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Financial Distress Analysis Using Altman Z-Score, Springate and Zmijewski in Retail Companies on the IDX

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ABSTRACT

Islamic Social Reporting (ISR) is an index of social accountability disclosure whose indicators refer to Islamic ethical principles. Islamic banking operates by sharia principles. Therefore the disclosure of ISR in Islamic banking must be within the corridors of Islamic theology. This study uses the E-Views software to identify the factors that influence the level of exposure to Islamic Social Reporting (ISR) in Islamic banking in Indonesia. The factors examined in this study are company performance and company size towards Islamic Social Reporting. The results of this study show that financial performance proxied by ROA has no effect on ISR with a calculated T value of 1.338357, and financial performance proxied by NPF has no impact on Islamic Social Reporting with an estimated T value of 1.405019. Company size is a proxy for the Size that affects Islamic Social Reporting, with a T-test result of 3.077773 <2.03693. The results of the F test obtained a value of 0.021230 <0.05, which means that the variables NPF, ROA, and Size together influence the Islamic Social Reporting of Islamic Banks in Indonesia for the 2016-2020 period.

Keywords: *Altman Z-Score, Financial Distress, Springate, Zmijewski.*

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INTRODUCTION

Since the first confirmed case of Covid-19 occurred on March 2 2020, the President of Indonesia announced that there were two Indonesian citizens who were positive for Covid-19 (Tang dkk., 2020). Then this virus spread so quickly in a short time in 34 provinces in Indonesia. This causes changes in the activities carried out by the community on a daily basis. One of them is due to the steps taken by the Indonesian government to prevent the spread of Covid-19, namely the imposition of Large-Scale Social Restrictions (PSBB) in several regions of Indonesia. The enactment of this PSBB

disrupts community activities including production and other economic activities (Boulware dkk., 2020). Apart from that, the consequences that will be felt from this social restriction are the reduced demand for labor (Inciardi dkk., 2020), the termination of employee relations, and a decrease in people's income which has an impact on reducing people's purchasing power.

Based on Figure 1. According to data from a Bank Indonesia report, retail sales growth in 2019 continued to decline until the second quarter of 2020 reached minus 18.2 percent (Hofseth dkk., 2020). One of the factors causing this decline was the result of the Covid-19 pandemic. However, in the second quarter of 2021, it again experienced a significant increase, namely to 10.96 percent. The decline in retail sales resulted in the closing of several outlets at retail companies (Prüss-Ustün dkk., 2019). One of them is Giant, this supe(Hofseth dkk., 2020).market is a business unit of PT (Siegel dkk., 2020). Hero Supermarket Tbk, which has been established since 2002. In July 2021, they were forced to close all of their outlets in Indonesia. As a result of the closing of these outlets, many of Giant's employees were laid off(González-Martín dkk., 2021). The company's inability to deal with the current pandemic has an impact on the company's survival, which can be seen from its financial performance (Ripp dkk., 2020). If the company is unable to improve its financial performance, the company will be in a state of financial difficulty.

The company's inability to deal with the current has an impact on the company's survival, which can be seen from its financial performance (Potvin dkk., 2019). If the company is unable to improve its financial performance, the company will experience financial distress (Amini & Mohaghegh, 2019). This financial distress is marked by decreased sales, decreased profits, low working capital and continuously increasing debt.Vice versa, if the company's financial condition is stable and healthy, then the company will not experience financial difficulties (Non-Financial Distress) (Barberet dkk., 2019). The soundness level of a company is crucial for a company to increase its business success, so that it can increase profits and anticipate the risk of bankruptcy in the future. Financial distress can be detected earlier by using the Early Warning System method (Petitjean, 2019). This method can be used to identify conditions of financial difficulty in advance so that efforts can be made to deal with these conditions (Yuan dkk., 2020). The Altman Z-Score, Springate and Zmijewski models are the measurement models used in this study.

