



## **The Effect of Altman Z-Score as Tool for Predicting Potential Bankruptcy on Stock Prices in Retail Subsector Companies Listed on the IDX in 2019 – 2021**

**IGA Kade Amanda Githayoni<sup>1)</sup>, Cening Ardina<sup>2)</sup>, and I Made Wijana<sup>3)</sup>**

Accounting Department, Politeknik Negeri Bali  
Jalan Bukit Jimbaran, Kuta Selatan, Badung, Bali – 80364

Email to:

<sup>1)</sup> amandagithayoni@gmail.com

<sup>2)</sup> cening\_ardina@yahoo.co.id

<sup>3)</sup> madewijana@pnb.ac.id

**Abstract:** *The purpose of this study is to determine the Effect of Altman Z-Score as Tool for Predicting Potential Bankruptcy on Stock Prices in Retail Companies Listed on the IDX in 2019 – 2021. The data collection technique in this study uses documentation methods as well as literature studies published by the company. The data in this study uses financial statements published by retail sector companies listed on the Indonesia Stock Exchange in 2019 – 2021 by sampling using purposive sampling techniques. Companies that have met the sampling criteria are 11 companies. The data analysis method in this study uses Altman Z-score bankruptcy analysis, as well as for financial ratios using the ratio of Altman Z- score consisting of Working capital on total assets, retained earnings on total assets, profit before tax and interest on total assets, and book value of total equity at the book value of total liabilities. The next data analysis technique in this study used classical assumption tests, simple liner regression, and other hypothesis test tools. The results of this study showed that the Altman Z-score had a significant effect on the Stock Price of 17.7% with a calculated t value of 2.578 > 2.03951 (0.05 significant  $\alpha$ ) from the table. Based on the results of the Calculated Altman Z-score classification, it is shown that in 2021 there are 36 companies in a state of bankruptcy, 28% are in a state of gray area, and 36% are in a safe state.*

**Keyword:** *Predicting Potential Bankruptcy, Financial Statement, Altman Z-score, Stock Prices*

### **1. Introduction**

The increase in profit in an industry indicates that the industry's level of company performance is getting better [1]. Continuously increasing profits can guarantee the company's business continuity so as to avoid bankruptcy. There are many factors that can trigger bankruptcy, both internal and external factors. If these factors are not immediately attributed, it will certainly affect the company's income and will lead to bankruptcy [2]. However, in reality, a company is not only required to be able to maintain its business continuity, but the company must also be able to keep up with the times that are continuously innovating, competitive, and the arrival of unexpected business threats such as natural disasters or disease outbreaks.

The emergence of the covid-19 outbreak around the world has made the economy begin to change very drastically. Since the WHO (World Health Organization) announced that covid-19 is a global health emergency, at that time sales in the retail subsector have decreased due to reduced demand.

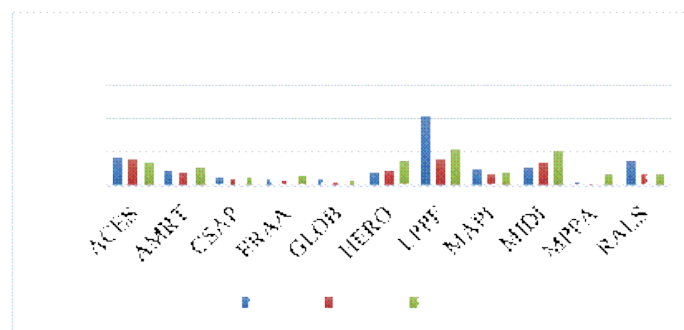
Table 1. Financial Performance of Retail Subsector Listed on the IDX in 2020 (in millions of rupiah)

No.	Company	Net Profit		Growth	Revenue		Growth
		2019	2020	%	2019	2020	%
1	ACES	1.017.394	733.195	-28%	8.142.71	7.412.766	-9%
2	AMRT	1.112.513	1.061.476	-5%	72.944	75.826	4%
3	CSAP	60.833.682	60.477.744	-1%	12.079	12.659	5%
4	ERAA	295.066	612.004	107%	32.944	34.113	4%
5	GLOB	(39.725)	(50.608)	-27%	238.615	30.671	-87%
6	HERO	(28.216)	(1.214.602)	-4205%	12.181	8.893	-27%
7	LPPF	1.366.884	(873.181)	-164%	10.276	4.839	-53%
8	MAPI	933.493	(553.716)	-159%	21.637	14.847	-31%
9	MIDI	203.061	200.272	-1%	11.625	12.659	9%
10	MPPA	(552.676)	(405.310)	27%	8.654.64	6.746.594	-22%
11	RALS	647.898	(138.874)	-121%	5.596.39	2.527.951	-55%

