



# Financial Distress Analysis Using The Altman Z-Score Method For Retail Companies During The Covid-19 Pandemic

Ratnawaty Marginingsih

Management, Faculty of Economics and Business, Universitas Bina Sarana Informatika, Jl. Kramat Raya No. 98. Senen, Jakarta Pusat 10450

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## ABSTRACT

The retail industry is one of the sectors hardest hit by the impact of the Covid-19 pandemic. This condition has resulted in a number of large retail companies in Indonesia experiencing financial distress to the point of announcing that they experienced losses and could no longer survive. The purpose of this study was to analyze financial distress in retail companies during the covid-19 pandemic. In this research, the type of descriptive quantitative research is used. The sampling technique used purposive sampling technique and the type of data used secondary data. The data collection method uses the financial statements of retail sector companies with hypermarket, supermarket and minimarket businesses that have been published for the 2017-2020 period. Data analysis used the first Altman Z-Score discriminant ratio model. The results of the study show that from 2017-2019 most issuers are in the non-distress category or not bankrupt, except for HERO which is in a gray area condition. Then for 2020 the issuers of MPPA, RANC, AMRT remain in a non-distress condition, while the issuers of RALS and MIDI shift to the condition of the gray area, issuers of HERO are experiencing a setback by being in a state of distress or experiencing financial difficulties.

**E-mail:**  
[ratnawaty.rmg@bsi.ac.id](mailto:ratnawaty.rmg@bsi.ac.id)

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## 1. Introduction

The Covid-19 pandemic that hit the world, including Indonesia, resulted in changes in the order of life, both in terms of economy and people's consumption behavior. These changes resulted in an impact on various sectors including the retail sector. The retail sector is one of the hardest hit business segments due to the impact of the COVID-19 pandemic. Several companies or retail issuers also experienced a decrease in income, even bearing losses (Mulyana, 2021). Data from the Indonesian Retail Entrepreneurs Association (APRINDO) shows that more than 1,500 retail stores have been out of business since the beginning of the pandemic until the current emergency PPKM. The closed retails are dominated by the lower middle class, MSME actors, and the informal sector. So that this results in a weak and low consumption power (Hendartyo, 2021). Meanwhile, based on data from CEIC Indonesia, Indonesia's retail sales growth was reported to be -0.1% in August 2021. This record increased compared to the previous -2.9% for July 2021. The data also shows that the highest increase of 28.2% was achieved in December 2013 and the lowest was recorded at -20.6% in May 2020 (CEIC, 2021)

This condition has resulted in several large retail companies in Indonesia experiencing financial distress to the point of announcing a loss and saying they can no longer survive. Not a few of them closed some or even all of their outlets in various regions. Financial distress is a condition that shows the stage of declining company performance financial condition that existed prior to bankruptcy or liquidation (Lewaru et al, 2021). Financial condition distress is described by the company's inability or unavailability of funds to pay

its obligations due date (Tahu, 2019). Financial distress is a term used to describe the condition of a company that is experiencing financial difficulties (Cindik et. al, 2021) Financial difficulties begin when the company is no longer able to pay its obligations, especially short-term obligations. If a company experiences problems with its liquidity, the company to start entering a period of financial distress, and if the financial difficulties are not resolved immediately it can result in bankruptcy conditions.(Fahmi, 2017).

Measurement of financial distress can be done by using financial ratios as an analytical tool for the company's financial statements. One way to overcome bankruptcy is to use finance analysis to unify and provide standards for the company. To date, several models have been developed as: analytical tool that can relate several financial ratios as well as predicting the possibility of financial difficulties in company (Toly et. al, 2019). Financial ratio analysis is a technique for evaluating company finances report by combining the figures in the income statement and trial balance. This report provides information about the financial condition in a systematic and displays the results of the company's operations in the past and present. corporate bankruptcy is usually preceded by serious financial difficulties characterized by uncertainty about the firm's future profitability (Utami et. al, 2020)

Financial distress analysis using the Altman Z-Score method can be used to predict corporate bankruptcy. Altman Z-Score method is a calculation formula used to predict the occurrence of financial distress in a company. Altman Z-Score is a tool used to predict bankruptcy rate of a company by calculating the value of several ratios and then plugged into the discriminant equation (Fitriani et. al, 2020). This bankruptcy prediction model was first developed by Edward I. Altman in 1968 using the Multiple Discriminant Analysis (MDA) method. This discriminant analysis technique is a statistical technique that identifies several financial ratios that are considered to affect an event by using five types of financial ratios that can be combined to see the difference between bankrupt and non-bankrupt companies. The Altman Z-Score model is a tool that takes into account and combines certain financial ratios within the company in a discriminant equation which will produce a certain score that will indicate the level of probability of the company's bankruptcy (Diana, 2018)

Financial distress it could be early warning as a warning that there is a problem at the company what needs to be fixed (Setiawan, 2021). Information about financial distress conditions can provide very important benefits for various parties because knowing companies experiencing financial distress conditions, can be used as a decision-making tool or action to improve the situation and prevent potential bankruptcy of a company.

