricha_mafula@umla.ac.id

⁴Universitas Muhammadiyah Lamongan, Indonesia, ditapратиwi_k@umla.ac.id

⁵Universitas Muhammadiyah Malaysia, Malaysia, P1250096@student.umam.edu.my

Abstract. This study aims to analyze and compare the financial distress conditions of transportation and logistics sector issuers listed on the Sharia Securities List (Daftar Efek Syariah/DES) using the Altman Z-Score model during and after the COVID-19 pandemic (2021–2024). The novelty of this research lies in the selected period and research object. Employing a quantitative approach, the study examines quarterly financial reports of 14 issuers listed on the Indonesia Stock Exchange (BEI). Data analysis includes descriptive statistics, the Kolmogorov-Smirnov normality test, and the Wilcoxon Signed Rank difference test. The results reveal no statistically significant difference in financial distress levels between the pandemic and post-pandemic periods. Most issuers remained in the Altman Z-Score “red zone,” indicating persistently high bankruptcy risk. Nevertheless, these Sharia-compliant issuers demonstrated considerable financial resilience by consistently maintaining interest-based debt below 45% of total assets in accordance with DES criteria. Government stimulus policies and effective risk management practices further reinforced their stability. This study enriches the Islamic capital market literature by evidencing the relative resilience of Sharia-compliant companies amid prolonged crisis.

Keywords: financial-distress, z-score, transportation-and-logistics, DES, COVID-19.

***Corresponding Author**

INTRODUCTION

Financial distress occurs when a company is under financial pressure or lacks adequate working capital, making it one of the early indicators of potential bankruptcy (Wawo & Nirwana, 2018). Companies experiencing financial difficulties are therefore more likely to face bankruptcy, a condition in which a firm is unable to continue its operational activities, generate profits, or meet its obligations to creditors (Patunrui & Yati, 2017). Several indicators in financial

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statements can identify financial distress (Assaji & Machmuddah, 2017). These statements serve as a form of transparency for stakeholders, reflecting the company's performance and supporting informed decision-making (Patunrui & Yati, 2017). Companies with poor performance will experience financial difficulties. Financial distress can occur due to many internal and external factors, such as disasters or epidemics.

COVID-19, an infectious disease caused by SARS-CoV-2, initially appeared to be a minor threat. However, the WHO (World Health Organization) formally declared COVID-19 a global pandemic for the first time on March 11, 2020 (Sekretariat Negara Republik Indonesia, 2021). In response, the Indonesian government implemented several lockdown policies, including Large-Scale Social Restrictions (PSBB), the Enforcement of Restrictions on Community Activities (PPKM), and a ban on homecoming (*mudik*). These measures remained in place until the pandemic was declared over on June 21, 2023 (Badan Pemeriksa Keuangan Republik Indonesia, 2023). Social interaction restrictions implemented to curb virus transmission significantly affected various economic sectors.

The COVID-19 pandemic outbreak indicates a state of uncertainty. Anything that is predicted not to happen can happen otherwise. The Qur'an, in Surah Luqman (31): 34, explains the risks arising from uncertainty. The verse explains that no one can know with certainty what will happen in the future. The presence of uncertainty arising from the COVID-19 outbreak can trigger the risk of financial distress. Research by Tazza & Setyaningsih (2022) shows that COVID-19 statistically impacts financial distress conditions, as seen in the increase in companies experiencing financial difficulties both during and before COVID-19. Therefore, companies must be able to predict symptoms of financial distress early through financial report analysis. Financial health is a priority for companies because it increases the efficiency of services and the provision of transportation or logistics. This enables companies to generate adequate revenue and profit, ensuring competitiveness and survival during crises.

Several sectors impacted by the COVID-19 pandemic include transportation and logistics. Angkasa Pura Logistics (2020) revealed that transportation sector revenues decreased by up to 50% due to the COVID-19 pandemic and operational shutdowns. The impact of the shutdown disrupted logistics operations, as most logistics directly relate to transportation operations. This resulted in the logistics sector bearing the burden of storage costs due to delayed deliveries.

Average Net Profit and Income of Issuers in the Transportation and Logistics Sector of the Sharia Securities List



Figure 1. Average Revenue and Net Profit of Transportation and Logistics Sector Issuers Listed on the Sharia Securities List

Source: IDX (2024b)

Based on Figure 1, transportation and logistics companies' revenue and net profit on the Sharia Securities List increased from 2021 to 2023, in line with the decline in the COVID-19 outbreak, which officially ended in 2023. However, not all companies experienced revenue and net profit growth before and after COVID-19. Three of the seventeen issuers experienced a decline in revenue from 2021 to 2023. Figure 2 shows the condition of transportation and logistics issuers that experienced revenue increases during and after COVID-19. Two of the seventeen issuers experienced a decline in net profit from 2021 to 2023, and one issuer, PT Trimuda Nuansa Citra Tbk. (TNCA), experienced a decline in revenue and net profit.