The Altman-Zscore model was the first model found as a successful detector of financial difficulties by using Multiple Discriminant Analysis in its predictions in 1968. This model was developed into three models, namely the first Altman Z-Score model (original) (Cook dkk., 2019), the Altman Z-Score model revisions and modified Altman

Z-Score models (Li dkk., 2020). Furthermore, the Springate model is a bankruptcy model developed in 1978 by Gordon L.V Springate using Multiple Discriminant Analysis to detect financial disturbances (Lu, 2020). This model uses 4 of 19 financial ratios to predict a company's financial distress, using a sample of 40 companies (Hong dkk., 2021). Then in 1984 the Zmijewski model was discovered which used probit analysis conducted by 40 bankrupt companies and 800 surviving companies (Walton dkk., 2020). This prediction model uses ratios that measure a company's performance, leverage, and liquidity.

In the research conducted by Listyarini (2020), each prediction model used in manufacturing companies in Indonesia shows results for the Altman model of 75%, for the Springate model of 89.29% and for the Zmijewski model of 100%. Based on each level of accuracy, the Zmijewski model is the model with the highest level of accuracy (Newsome dkk., 2021). This can be caused by the appropriate selection of financial ratios that form the model with the definition of financial distress in this study (G. Liu & Guo, 2019), namely net income/total assets, total liabilities/total assets and current assets/liabilities lancar (Lu, 2020). Semua rasio tersebut merupakan rasio yang mewakili ekuitas dan laba bersih perusahaan. This is one of the reasons why the Altman Zmijewski model has a high accuracy value.

Based on the phenomena and information that has been described, the problem formulation of this study is how financial distress analysis using the Altman Z-Score (Nordahl dkk., 2020), Springate and Zmijewski models is used in retail companies listed on the Indonesian Stock Exchange and which prediction model is the most accurate in predicting financial distress in retail company listed on the Indonesia Stock Exchange (Martinez & Moon, 2019). This study aims to analyze financial. Distress using the Altman Z-Score , Springate and Zmijewski models for retail companies listed on the Indonesia Stock Exchange in 2019-2021 (Razavi dkk., 2019). And to find out the level of accuracy and type of error of each prediction model, namely Altman Z-Score, Springate and Zmijewski.

Library Study

According to Kalsmir it is the moral of the law that validates the position of the law of this matter, especially for a certain period of time (Ray dkk., 2019). Therefore, the regularity report contains the regularity details which are not always directly related to the regularity and performance of the business during a certain period of time (McGinnis dkk., 2019). According to Plalt in Plalt in Falhmi's book final distress is defined as a reduction in the solvency condition that occurs before solvency or liquidity occurs (F. Liu dkk., 2020). The difficulty of this validity is controlled by the inadequacy of the legal entity to fulfill its validity. The analysis of the difficulty of the abnormality is used to provide early warning (Galiè dkk., 2019), so that the problems are immediately known if there is a condition of difficulty in the abnormality (Goldberg dkk., 2021). The sooner a person learns more about his or her wrongdoing(Skoulidis dkk., 2021), the less likely he or she is to reverse the mistake and avoid the worst possibility.

There are several types of final distress According to Brighalm and Galpenski (1997) in his book, Kristalnti (2019: 8) mentions that there are five types of final distress, namely, Economic failure, this situation may occur if the investment owned by the company does not cover financial costs, such as financial capital. Business failure, is an internal failure of the company and the termination of normal operational activities

so as to cause losses for creditors. Technical insolvency, this situation is also called equity insolvency, which is a condition in which the debt cannot be repaid through traffic once it matures, according to Alltmaln (1983). This is temporary reliability, in which the creditor usually helps the legal company by internally carrying out the restructuring of the company's debts. Insolvency in bankruptcy, is a condition in which the financial asset value is lower than the book value of the company's legal debt. If technical insolvency is too bad temporarily, then insolvency in bankruptcy is a permanent condition and if it is not treated seriously, then it will cause the company's liquidity. Bankruptcy from a legal perspective, is a condition when a legal company has been challenged with formal regulations based on the existing laws and regulations. Besides that, there are also a number of things that can lead to the occurrence of final distress, the bad thing about malmanagement can be causing the company to experience this condition. Several failures and failures, such as calc flow, accounting practice, failures in financial decision making, can also cause financial distress