## 2. Methods

In this research, the type of research used is descriptive quantitative research. The sampling technique used was purposive sampling technique and the type of data used in this study was secondary data. The data collection method is to use the financial statements of retail sector companies with hypermarket, supermarket and minimarket businesses that have been published through the Indonesia Stock Exchange (IDX) for the 2017-2020 period. Based on these criteria, 6 (six) retail companies were used in this study, namely PT Hero Supermarket, Tbk (HERO), PT Matahari Putra Prima, Tbk (MPPA), PT Ramayana Lestari Sentosa, Tbk (RALS), PT Supra Boga Lestari, Tbk (RANC), PT Sumber Alfaria Trijaya, Tbk (AMRT), PT Midi Utama Indonesia, Tbk (MIDI). Data analysis in this study is based on the results of the weighting of the first Altman discriminant ratio model as follows:

$$Z = 1,2X_1 + 1,4X_2 + 3,3X_3 + 0,6X_4 + 0,999X_5 \dots\dots\dots(1)$$

Information:

$X_1$  = Working Capital/Total Assets

$X_2$  = Retained Earnings/Total Assets

$X_3$  = Earnings Before Interest and Taxes/Total Assets

$X_4$  = Market Value of Equity/Book Value of Total Debt

$X_5$  = Sales/Total Assets

Z = Bankruptcy Indeks.

The Z value calculated from the combined total of the 5 (five) ratios will show the condition of the company. The ratio parameters used are as follows

**Table 1.**  
Altman Z-Score Discriminant Ratio Parameters

Variabel	Definition	Parameter	Measuring Scale
WC/TA (X <sub>1</sub> )	This ratio is used to measure the level of liquidity by comparing net liquid assets with total assets.	$\frac{\text{Working Capital}}{\text{Total Assets}} \times 100\%$	Ratio
RE/TA (X <sub>2</sub> )	This ratio is used to measure whether the cumulative profit is able to offset the total assets.	$\frac{\text{Retained Earnings}}{\text{Total Assets}} \times 100\%$	Ratio
EBIT/TA (X <sub>3</sub> )	This ratio is used to measure the achievement of company profits, especially in order to meet the interest obligations of investors.	$\frac{\text{EBIT}}{\text{Total Asset}} \times 100\%$	Ratio
MVE/BVTD (X <sub>4</sub> )	This ratio is used to measure the company's ability to provide guarantees for each of its debts through its own capital.	$\frac{\text{MVE}}{\text{BVTD}} \times 100\%$	Ratio
S/TA (X <sub>5</sub> )	This ratio is used to measure how efficient the company is in using company assets to generate sales.	$\frac{\text{Sales}}{\text{Total Assets}} \times 100\%$	Ratio

Furthermore, according to Altman, there is a cut-off figure that can explain the company category by dividing it into 3 (three) categories. If the Z value < 1.81, it is a company that is in a state of bankruptcy. Furthermore, if the value is 1.81 < Z < 2.99 then it is included in the gray area and if the Z value is > 2.99 then it is a company that is not bankrupt (Diana, 2018).

### 3. Results and Discussion

The calculation of the discriminant ratio using the Altman Z-Score method is the first step in this research stage. The calculation of the discriminant ratio is as follows:

**Table 2.**  
Results of Calculation of The Discriminat Ratio  
2017-2020 Period

<i>Working Capital/Total Assets (X<sub>1</sub>)</i>				
Code	2017	2018	2019	2020
HERO	0.16	0.13	0.04	-0.16
MPPA	-0.07	-0.09	-0.19	-0.26
RALS	0.48	0.45	0.51	0.42