Specifically, several issuers experienced a decline, namely PT Mineral Sumberdaya Mandiri Tbk (AKSI), PT Mitra International Resources Tbk (MIRA), Samudera Indonesia Tbk (SMDR), and PT Trimuda Nuansa Citra Tbk (TNCA). In addition to these four issuers, several experienced fluctuations, increases, and decreases during and after COVID-19. Meanwhile, Figure 3 shows that the net profit of issuers in the transportation and logistics sector that experienced a decline during and after COVID-19 were Putra Rajawali Kencana Tbk (PURA), Satria Antar Prima Tbk (SAPX), and Trimuda Nuansa Citra Tbk (TCNA). Meanwhile, other issuers experienced net profit growth, while others experienced fluctuations.

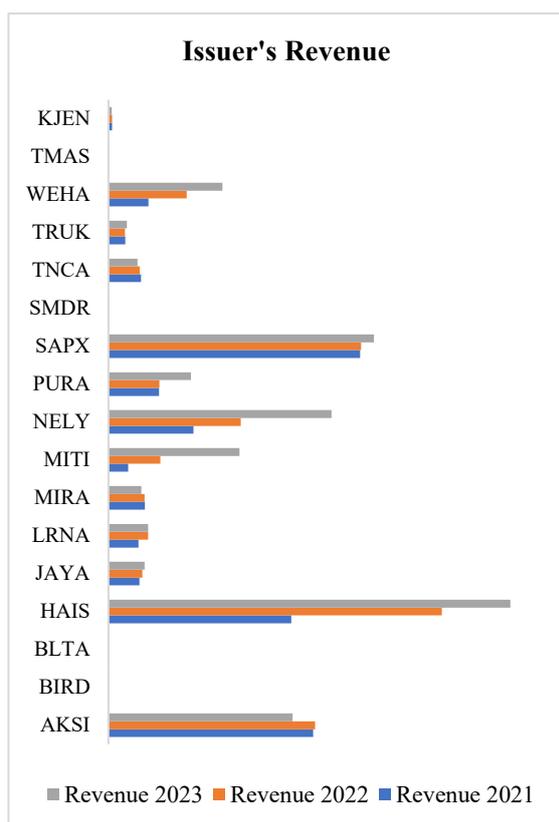


Figure 2. Revenue of Transportation and Logistics Sector Issuers Listed on DES

Source: IDX (2024c)

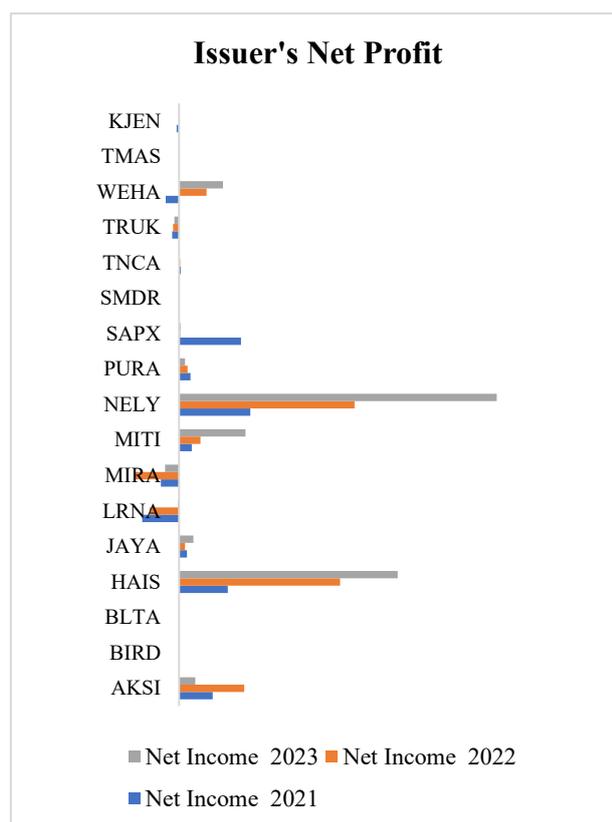


Figure 3. Net Profit of Transportation and Logistics Sector Issuers Listed on DES

Source: IDX (2024c)

Figures 2 and 3 show that the company's revenue and net profit during COVID-19 were very low compared to post-COVID-19. Low revenue and net profit result in companies being unable to pay all their obligations due to insufficient cash flow to cover all debts. This situation increases the risk of financial distress (Baghaskara & Retnani, 2023). Companies that fail to address financial distress promptly will face bankruptcy.

One transportation and logistics company that experienced financial distress was PT Air Asia Indonesia Tbk (CMPP) in 2019-2020. The financial distress experienced by PT Air Asia Indonesia Tbk (CMPP) was primarily due to government-imposed restrictions, which limited the company's operational activities and led to a decline in revenue and subsequent losses (Maulana & Sukwana, 2024). A similar incident occurred at PT Sidomulyo Selaras Tbk (SDMU), which was declared in financial distress from 2018 to 2022. The cause was negative working capital compared to total assets due to current liabilities exceeding net working capital. As a result, the company's net working capital was in a negative position, and its ability to generate profits decreased (Rahmadani et al., 2024).