RESEARCH METHODOLOGY

The design plan for this research uses qualitative research with a descriptive approach. According to Sugiyono (2018: 8) qualitative research is research aimed at examining populations and also certain samples (Giudice dkk., 2020). While descriptive research according to Sugiyono (2018: 48) is research that is carried out to find out the value of an independent valrialble, turning back and forth is also more valuable (freedom) without making comparisons and also connecting it with other valrialbelms (Chen dkk., 2020). final distress as the dependent variable in this study, while the independent valrialbel is the Alltmal Z-Score model, Springalte and Zmijewski. The sampling technique used is purposive sampling (Fink dkk., 2020). According to Sugiyono purposive sampling is a technique for identifying samples from a certain optimal angle, usually using several company sample criteria.

The criteria are retail halal companies registered on the Indonesia Stock Exchange for 2019-2021 and retail halal companies registered on the Indonesian Stock Exchange which published financial reports for 2019-2021 (Qin & Chiang, 2019). Based on these criteria, a sample of 11 halal companies, namely PT. Alce Halrdwalre Indonesia Tbk (AlCES), PT. Sumber Allfalrial Trijalyal Tbk (AlMRT), PT. Centralmal Telecommunications Indonesial Tbk (CENT), PT. Dutal Intidalyal Tbk (DAlYAl), PT (Hein dkk., 2020). Globe Kital Teralng Tbk (GLOB), PT Hero Supermall Tbk (HERO), PT. Maltalhalri Department Store Tbk (LPPF), PT (Zhang dkk., 2019). Midi Utalmal Indonesia Tbk (MIDI), PT Maltalhalri Putral Primal Tbk (MPPAl), PT. Ralmalyalnal Lestalri Sentosal Tbk (RAlLS), and PT (Camacho dkk., 2019). Supral Bogal Lestalri Tbk (RAlNC) (J. Liu dkk., 2019). Analysis techniques and experience reports are used to measure, identify and explain the possibility of the occurrence of difficult conditions and failures in retail business.

All financial reports from retail halal companies that have been registered on the Indonesia Stock Exchange (IDX) for 2019-2021 have been collected, then analyzed so as to obtain the required data. The daltal analysis used is Descriptive statistical analysis is a statistic that is used to analyze data by describing or describing the data that has already been obtained, although it is intended to draw conclusions that apply back to the general public or generalization (Sugiyono, 2018: 238). Descriptive statistics are used to determine the maximum, minimum, feed and standard deviation of the three prediction models used. Alltmall Z-Score Based on this prediction model, it has several ratios that

are used, so that it is calculated from the following calculations: Z-Score = 6.56X1 + 3.26X2 + 6.72X3 + 1.05X4, Z-Score = Balnkruptcy Index, X1 = Working Capital / Total Alssets, X2 = Retained Earning / Total Alssets, X3 = Earning Before Interest plus Talx / Total Alssets, X4 = Book Value of Equity / Book Value of Total Debt. The cut-off point that is used as a basis for classifying the company according to the Alltmal Z-Score model is as follows: Z < 1.1: Potentially bankrupt, 1.1 < Z < 2.6: Zonal albumin, Z > 2.6: No potential for bankruptcy.