RANC	0.22	0.21	0.23	0.09
AMRT	0.11	0.08	0.07	-0.06
MIDI	-0.12	-0.16	-0.14	-0.21
<i>Retained Earnings/Total Assets (X<sub>2</sub>)</i>				
Code	2017	2018	2019	2020
HERO	0.14	0.12	0.07	-0.27
MPPA	-0.13	-0.15	-0.34	-0.37
RALS	0.73	0.70	0.71	0.68
RANC	0.27	0.25	0.29	0.21
AMRT	0.16	0.15	0.17	0.18
MIDI	0.17	0.14	0.17	0.16
<i>Earnings Before Interest and Taxes/Total Assets (X<sub>3</sub>)</i>				
Code	2017	2018	2019	2020
HERO	-0.19	-0.21	-0.01	-0.18
MPPA	-0.15	-0.18	-0.06	-0.03
RALS	0.16	0.14	0.12	-0.04
RANC	0.08	0.07	0.08	0.06
AMRT	0.08	0.06	0.07	0.07
MIDI	0.09	0.08	0.09	0.09
<i>Market Value of Equity/Book Value of Total Debt (X<sub>4</sub>)</i>				
Code	2017	2018	2019	2020
HERO	0.75	0.71	0.65	0.87
MPPA	3.25	3.21	3.14	5.48
RALS	0.17	0.14	0.21	0.29
RANC	0.84	0.81	0.78	1.15
AMRT	0.43	0.42	0.48	0.55
MIDI	1.28	1.25	1.15	0.82
<i>Sales/Total Assets (X<sub>5</sub>)</i>				
Code	2017	2018	2019	2020
HERO	2.05	2.07	2.02	1.85
MPPA	2.24	2.23	2.28	1.50
RALS	1.20	1.10	0.98	0.49
RANC	2.67	2.62	2.53	2.28
AMRT	3.05	3.01	3.05	2.94
MIDI	2.17	2.16	2.34	2.15

Sources : Research data processed (2022)

Based on the results of the calculation of the discriminant ratio above, it can be seen that the WC/TA ratio (X<sub>1</sub>) in the six issuers of retail companies from 2017-2020 experienced a condition that tends to decrease for liquidity compared to total assets. In general, if the company is experiencing financial difficulties, the decrease in working capital will be faster than total assets causing this ratio to fall. The most

significant decline occurred in HERO with the most drastic decline occurring in 2020 compared to MPPA, RALS, RANC, AMRT and MIDI.

In the RE/TA ratio (X2), the cumulative profit measurement to offset the number of assets in retail companies in the data above shows fluctuating results from 2017-2020. HERO issuers experienced the most declines compared to other issuers in 2020. This shows the company's ability to earn profits, in terms of the company's ability to earn profits compared to the operating assets turnover speed as a measure of business efficiency while operating in that year experienced a decline from previous years. the previous year.

The EBIT/TA (X3) ratio as a measure of the company's profit achievement, especially in order to meet the interest obligations of investors, based on the results of the calculations in the table above shows that the issuers of HERO, MPPA, RALS experienced fluctuating conditions from 2017-2020 compared to issuers of RANC, AMRT, MIDI tends to be more stable.

In the next ratio, namely MVE/BVTD (X4) as a measurement of the company's ability to provide guarantees for each of its debts through its own capital, the table above shows that all issuers experienced fluctuating conditions during 2017-2020. The largest increase occurred in MPPA issuers in 2020 compared to other issuers.

While the S/TA ratio (X5) as a measurement of management's ability to use assets to generate sales which is the core operation of the company to be able to maintain its viability, based on the results in the table above shows that all issuers continue to experience a decline from 2017-2020. The most drastic decline was experienced by HERO, MPPA, RALS compared to RANC, AMRT, MIDI issuers in 2020.

The next step after the discriminant ratios are calculated, the results of the ratio are multiplied by the weighting coefficient to determine the prediction of financial distress with the original Altman Z-Score model. The Z-Score calculation results are presented in the following table:

**Table 3.**  
Altman Z-Score Calculation Results  
2017-2020 Period

Year 2017						
Code	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>	X <sub>5</sub>	Z-Score
HERO	0.19	0.20	-0.63	0.45	2.05	2.26
MPPA	-0.08	-0.18	0.49	1.95	2.24	3.44
RALS	0.58	1.02	0.53	0.10	1.20	3.43
RANC	0.26	0.38	0.26	0.50	2.67	4.07
AMRT	0.13	0.22	0.26	0.26	3.05	3.92
MIDI	-0.14	0.23	0.29	0.76	2.17	3.31
Year 2018						
Code	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>	X <sub>5</sub>	Z-Score
HERO	0.16	0.17	-0.69	0.42	2.07	2.13
MPPA	-0.11	-0.21	0.59	1.88	2.23	3.20
RALS	0.54	0.98	0.46	0.13	1.10	3.21
RANC	0.25	0.35	0.23	0.49	2.62	3.94
AMRT	0.09	0.21	0.20	0.25	3.01	3.76
MIDI	-0.19	0.20	0.26	0.75	2.16	3.80
Year 2019						

Code	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>	X <sub>5</sub>	Z-Score
HERO	0.05	0.09	-0.33	0.39	2.02	2.52
MPPA	-0.23	-0.48	-0.20	1.88	2.28	3.25
RALS	0.61	0.99	0.40	0.13	0.98	3.11
RANC	0.28	0.41	0.26	0.47	2.53	3.95
AMRT	0.08	0.24	0.23	0.29	3.05	3.89
MIDI	-0.17	0.24	0.30	0.70	2.34	3.41