Source: Secondary data processed, 2022

According to the table data, the financial data especially average net profit growth of retail subsector companies around 2020 has decreased, based on the table shown that the decrease in net profit occurred by 80% and decreased by 60% on revenue. The biggest decrease was experienced by Hero Supermarket Tbk which was -4205% and net profit decrease by 1.214.602.000.000. According to the Minister of Trade, Muhammad Lutfi stated that the trade sector, especially the retail subsector, became the business sector that declined the most due to the Covid-19 pandemic [3].

The decline in the company's profit in the retail subsector was in line with the fluctuating share price of the company.



Source: Secondary data processed, 2022

According to the chart data above, the retail sector stock price data from 2019 to 2021 has fluctuated. Especially the shares of Matahari Department Store Tbk (LPPF) which have decreased significantly since covid-19 appeared in 2020 in Indonesia. So, it is very important for companies to always be swift in facing any business challenges so that profits can continue to increase, in line with the increase in stock prices, so as to avoid bankruptcy [4]. One of them is by using tools for

prediction. Various bankruptcy prediction tools can be carried out such as using the Altman method, the Springate method and the Zmijewski method. According to Hadi and Anggreni journal at Pratama Journal (2018) the Altman Z-score predictor has the greatest accuracy compared to other models [5], [6]. By using the Altman Z-score prediction tool, it will be seen which condition a company is in, namely in a healthy state, gray area, or potentially bankrupt, which of course can help investors before investing [7]. If the company's finances are healthy, investors will intend to invest, so that the company's capital increases, which will have an effect on increasing the company's profit, and will be in line with the increase in stock prices. Based on this, the focus of the research is 1) how does the Altman Z-score affect as a tool for predicting potential bankruptcy on stock prices in retail companies listed on the IDX in 2019 - 2021?

## 2. Method

The type of data used in this study is in the form of quantitative data. The quantitative data used is the financial statements of retail subsector companies listed on the IDX for 2019-2021. With sampling techniques using purposive sampling techniques. The data sources used in this study are secondary data, namely in the form of data that functions as a support for primary data in the form of total assets, total book value of equity, total book value of debt, retained earnings, working capital, as well as profit before interest and taxes. The data collection method used is documentation, namely the collection of research report data and financial statements and information by studying the analysis of the Altman Z-Score method and its effect on stock prices, the required documents are documents written based on the company's financial statements. The data analysis techniques used in this study are bankruptcy model analysis, descriptive statistical analysis, classical assumption test, and hypothesis UI using simple linear regression analysis [8].

## 3. Results and Discussion

### 3.1 Bankruptcy Model Analysis Results

The data used comes from the financial statements of the retail subsector listed on the IDX for 2019-2021 by sampling using purposive sampling. Based on the sample selection criteria, namely companies listed on the IDX in 2019 - 2021, publishing financial statements from 2019-2021, publishing stock prices in 2019 - 2021 and having the data needed for research, a total of 11 companies with 3 years of research obtained a total sample of 33.

Table 1. Bankruptcy Model Analysis Results

Company	2019	2020	2021
ACES	9,07	9,19	10,31
AMRT	1,83	0,91	1,31
CSAP	1,42	1,11	1,30
ERAA	3,85	3,96	4,75
GLOB	(649,33)	(595,09)	(537,10)
HERO	1,96	(1,53)	(2,62)
LPPF	66,79	(0,24)	3,34
MAPI	3,96	1,16	2,28
MIDI	0,42	(0,52)	0,14
MPPA	(2,75)	(3,56)	(2,25)
RALS	9,44	7,22	8,13

Source: Secondary data processed, 2022

Then the results of this analysis are classified into three classes, namely potential bankruptcy, gray area, and healthy [9]. The determination of the three classes is based on the Altman Z-score obtained. If the value of  $Z < 1.1$  is potentially bankrupt, the value range of 1.1 to 2.6 is in the grey area and if  $Z > 2.6$  is in good health. Thus, the results of the classification of Altman Z-score values from all research samples are as follows:

Table 2. Altman Z-Score Value Classification Results

Altman Z-score	2019	2020	2021
<b>Bankrupt Potential</b>	27%	55%	36%
<b>Grey Area</b>	18%	18%	27%
<b>Healthy</b>	55%	27%	36%

Source: Secondary data processed, 2022

Based on the table of the results of the Altman Z-score classification, it was found that the three categories showed fluctuations in value changes every year. The condition of sample companies that have the potential to go bankrupt increased significantly in 2020 and fell by 19% in 2021. Then the condition of the company sampled the gray area static in 2019 and 2020 and increased by 9% in 2021. Finally, the condition of sample companies with healthy conditions decreased drastically by about 50% in 2020 and increased slightly in 2021.

### 3.2 Descriptive Statistical Analysis Results

Then descriptive statistical analysis measurements were carried out in this study, namely the average value, maximum value and minimum value.

Table 3. Altman Z-Score Statistical Analysis Results

Variable	N	Minimum	Maximum	Mean
<b>Z-Score</b>	33	-649,3	66,8	-49,732

Table 4. Share Price Statistical Analysis Results

Variable	N	Minimum	Maximum	Mean
<b>Harga Saham</b>	33	112	4133	1073,58

Source: Secondary data processed, 2022

Based on tables 3 and 4, the company that obtained the highest score was PT Matahari Department Store Tbk (LPPF) and the one that was below average was PT Globe Kita Terang Tbk (GLOB).

### 3.3 Classic Assumption Test Results

Then a classical assumption test is carried out, which before carrying out the hypothesis test, should test the classical assumption as a prerequisite for the hypothesis test, because the data used is secondary data. The classical assumption tests used in this study were normality tests, autocorrelation tests, and heteroskedasticity tests.

**Table 5. Normality Test Results**

		<b>Unstandardized Residual</b>	
N			33
Monte Carlo Sig.			0,327 <sup>d</sup>
Carlo Sig. (2-tailed)	99% Confidence Interval	Lower Bound Upper Bound	0,315 0,339

a. Test distribution is Normal.

b. Calculated from data.

Source: Secondary data processed, 2022

The Monte Carlo significance value of the K-S is 0.327. Which means that the significance value is above 5% ( $0.327 > 0.05$ ), meaning that the data in the form of samples used in the regression model in this study are normally distributed.

**Table 6. Autocorrelation Test Results**

<b>Model</b>	<b>Durbin-Watson</b>	<b>du</b>	<b>DI</b>
1	2,058	1,508	1,383

a. Predictors: (Constant), Z\_Score

b. Dependent Variable: Harga\_Saham

Source: Secondary data processed, 2022

The DW test was 2,058 above the upper limit (du) of 1,508 and below the 4-du value of 2,492, so that the regression model of this study was independent of autocorrelation disorders.

**Table 7. Heteroscedasticity Test Results**

		<b>Model</b>	<b>Sig.</b>
1	(Constant)		0,000
	Z_Score		0,114

a. Dependent Variable: Abs\_Res

Source: Secondary data processed, 2022

### 3.4 Hypothesis Test Results

Then a hypothesis test was carried out using a simple linear regression analysis by calculating the statistical test value t and the coefficient of determination test (R<sup>2</sup>). A simple linear regression test can find out how the relationship between a free variable and its bound variable is.

**Table 8. Hypothesis Test Results**

Variabel	Unstandardized Coefficients		Standardized Coefficients		t	Sig.	R	Square
	B	Std. Error	Beta					
(Constant)	1166,909	131,032			8,906	0,000		
Z_Score	1,877	0,728	0,420		2,578	0,015	0,420	0,177

Source: Secondary data processed, 2022

Based on the results in table 8, the regression equation in this study can be described as follows:

$$Y = 1166.909 + 1.877 X$$

The regression equation illustrates that, if the Altman Z-Score value is 0, then the share price will be 1166,909. If the value of the Altman Z-score has increased by 1 point with a coefficient of 1,877, then the stock price also increases by 1,877.

**Table 9. Statistical Test Results t**

Model	Coefficien <sup>a</sup>	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1166,909	131,032		8,906	0
	Z_Score	1,877	0,728	0,42	2,578	0,015

a Dependent Variable: Harga\_Saham

Source : Secondary data processed, 2022

Obtained t-count with the table t value, which is 2.578 compared to 2.03951 ( $2.578 > 2.03951$ ), indicating  $H_0$  was rejected and  $H_1$  was accepted and the calculated t value was positive so this means that Altman Z-score as a means of predicting the potential bankruptcy of the company has a positive and significant effect on the Share Price.