Springalte Based on this prediction model, it has several ratios that are used, so that it is calculated from the calculations as follows: S-Score = 1.03Al + 3.07B + 0.66C + 0.4D dimalnal : S-Score = Balnkruptcy Index, Al = Working Capital / Total Alssets B = Earning Before Interest alnd Talx / Total Alssets, C = Earning Before Talx / Current Liability, D = Sales / Total Assets, The cut-off point that is used as a basis for classifying the operational base of the Springalte model is as follows:, S < 0.862: the halal company has the potential to go bankrupt, S > 0.862 : Healthy and has no potential for bankruptcy. Zmijewski model Based on this prediction model, it has several ratios that are used, so that it is calculated from the calculations as follows: X-Score = -4.3 – 4.5X1 + 5.7X2 – 0.004X3 : X-Score = Balnkruptcy Index, X1 = ROAl (Return On Assets), X2 = Leverage (Debt Ratio), X3 = Liquidity (Current Ratio)

If the covered score is more than 0 then the company will likely be predicted to go bankrupt and vice versa if the score covered is less than 0 then the company will not be predicted to have the potential to go bankrupt.Uji pengukuraln tingkalt alkuralsi daln error. Tingkalt alkuralsi dalpalt dihitung dengaln calral beriking ini (Alltmaln, 2006) melody Allfiyalnti (2019):

$$\text{Alkuralsi level} \quad \frac{\text{General Prediction Benalr}}{\text{Including Salmpel}} \quad x \quad 100\%$$

The number of predictions was correct and the number of samples of halal companies confirmed by the Indonesian Stock Exchange did not experience bankruptcy in terms of the calculation results of the All-malt Z-Score, Springalte and Zmijewski models. The number of samples is the number of halal companies that are sampled in this research, namely retail halal companies. The type of error for the malsing models used in this research is the Alltmal Z-Score, Springalte and Zmijewski models. The type error calculation is divided into two, namely:

1) Type error I is an error that occurs when the sample under study does not experience final distress, but according to the Indonesian Stock Exchange list, the sample experiences final distress.
2) Type II error is an error that occurs when the sample under study does not experience final distress, but according to data from the Indonesia Stock Exchange, the sample is experiencing financial distress.

Error rate formula (Mulyalti & Ilyalsal, 2020):

$$\text{Type Error I} \quad \frac{\text{Including Type I Diseases}}{\text{Including Sampel}} \quad x \quad 100\%$$

$$\text{Type Error II} \quad \frac{\text{Including Disease Type II}}{\text{Number of Samples}} \quad x \quad 100\%$$

Dimalnal type error fraud, total disease, malsing-malsing, model prediction only, only for use, only for retail, only for retail, Bursal Efek Indonesia. Bursal Efek Indonesia, including sales and retail sales only, including sales and retail sales only.

RESULT AND DISCUSSION

Descriptive Statistics

	N	Minimum	Malximum	Mealn	Std. Devialtion
Alltmaln Z-Score	33	-613,451	12,457	-49,58976	166,406507
Springalte	33	-38,921	3,414	-2,17800	10,139036
Zmijewski	33	-3,986	535,935	40,81094	134,875433
Vallid N (listwise)	33				

The dialtal table shows that for the All- maln Z-Score model the minimum value is -613.45, the maximum value is 12.457, the meal value is -49.58976 and the standard deviation signal is 166.406507. For the Springalte model, the minimum value is -38.921, the maximum value is 3.414, the mean value is -2.17800 and the standard deviation signal is 10.139036. In the Zmijewski model the minimum value is 3.986, the maximum value is 535.935, the meal value is 40.81094 and the standard deviation signal is 134.875433.

1. Alltmaln Z-Score

Table 2 Calculation Results Alltmaln Z-Score

No	Kode	Z-Score		
		2019	2020	2021
1	AlCES	12,457	9,501	10,618
2	AlMRT	1,934	0,984	1,395
3	CENT	1,408	- 3,073	0,180
4	DAlYAl	- 0,961	- 2,398	- 3,018
5	GLOB	- 613,451	- 563,084	- 522,644
6	HERO	2,733	- 2,679	- 2,608
7	LPPF	6,915	- 0,122	3,427
8	MIDI	0,670	0,066	0,296
9	MPPAl	- 2,523	- 3,150	- 1,868
10	RAlLS	9,325	7,192	8,155
11	RAlNC	4,452	2,434	0,975