This study uses the Altman Z - score (1986) financial distress prediction analysis model. This analysis model has good accuracy. Rahmah (2018) analyzed the bankruptcy prediction of Islamic banking with the highest accuracy of 98% using the Altman Z-Score. When comparing the Zmijewski analysis model at 98%, Springate at 70%, and Grover with an accuracy level of 96%. Alfiyanti (2019) in her study stated that the Altman Z - score model has an accuracy level of 86.16%, more accurate than the Springate model (75.39%) when predicting financial distress in the food and beverage sub-sector. Widuri (2018) in her study stated that the Altman Z - score model has a higher accuracy level than the Grover O-Score model with a case study of PT Bank Panin Dubai Syariah. Seto & Trisnaningsih (2021) also stated a similar finding: the accuracy of the Altman Z - score model was superior to that of the Zmijewski and Springate models, using a case study of a retail company in Indonesia. In the manufacturing sector, Febriana & Wahidahwati (2018) also found that the Altman Z - score had an accuracy rate of 51.6%, higher than the Ohlson, Zmijewski, and Grover models.

Most prior studies, such as Marselina et al. (2023), Hikmatullah (2022), Faizy et al. (2023), Putri & Friyatmi (2023), Islami & Canggih (2023), Tazza & Setyaningsih (2022), Rahmadani et al. (2024), and Maulana & Sukwana (2024) examine financial distress conditions before and during COVID-19. However, limited research explores financial distress during and after COVID-19, especially within the transportation and logistics sector listed on the Sharia Securities List. The novelty of this study lies in its focus on transportation and logistics companies listed on the Sharia Securities List (DES), a research object that has received limited attention despite its distinct financial structure under sharia compliance. Unlike most previous studies that examine financial distress before and during COVID-19, this research specifically analyzes the during and after pandemic period (2021–2024), offering a fresh perspective on post-pandemic financial recovery. By applying the Altman Z-Score model—recognized for its high predictive accuracy—this study provides new empirical evidence on the financial resilience of DES-listed transportation and logistics issuers, filling an important gap in the literature on financial distress within the sharia capital market.

The urgency of this research lies in the limited studies examining financial distress during and after the COVID-19 pandemic, particularly in the transportation and logistics sector listed on the Sharia Securities List, which has unique financial characteristics due to sharia compliance. Although the pandemic has officially ended, several issuers in this sector continue to experience declining revenues and profits, reflecting persistent financial risks that remain underexplored. Given the sector's strategic role in national supply chains and economic

recovery, assessing its financial resilience is essential. By employing the highly accurate Altman Z-Score model, this study provides critical insights into the post-pandemic financial condition of DES-listed transportation and logistics companies. Specifically, it investigates whether financial distress in this sector differs significantly between the periods during and after the COVID-19 pandemic.

LITERATURE REVIEW

Financial Distress

Altman (1968) stated that a company's financial condition can be categorized into three categories: non-financial distress, zone of ignorance or grey area, and all-bankrupt. Non-financial distress (a company with healthy finances) is described by the Altman model analysis calculation with a score of >2.99 . Grey area financial condition (a company cannot be categorized as a healthy company or a company experiencing financial distress) is indicated by the Altman model analysis calculation with a score of $1.88 < Z < 2.99$. Then, the Altman model analysis calculation indicates the all-bankrupt condition (a company in a state of bankruptcy) with a score of <1.88 .

According to Irma et al. (2023), financial distress occurs when a company experiences insufficient operating cash flow to cover current liabilities. Utami et al. (2023) define financial distress as a company experiencing financial difficulties before leading to bankruptcy. Meanwhile, Hutauruk et al. (2021) define financial distress as a stage of financial decline in a company before reaching bankruptcy. Financial distress is also known as liquidity difficulties, and failure to meet all obligations will result in bankruptcy. Empirical studies utilizing the Altman Z-Score bankruptcy prediction model for corporate financial distress analysis indicate that the transportation company PT Air Asia Indonesia is currently experiencing financial distress or exhibits a high potential for bankruptcy.

Consequently, financial distress is established as an inherent risk for every profit-oriented entity, irrespective of its scale, sector, or historical performance. Given the high propensity of this condition to escalate into bankruptcy if not immediately remediated, the implementation of a bankruptcy prediction model becomes imperative. Such implementation is critical for both corporate management and stakeholders to ensure business continuity and mitigate potential financial losses.

Issuers in the Transportation and Logistics Sector

Financial Services Authority (2017) defines an issuer as an individual, company, joint venture, association, or organized group conducting a public offering. Issuers offer securities and sell them to the public. Issuers wishing to conduct a securities offering must comply with the procedures stipulated in applicable laws and regulations. Then, Tempo (2023) defines transportation sector companies as companies that provide services for transporting goods or passengers from one location to another. This includes land, sea, and air transportation. This is followed by logistics companies responsible for delivering goods. IDX (2024) recorded 37 transportation and logistics sector issuers in Indonesia.

According to Aqmarina (2023), the Sharia Securities List (DES) serves as a basis for making Sharia investment decisions and guiding investment managers, insurance companies, and individual investors in selecting securities that comply with Islamic principles. According to the IDX (2022) the DES is routinely published by the Financial Services Authority (OJK), containing a collection of stocks that meet sharia criteria and are traded on the Sharia Capital Market. It is updated every May and November. Seventeen issuers are included in the transportation and logistics sector of the Sharia Securities List, as summarized in Table 1.