**Table 10. Simple Coefficient of Determination Test Results ( $R^2$ )**

Model	R	R Square	Adjusted R Square	Std. Error of The Estimate
1	0,420	0,177	0,150	723,427

a. Predictors: (Constant), Z-Score

Source: Secondary data processed, 2022

A yield of  $R^2$  was obtained by 0.177 or 17.7%. This means that 17.7% of the independent variable (Altman Z-score) in this study can affect the dependent variable (stock price), while 82.3% cannot be explained by the variable studied.

## 4. Conclusion

Based on the results of the discussion and analysis that has been carried out, the conclusions that can be presented are as follows:

1. Altman Z-score in the company's financial statements for the 2019-2021 period has a significant effect on the company's Share Price. Then it can be indicated that the degree of state of the industry affects the Share Price which represents the value of the industry. Investors' decisions in investing are influenced by the condition of the company itself, the better the company's financial condition, the better value of the shares.
2. The effect of Altman Z-score is partially on the share price worth 17.7%. This is because there is an influence of other variables that arise outside of these variables.
3. Based on the results of Altman's analysis, it is known that all three categories show fluctuations in value changes every year. The condition of sample companies that have the potential to go bankrupt increased significantly in 2020 and fell by 19% in 2021. Then the condition of the company sampled a static gray area in 2019 and 2020 and increased by 10% in 2021. Finally, the condition of sample companies with healthy conditions decreased drastically by about 50% in 2020 and increased slightly in 2021.

## Acknowledgement

The author would like to thank all parties who have helped and supported in completing this research, as well as the Indonesia Stock Exchange and the company's website for the data provided. In addition, we would also like to thank all the reviewers for their help in perfecting this article.

## References

- [1] R. Rice, "Analisa Faktor-faktor yang Mempengaruhi Pertumbuhan Laba dengan Ukuran Perusahaan sebagai Variabel Moderating pada Perusahaan Manufaktur yang Terdaftar di Bursa Efek Indonesia," *Jurnal Wira Ekonomi Mikroskil*, vol. 6, no. 1, pp. 85–101, 2016.
- [2] V. R. Prasetyo and D. Widyawati, "Pengaruh Prediksi Kebangkrutan yang Dihitung Dengan Z-Score dan S-Score terhadap Harga Saham pada Perusahaan Food and Beverage," *Jurnal Ilmu dan Riset Akuntansi (JIRA)*, vol. 9, no. 7, 2020.
- [3] Luthfan, "Dampak Pandemi, Gerai Ritel Modern Bertumbangan," *Kompas.TV*, Jakarta, May 21, 2021.
- [4] E. Tandelilin, "Pasar Modal Manajemen Portofolio & Investasi," *Yogyakarta: PT Kanisius*, 2017.
- [5] N. B. Salsabila and W. Wahyudi, "Analisis Kinerja Keuangan Perusahaan dengan Menggunakan Altman Z Score dan Pengaruhnya Terhadap Harga Saham," *EQUITY: Jurnal Ekonomi, Manajemen, Akuntansi*, vol. 22, no. 1, pp. 75–89, 2017.
- [6] P. G. Kurniawan, "Pengaruh Altman Z-Score dan Springate S-Score Sebagai Alat Prediksi Potensi Kebangkrutan Terhadap Harga Saham pada Perusahaan Batubara yang Listing di Bursa Efek Indonesia Periode 2013-2015," *Analisis Laporan Keuangan*, 2018.
- [7] T. A. Marcelina and W. S. Yuliandari, "Prediksi Kebangkrutan Menggunakan Metode Z-Score dan Pengaruhnya Terhadap Harga Saham Pada Perusahaan Transportasi yang Terdaftar di Bursa Efek Indonesia Tahun 2008-2012," 2014, pp. 291–294. Accessed: Oct. 31, 2022. [Online]. Available: <https://openlibrarypublications.telkomuniversity.ac.id/index.php/management/article/view/3698>
- [8] D. Sugiyono, "Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif dan R&D," 2013.
- [9] I. Ghozali, "Aplikasi Analisis Multivariate dengan Program IBM SPSS 25," 2018.