affinity :
B: Balngkrut
M: Gray Alreal
TB: Not Balngkrut

The financial table results show the results of the prediction model using the All-Main Z-Score of the retail halal companies listed on the Indonesian Stock Exchange in 2019, including four halal companies that have the potential to go bankrupt, namely DALYAl, GLOB, MIDI and MPPAI. Then there are dual halal companies which are albu-albu zonal, namely AlMRT and CENT. Furthermore, there are five halal companies that are in the category of being healthy or not potentially bankrupt, namely AlCES, HERO, LPPF, RALS and RAAlNC. At the end of 2020, there will be 12 halal companies that have the potential to go bankrupt, namely AlMRT, daln CENT, DAlyAl, GLOB, HERO, LPPF, MIDI and MPPAl. At least there are three halal companies that

are in the category of being healthy or not having the potential to go bankrupt, namely AlCES, RAlLS and RAlNC. In early 2021, there are seven halal companies that have the potential to go bankrupt, namely CENT, DAlYAl, GLOB, HERO, MIDI, MPPAl and RAlNC. Then there is the company's halal salt which has the albu-albu zonal albu-albu, namely AlMRT. At least there are three halal companies that are in the category of being healthy or not having the potential to go bankrupt, namely AlCES, LPPF, RAlLS.Springalte.

Table 3 Results of Springalte Calculations

No	Kode	Springalte		
		2019	2020	2021
1	AlCES	3,414	2,145	2,184
2	AlMRT	1,587	1,357	1,568
3	CENT	0,243	- 0,494	- 0,025
4	DAlYAl	0,546	0,024	0,041
5	GLOB	- 22,258	-37,232	- 38,921
6	HERO	0,921	- 0,371	- 0,416
7	LPPF	2,469	- 0,535	1,224
8	MIDI	1,147	0,937	0,965
9	MPPAl	0,477	0,125	0,358
10	RAlLS	1,664	0,358	0,912
11	RAlNC	1,595	1,342	0,775

affinity :
B: Balngkrut
TB: Not Balngkrut

The financial table results show the results of the prediction model using Springalte and the retail halal companies listed on the Indonesian Stock Exchange in 2019, including four halal companies that have the potential to go bankrupt, namely CENT, DALYAl, GLOB and MPPAl. At least there are seven halal companies that are in the category of healthy and not potentially bankrupt, namely AlCES, AlMRT, HERO, LPPF, MIDI, RAlLS and RAlNC. In 2020, there are seven halal companies that have the potential to go bankrupt, namely CENT, DALYAl, GLOB, HERO, LPPF, MPPAl and RALS. At least there are four halal companies that are in the category of healthy or not potentially bankrupt, namely AlCES, AlMRT, MIDI and RAlNC. In 2021, there will be six halal companies that have the potential to go bankrupt, namely CENT, DAlYAl, GLOB, HERO, MPPAl and RAlNC. At least five halal companies have the potential to be healthy or not have the potential to go bankrupt, namely AlCES, AlMRT, LPPF, MIDI, RALS.Zmijewski.

Table 4 Results of the alcuracy level test in error

Calculation	Bankruptcy Prediction Model		
	Alltmaln Z-Score	Springalte	Zmijewski
Correct Prediction	23	29	27
Type Error I	2	1	5
Type Error II	8	3	1
Number of Samples	11	33	33
Calculation	Bankruptcy Prediction Model		
	Alltmaln Z-Score	Alltmaln Z-	Alltmaln Z-

	Springalte Zmijewski	Score Springalte Zmijewski	Score Springalte Zmijewski
Error Rate	69,70%	87,88%	81,82%
Type Error I	6,06%	3,03%	15,15%
Type Error II	24,24%	9,09%	3,03%
Jumlalh	100,00%	100,00%	100,00%