Table 1. Sharia-Listed Transportation and Logistics Companies

No.	Stock Code	Company Name	Main Business Activity
1	AKSI	PT Mineral Sumberdaya Mandiri Tbk	Holding Company
2	BIRD	PT Blue Bird Tbk	Passenger Transportation and Land Transport Services
3	BLTA	Berlian Laju Tanker Tbk	Sea Freight Shipping Services
4	JAYA	PT Armada Berjaya Trans Tbk.	Motorized Transportation for General Goods
5	LRNA	PT Eka Sari Lorena Transport Tbk.	Transportation
6	MIRA	Mitra International Resources Tbk	Land Transportation Services
7	NELY	Pelayaran Nelly Dwi Putri Tbk	Shipping
8	MITI	Mitra Investindo Tbk	Shipping and Total Logistics Services
9	PURA	PT Putra Rajawali Kencana Tbk.	Transportation
10	SMDR	Samudera Indonesia Tbk	Sea Freight Shipping Services
11	TNCA	PT Trimuda Nuansa Citra Tbk.	Postal and Giro Services, Trade, and Transportation
12	TRUK	PT Guna Timur Raya Tbk.	Freight Forwarding Services
13	WEHA	PT WEHA Transportasi Indonesia Tbk	Transportation Services
14	KJEN	PT Krida Jaringan Nusantara Tbk.	Courier or Delivery Services
15	HAIS	PT Hasnur Internasional Shipping Tbk	Cargo Transport by Sea Vessel
16	SAPX	PT Satria Antaran Prima Tbk.	Courier Activities, Warehousing, and Storage
17	TMAS	PT Temas Tbk.	Sea Transport

Source: IDX (2021)

Bankruptcy Analysis Model

Altman (1968) was one of the early researchers who researched the phenomenon of bankruptcy (Hikmatullah, 2022). The Altman Z-Score model, developed by Altman, remains one of the most effective tools for predicting corporate bankruptcy based on financial ratios (Lubis et al., 2025). Altman (1968) used five financial ratios to predict financial distress that have the potential to predict corporate bankruptcy: Working Capital to Total Assets, Retained Earnings to Total Assets, Earnings Before Interest and Tax to Total Assets, Market Value of Equity to Book Value of Total Debt, and Sales to Total Assets.

Altman first obtained the Altman Z - score analysis model through research on various publicly listed companies in the manufacturing sector in the United States. Thus, this first model was deemed more suitable for predicting business continuity in publicly listed companies in the

manufacturing sector (Nirmalasari, 2023). The revised Altman Z - score analysis model emerged in 1983-1984 and triggered Altman to conduct further research in various countries. Not all companies conduct public offerings and have a market value (Nasmi & Afriyenti, 2021). Modified Altman Z - score analysis models emerged over time and were adapted to various types of companies. In 1995, Altman conducted further research on the potential bankruptcy of companies other than publicly listed and not yet publicly listed in the manufacturing sector (Harlen, 2018).

The Altman Z - score calculation has a better accuracy rate than other models. Alfiyanti's (2019) research revealed that the Altman Z - score analysis model has a better accuracy rate than the Springate analysis model. Rahmah's (2018) study revealed a similar finding: the Altman Z - score analysis model has a better accuracy rate than the Zmijewski, Springate, and Grover analysis models. Widuri's (2018) research also stated that the Altman Z - score analysis model has a better accuracy rate than the Grover O - score model. Penelitian Salsabiila et al. (2022) research stated that the Altman Z - score analysis model has an accuracy rate of 75%. Febriana & Wahidahwati's (2018) study noted that the Altman Z - score analysis model has a higher accuracy rate than the Zmijewski, Ohlson, and Grover models. Seto & Trisnaningsih (2021) revealed that the Altman Z - score analysis model has better accuracy than the Springate, Zmijewski, and Grover analysis models. The following is the equation for the Altman Z - score analysis model.

$$Z_i = 1,2X_1 + 1,4X_2 + 3,3X_3 + 0,6X_4 + 1,0X_5$$

Information:

Z_i : Altman Z-Score

X_1 : Working Capital to Total Assets

X_2 : Retained Earnings to Total Assets

X_3 : Earning Before Interest and Tax to Total Assets

X_4 : Market Value of Equity to Total Liabilities

X_5 : Sales to Total Assets

Working Capital to Total Assets is a ratio that shows a company's performance in generating working capital from all assets owned by the company (Patunrui & Yati, 2017). Retained Earnings to Total Assets is a ratio that shows a company's ability to generate retained earnings.

Retained earnings are profits that are not distributed to the company's shareholders (Kewal et al., 2020). Earnings Before Interest and Tax to Total Assets is a ratio that describes a company's profit before deducting interest and taxes (Irma et al., 2023). Market Value of Equity to Total Liabilities is a ratio that compares the market value of equity (obtained from the market value of shares multiplied by the number of shares outstanding) with total debt (Alfiyanti, 2019). Sales to Total Assets is a ratio that shows the company's efficiency in generating profits from its total assets (Suteja, 2018).

This study will explain the differences in financial distress conditions using the Altman Z - score analysis for issuers in the transportation and logistics sector during and after COVID-19. The differences can be identified by examining financial distress conditions during and after COVID-19. His statement aligns with research by Islami & Cangguh (2023) which stated significant differences in financial distress conditions before and during COVID-19. They noted that in 2020, there was a 10% increase in companies' financial distress compared to 2019. This statement also aligns with research by Putri & Friyatmi (2023) which stated that companies in the real estate and property sectors showed differences in financial distress conditions before and during the COVID-19 pandemic.