Year 2020

Code	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>	X <sub>5</sub>	Z-Score
HERO	-0.19	-0.38	-0.60	0.52	1.85	1.20
MPPA	-0.31	-0.52	-0.09	3.29	1.50	3.87
RALS	0.50	0.95	-0.13	0.17	0.49	1.98
RANC	0.11	0.29	0.20	0.70	2.28	3.58
AMRT	-0.07	0.25	0.23	0.33	2.94	3.68
MIDI	-0.25	0.22	0.30	0.50	2.15	2.92

Sources : Research data processed (2022)

Based on the results of the Z-Score calculation above, it can be determined the category of financial distress zone which is presented in the following table:

**Table 4.**  
Category Financial Distress Zone  
2017-2020 Period

Code	Z-Score				Zone Category			
	2017	2018	2019	2020	2017	2018	2019	2020
HERO	2.26	2.13	2.52	1.20	<i>Grey</i>	<i>Grey</i>	<i>Grey</i>	<i>Distress</i>
MPPA	3.44	3.20	3.25	3.87	<i>Non-Distress</i>	<i>Non-Distress</i>	<i>Non-Distress</i>	<i>Non-Distress</i>
RALS	3.43	3.21	3.11	1.98	<i>Non-Distress</i>	<i>Non-Distress</i>	<i>Non-Distress</i>	<i>Grey</i>
RANC	4.07	3.94	3.95	3.58	<i>Non-Distress</i>	<i>Non-Distress</i>	<i>Non-Distress</i>	<i>Non-Distress</i>
AMRT	3.92	3.76	3.89	3.68	<i>Non-Distress</i>	<i>Non-Distress</i>	<i>Non-Distress</i>	<i>Non-Distress</i>
MIDI	3.31	3.80	3.41	2.92	<i>Non-Distress</i>	<i>Non-Distress</i>	<i>Non-Distress</i>	<i>Grey</i>

Sources : Research data processed (2022)

Based on the data above for the year 2017-2020, the results vary for all issuers. Most of the six issuers are in the category of non-distress or not bankrupt in the category of financial distress zones. This condition does not occur in HERO where from 2017-2019 the prediction results are at a value of  $1.81 < Z < 2.99$ , which means the company is in the gray area category or is in a condition prone to financial difficulties. This result is in line with research conducted by (Silaen, et. al, 2020) which states that the company is in a gray area condition where the company must improve its financial condition. As for 2020, the prediction results  $Z < 1.81$ , which means the company is in a state of financial difficulty. HERO, which runs the Giant hypermarket business, was in a deteriorating condition that year which resulted in closing its outlets in

several areas. This is done by the company as a step to stay afloat by focusing more on other brands owned by HERO.

Meanwhile, issuers of MPPA, RANC, AMRT for 2017-2020 are in a non-distress condition or not bankrupt where the prediction results are at a value of  $Z > 2.99$ . Research conducted by (Patmawati, et al., 2020) showed similar results where the issuer of RANC, AMRT for that year was in a healthy condition. Meanwhile, research conducted by (Achmada, et al., 2020) shows the results of MPPA issuers being in a non-bankrupt condition. In other words, the company continues to strive to improve its performance, especially financial performance which is a measuring tool or indicator to improve the company's operational activities in order to be able to maintain business.

RALS and MIDI issuers in 2017-2019 showed results  $Z > 2.99$ , which means the company is in a non-distress condition or not bankrupt. This study is in line with (Patmawati et al., 2020) and (Hernawaty et al., 2021) which show similar results where RALS issuers were in a healthy condition that year. Meanwhile, for 2020 the prediction results of  $1.81 < Z < 2.99$  for RALS and MIDI issuers are in a gray area condition or in a condition prone to experiencing financial difficulties so that further policy steps are needed based on the condition of the company.

#### 4. Conclusions

The results of the study conclude that the analysis of financial distress using the first/original Altman Z-Score method in retail companies in the hypermarket, supermarket and minimarket business sectors shows that from 2017-2019 issuers of MPPA, RALS, RANC, AMRT, MIDI are in non-performing conditions, distressed or not bankrupt. Meanwhile, HERO issuers in 2017-2019 are in a gray area condition or prone to financial difficulties. In 2020, HERO issuers are in distress or experiencing financial difficulties. For issuers MPPA, RANC, AMRT are in a state of non-distress or not bankrupt. Meanwhile, RALS and MIDI issuers are in a gray area condition or in a condition prone to financial difficulties.

Thus, companies that are in distress require evaluation, strategies and corrective steps where the Covid-19 pandemic condition and also changes in public consumption behavior trends require retail business actors to be able to continue to innovate to improve company performance so that it does not get worse. Meanwhile, for companies that are in a gray area condition, this is a signal that the company is in a bad condition because it is prone to financial difficulties, changing concepts, improving services and continuing to innovate need to be done by retail business actors to be able to survive during the pandemic.

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