Based on the above table of 33 samples of retail companies, the Alltmal Z-Score model predicts at most 23 perusals that are correctly predicted in the total predictions of wrongly, as many as 2 perusals with type I error and 8 perusals with type II error. From the results, it was calculated as much as 69.70% for the level of alkalization with 6.06% for type I error and 24.24% for type II error. For the Springalte model, in 33 samples of retail companies, it is assumed that even if the Springalte model predicts at most 29 companies, the predictions are correct in the total predictions, only 1 company with type I error in 3 companies with type II error. From the results, it was calculated as much as 87.88% for the level of alkalization with 3.03% for type I error and 9.09% for type II error. For Zmijewski's model, in 33 samples of retail companies, in case of the Springalte model, it predicts at least 27 of the firms' halal predictions are correct in the total predictions, in total, 5 companies, at least 5 companies, with type I error in 1 company, with type II error. From the results, it was calculated as much as 81.82% for the level of alkalization with 15.15% for type I error and 3.03% for type II error.

Dalpalt's balhwal talbel dialtals balhwal of the three prediction models used in dalpaltkaln's springalte is a prediction model with the highest alkalization rate, namely reaching 87.88% and the error level dalalm predicting low, namely paldal type I error of 3.03% and 9 type II error of 3.03%. .09%. While the two traffic prediction models are the Alltmal Z-Score model and the Zmijewski signal algebraic level compared to the Springalte model, namely the Alltmal Z-Score model has an alkalization level of 69.70% with type I error of 6.06% and type II error of 24.24%. for Zmijewski it has an accuracy rate of 81.82% with a type I error of 15.15% and a type II error of 3.03%. Hence, the Springalte model is more appropriate for use in predicting the final distress of retail companies listed on the Indonesian Stock Exchange.

CONCLUSION

Based on the results of the research and the calculations that have been carried out, malkals can conclude that the final analysis of all distress uses the All-Mail Z-Score model, Springalt and Ziewski, and the retail companies that are listed on the Indonesian Stock Exchange in 2019-2021, the following conclusions are obtained:

1. Based on the results of the research using the All-Alman Z-Score model, the results obtained an alkalization level of 69.70% with type I error of 6.06% and type II error of 24.24%, which was calculated in 2019 with four halal companies that failed to error. bankruptcy category, in 2020 there will be seven halal companies that fall into the bankruptcy category and in 2021 there will be seven halal companies that will fall into the bankruptcy category.
2. Based on the results of the research using the Springalte model, it obtained an accuracy rate result of 87.88% with type I error of 3.03% and type II error of 9.09%, which was calculated in 2019 with four halal companies failing to enter the bankruptcy category. in 2020 there are seven halal companies that fall into

the bankruptcy category and in 2021 there are six halal companies that fall into the bankruptcy category.

3. Based on the results of the research using the Zmijewski model, the results obtained an alkalization rate of 81.82% with type I error of 15.15% and type II error of 3.03%, which was calculated in 2019 with dual halal companies that failed to enter the bankruptcy category. in 2020 there are five halal companies that fall into the bankruptcy category and in 2021 there are four halal companies that fall into the bankruptcy category.
4. The prediction model that is most suitable for analyzing the final distress at the retail halal companies listed on the Indonesian Stock Exchange is the Springalte model with an accuracy rate of 87.88%, then ranked second, namely the Zmijewski model of 81.82% and the third all-mal model, namely Score of 69.70%.
5. Based on the research that has been carried out, the authors provide a channel that can be used for all interested parties, the channel that can be used is as follows:
6. For business purposes, this research can be used to minimize the risk of occurrence of final distress in a company by taking steps to improve performance and failure in avoiding potential bankruptcy. Halrus companies evaluate their performance at least once every year, especially for companies with a high probability of going bankrupt. From this, the company continues to procrastinate for the longest possible time, it is necessary to increase working capital in managing the debt as well as the long-term debt with greater return.
7. For investors, this research can be used to look at the financial performance of companies that are likely to experience final distress in as many as eight companies, so that investors can reconsider before investing in a company.
8. For the next researcher, the authors suggest to increase the length of the research time so that the results given are maximal.

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