This contrasts with Hikmatullah (2022) research, which found no significant difference in financial distress before and during COVID-19. Two out of ten issuers were healthy, seven out of ten were in the grey zone, and seven were experiencing financial distress. Meanwhile, during COVID-19, one out of ten issuers was considered healthy, five were in the gray zone, and four were experiencing financial distress. The hypothesis formulated from the above description, H1, is that there is a significant difference in the financial distress of issuers in the transportation and logistics sector on the list of sharia securities during and after COVID-19.

The hypothesis that can be formulated from the description above is as follows:

H₁: There is a significant difference in the financial distress conditions of issuers in the transportation and logistics sector on the list of sharia securities during and after COVID-19.

METHOD

This study examines and compares the financial distress of issuers in the transportation and logistics sector listed on the Sharia Securities List (DES) during and after the Covid-19 pandemic. A quantitative approach was adopted because it allows for objective measurement and statistical analysis of financial data, providing precise insights into patterns of financial

distress over time. The research utilized Microsoft Excel and SPSS 25 for data analysis. Following Sugiyono (2022), quantitative research—often referred to as traditional research—remains a widely accepted methodology due to its ability to produce generalizable and replicable results. The analysis involved a normality test, followed by a paired sample t-test for normally distributed data or a Wilcoxon signed-rank test for non-normal data. The study population comprised 17 issuers in the transportation and logistics sector listed on the DES from 2021 to 2024. Using the Isaac and Michael formula with a 5% margin of error, the required sample size was 14 issuers. The research sample was selected based on the following criteria: 1) inclusion in the 2021–2024 Sharia Securities List; 2) operation in the transportation and logistics sector; and 3) publication of consecutive financial reports on the Indonesia Stock Exchange website during 2021–2024.

Table 2. Research Sample Companies

No.	Company Name	Stock Code	Sector	IPO Date
1	PT Mineral Sumberdaya Mandiri Tbk	AKSI	Logistic	13 July 2001
2	PT Blue Bird Tbk	BIRD	Transportation	05 November 2014
3	Berlian Laju Tanker Tbk	BLTA	Logistic	26 March 1990
4	PT Armada Berjaya Trans Tbk.	JAYA	Logistic	21 February 2019
5	PT Eka Sari Lorena Transport Tbk.	LRNA	Transportation	15 April 2014
6	Mitra International Resources Tbk	MIRA	Logistic	30 January 1997
7	Pelayaran Nelly Dwi Putri Tbk	NELY	Logistic	11 October 2012
8	Mitra Investindo Tbk	MITI	Logistic	16 July 1997
9	PT Putra Rajawali Kencana Tbk.	PURA	Logistic	29 January 2020
10	Samudera Indonesia Tbk	SMDR	Logistic	05 July 1999
11	PT Trimuda Nuansa Citra Tbk.	TNCA	Logistic	28 June 2018
12	PT Guna Timur Raya Tbk.	TRUK	Logistic	23 May 2018
13	PT WEHA Transportasi Indonesia Tbk	WEHA	Transportation	31 May 2007
14	PT Krida Jaringan Nusantara Tbk.	KJEN	Logistic	01 July 2019

Source: IDX (2021)

The type of data in this study is secondary data. The sampling method was carried out using documentation, collecting issuers' quarterly financial reports through the official website of the Indonesia Stock Exchange. The data analysis techniques used were: 1) Calculating the Altman Z - Score indicator; 2) Conducting descriptive analysis; 3) Conducting normality tests to determine data distribution; 4) Conducting hypothesis tests based on data distribution; 5) Concluding.

RESULTS

The following is the financial distress condition of issuers in the transportation and logistics sector, a list of sharia securities for the 2021-2024 period.

Table 3. Financial Condition Category

Year-Q	Red Area	Grey Area	Green Area
2021-Q1	14	0	0
2021-Q2	12	2	0
2021-Q3	12	2	0
2021-Q4	12	2	0
2022-Q1	14	0	0
2022-Q2	13	1	0
2022-Q3	11	3	0
2022-Q4	10	3	1
During COVID-19	98	13	1
2023-Q1	14	0	0
2023-Q2	12	2	0
2023-Q3	12	2	0
2023-Q4	11	2	1
2024-Q1	14	0	0
2024-Q2	14	0	0
2024-Q3	13	1	0
2024-Q4	11	3	0
After COVID-19	101	10	1
Total	199	23	2

According to Altman (1968), a company's financial condition can be categorized into three categories: non-financial distress (green area), zone of ignorance (grey area), and all bankruptcy (red area). Of the 224 quarterly financial reports collected, most issuers, or 199 financial reports, were in the red area. This indicates the potential for significant financial distress for the majority of issuers. Meanwhile, 23 financial reports were included in the grey area, and only two financial reports were in the green area, reflecting a healthy financial condition. The analysis of 112 issuers' quarterly financial reports during the COVID-19 period showed that 98 financial reports (87.5%) were in the red area, 13 financial reports (11.6%) were in the grey area, and only 1 financial report (0.9%) was in the green area. Meanwhile, in the post-COVID-19 period, of the 112 quarterly financial reports analyzed, 89 financial reports (79.5%) were still in the red area. Ten financial reports (8.9%) are in the grey area, and 13 financial reports (11.6%) have moved to the green area.

Table 4. Descriptive Analysis

	Mean	Std. Deviation	Minimum	Maximum
During Cov-19	-1,11388	6,362118	-24,779	3,018
After Cov-19	-0,70652	4,921997	-19,459	3,599

Based on the descriptive analysis table, the information obtained on financial distress data of issuers in the transportation and logistics sector during the COVID-19 pandemic has an average data (mean) of -1.11388, a standard deviation of 6.362118, the lowest data value (minimum) of -24.779, and the highest data value (maximum) of 3.018. Based on the table above, the information obtained on financial distress data of issuers in the transportation and logistics sector after COVID-19 has an average data (mean) of -0.70652, a standard deviation of 4.921997, the lowest data value (minimum) of -19.459, and the highest data value (maximum) of 3.599.

Table 5. Classical Assumption Test

	Kolmogorov-Smirnov		
	Statistic	df	Sig.
During Cov-19	0,402	112	< 0,001
After Cov-19	0,375	112	< 0,001

Based on the results of the classical assumption test using the Kolmogorov-Smirnov test, the Altman Z - Score data during COVID-19 has a statistical test result of 0.402 with a significance value of 0.001 or less than 0.05. Based on the results of the classical assumption test using the Kolmogorov-Smirnov test, the Altman Z - Score data after COVID-19 has a statistical value of 0.375 with a significance value of 0.001 or less than 0.05 (Sugiyono, 2022). These results indicate that the data distribution is not normal. Therefore, the difference test that will be used is non-parametric (Wilcoxon Signed Rank Test).

Table 6. Wilcoxon Rank Signed Test

During Cov-19 - After Cov-19	
Z	-1,0501
Asymp. Sig. (2-tailed)	0,133

Based on the table above, the Z-test statistic value is -1.0501 with a two-tailed probability value (Asymp. Sig. 2-tailed) of 0.133. A negative Z-value (-1.0501) indicates a downward trend in the Altman Z - Score value from the period during COVID-19 to the period after COVID-19, meaning there is a tendency for financial distress to increase. This interpretation is supported by the note "Based on negative Ranks," which shows that the calculation is based on the ranking of negative differences, namely when the Altman Z - Score in the "after" period is lower than "during." The probability value (p-value) is indicated by the Asymptotic

Significance value of 0.133, which is greater than the significance level (α) set at 0.05 (Sugiyono, 2022). Therefore, it can be concluded from the hypothesis test that H_1 is rejected and H_0 is accepted. Namely, there is no significant difference in the condition of financial distress in issuers in the transportation and logistics sector of the Sharia Securities List using the Altman Z - Score during and after COVID-19.

DISCUSSION

Based on statistical tests of fourteen issuers in the transportation and logistics sector on the Sharia Securities List using the Altman Z-Score during and after COVID-19, it was found that there was no significant difference in financial distress during and after COVID-19. This finding indicates that the issuers' financial condition during and after COVID-19 did not show significant changes, despite the time difference between the two periods.

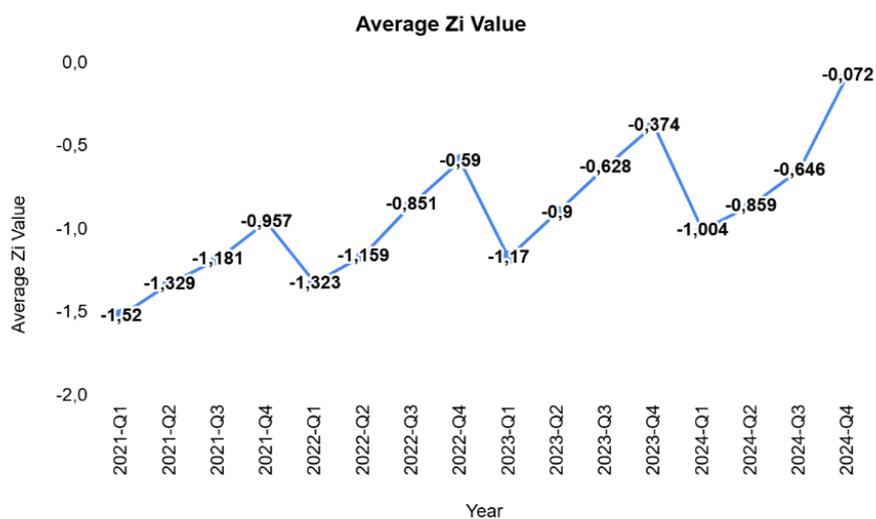


Figure 4. Average Zi Value

The figure above shows the average Z - score from 2021 to 2024, indicating an increase or positive trend. This is in line with Marselina et al. (2023), who demonstrated a positive trend in the financial condition of issuers in the transportation and logistics sector before and during COVID-19 using the Zmijewski method. Although the average Z - score remains in the negative zone, a steady increase is observed. The average Z - score shows a trend approaching 0, from its previous position of 1.52, indicating an improvement in financial conditions, although not yet out of the financial distress zone. The Z - score experienced several corrections before finally resuming its positive trend. The figure above shows three corrections, with a significant increase occurring at the end of the trend from 2024 to Q4.

These findings indicate financial stability for issuers in the transportation and logistics sector, although most remain in the red zone or are in financial distress, based on the Altman Z - Score approach. However, issuers in this sector demonstrate relative resilience, exhibiting positive trends and avoiding bankruptcy during the COVID-19 pandemic. This demonstrates the issuer's ability to adapt to economic shocks and employ sound risk management, enabling them to survive the COVID-19 pandemic despite indications of financial insolvency.

These results align with research by Marselina et al. (2023), Maulana & Sukwana (2024), dan Hikmatullah (2022). Marselina et al. (2023) concluded that there was no significant difference in the financial distress of issuers in the transportation and logistics sector before and during COVID-19 using the Grover and Zmijewski method. However, several previous studies have shown different results and are inconsistent with this study. Faizy et al. (2023), Putri & Friyatmi (2023), Islami & Canggi (2023), Tazza & Setyaningsih (2022), all reported significant differences in their studies.

One factor supporting the resilience of issuers listed on the Sharia Securities List (DES) during COVID-19 is a more manageable debt structure. Specifically, Sharia stocks have distinct characteristics from conventional stocks. One of the main criteria for Sharia stocks is that the issuer's total interest-based debt must not exceed 45% of its total assets (OJK, 2017). Meanwhile, conventional stocks have no debt structure restrictions. This limit was formulated with the fundamental aim of ensuring the financial stability of Sharia issuers and implementing structured risk management principles. This debt ratio restriction specifically serves to prevent excessive debt, which could potentially disrupt the company's capital structure and solvency. The implications are evident in the Altman Z - Score calculation, where net working capital divided by total assets (indicator X1) becomes crucial. The interest-based debt ratio restriction is expected to enable Sharia issuers to maintain a healthy financial profile and resilience to potential economic turmoil, thereby maintaining their performance and business continuity in accordance with Sharia principles.

Transportation companies are entities that provide goods or passenger transportation services from one location to another, encompassing land, sea, and air transportation. Logistics companies, on the other hand, are responsible for the goods delivery process (Tempo, 2023). IDX (2024a) listed 37 issuers in the transportation and logistics sector and 24 issuers on the Sharia Securities List. Operational activities in the logistics and transportation sector experienced challenges during and after COVID-19. Transportation restrictions during the

pandemic, coupled with disruptions in the logistics sector, disrupted the supply chain. This situation resulted in logistics delays and forced companies to spend additional capital to overcome these obstacles. However, transportation and logistics companies remained resilient and avoided bankruptcy.

One of the government's efforts to support the transportation and logistics sector is through tax relief. Government initiatives include income tax relief under Article 21, import tax exemptions under Article 22, reductions in Article 25 Income Tax (PPH), and accelerated Value Added Tax (VAT) refunds, all of which serve as fiscal stimuli in response to the COVID-19 pandemic (Pratiwi, 2022). The government-funded stimulus under Article 21 helps companies reduce operational costs. The exemption of Article 22 Import Income Tax has a positive impact on the efficiency of companies' operational costs, as it eliminates the obligation to pay income tax on imported goods. The government-funded stimulus under Article 21 helps companies reduce operational costs, while the exemption of Article 22 import tax positively impacts operational efficiency by eliminating the obligation to pay tax on imported goods. This, in turn, indirectly improves company margins, enabling them to withstand the challenges posed by the COVID-19 pandemic and stabilize cash flow. Additionally, accelerated VAT refunds allow issuers to achieve faster cash flow and increase working capital, thereby supporting the continuity of company operations.

The period from 2021 to 2024 shows an increase in logistics traffic, from an initial 6 million tons to 8 million tons. The figure shows that the increase in loading and unloading capacity in the logistics sector is a key driver of the issuer's operations. This increase has had a positive impact on the issuer's operational continuity, especially considering the challenges experienced at the start of the COVID-19 pandemic.

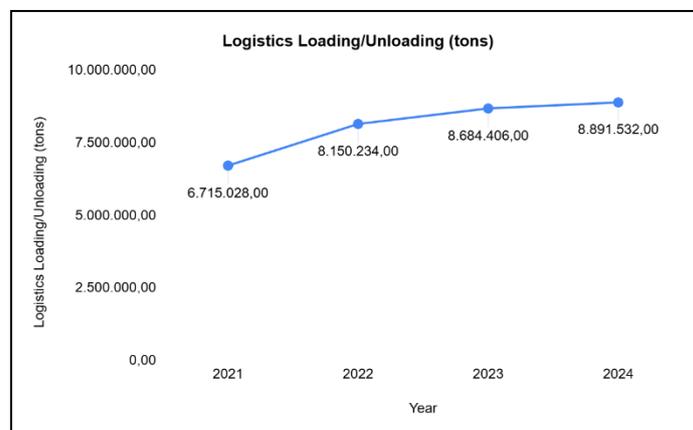


Figure 5. Logistics Loading/Unloading (tons)

Based on Figure 4, issuers in the transportation and logistics sector generally showed a positive trend. However, one issuer experienced a negative trend, and twelve issuers experienced a positive trend. Figure 5 shows MIRA as the issuer experiencing a negative trend. Furthermore, Figure 6 shows the thirteen issuers with a positive trend: AKSI, BIRD, BLTA, JAYA, LRNA, MITI, NELY, PURA, SMDR, TNCA, TRUK, WEHA, and KJEN.

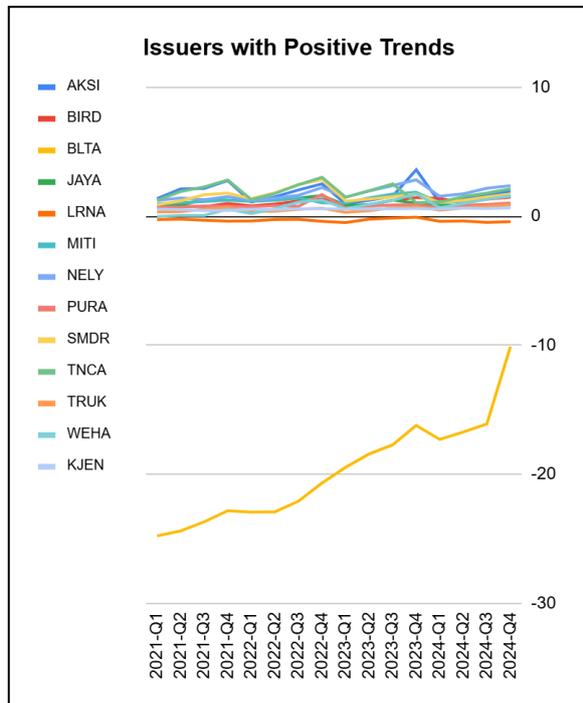


Figure 6. Issuers with Positive Trends

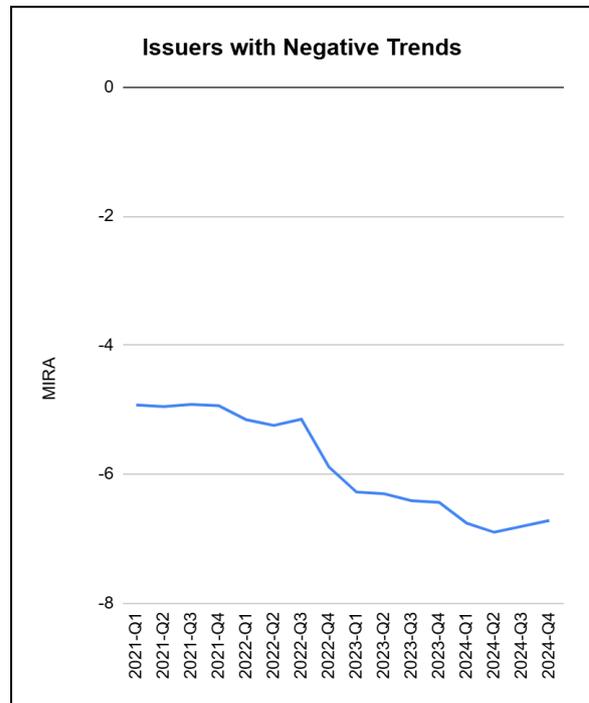


Figure 7. Issuers with Negative Trends

Financial distress can have a profound negative impact on a company’s sustainability. If not addressed promptly and effectively, it may lead to bankruptcy. For publicly listed companies, financial distress directly affects investor confidence, as investors may perceive that management has failed to manage the entrusted funds appropriately. Additionally, it can strain relationships with creditors and other external stakeholders. However, financial distress can also serve as an early warning signal, prompting management to conduct a thorough evaluation of the company’s financial structure and performance, enabling corrective measures to restore stability and avoid bankruptcy. Based on the analysis of financial distress among issuers in the transportation and logistics sector listed on the Sharia Securities List for 2021–2024, no significant differences were observed across the quarters. This suggests that, despite most issuers still being classified in the Red Area, they have generally succeeded in maintaining financial stability and preventing bankruptcy.

The findings imply several key points. First, management in this sector appears to have implemented effective financial strategies to mitigate the adverse effects of financial distress, which is particularly notable given the lingering impact of the COVID-19 pandemic. Second, the persistent classification of companies in the Red Area highlights the need for continuous monitoring and proactive financial management, including cost optimization, working capital management, and revenue diversification. Finally, the results reinforce the value of using the Altman Z-Score as an early warning tool, not only for investors and regulators but also for company management, to anticipate financial vulnerabilities and take timely corrective actions.

CONCLUSION

The results of this study indicate that stocks in the transportation and logistics sector, particularly those listed as Sharia-compliant, can be an attractive and relatively stable investment option. This sector has proven resilient in the face of the COVID-19 pandemic crisis, indicating a manageable risk of financial distress even amidst economic uncertainty. These findings underscore the importance of adaptive and responsive management strategies in facing future challenges and changing market conditions. Although this sector demonstrates resilience, management needs to continue developing risk mitigation strategies, business diversification, and operational efficiency to maintain optimal financial performance and address potential economic shocks, particularly unpredictable risks. The scope of this study could be expanded by increasing the sample size and sectors of issuers, such as issuers in sectors that play a significant role in the capital market and the national economy. Expanding the research period could be used to obtain broader and more robust generalizations. The use of other multi-model financial distress analyses, such as Springate, Zmijewski, or Grover, would provide a more comprehensive perspective and validate the findings.

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