

Prediction of Bankruptcy in Islamic Banking in Indonesia: Modified Altman Z-Score Method Approach

Surepno¹, Er Melinda Swissa²

Email: surepno@iainkudus.ac.id¹, ermelindaswissa@gmail.com²

^{1,2} Institut Agama Islam Negeri Kudus
Jl. Conge Ngembalrejo, Ngembal Rejo, Kabupaten Kudus, Jawa Tengah

Abstrak

Perbankan syariah sebagai suatu entitas memerlukan evaluasi terhadap kinerja keuangan untuk memastikan kesehatan dan keberlanjutan perusahaan. Penelitian ini bertujuan untuk menilai tingkat kesehatan dan prediksi kebangkrutan perbankan syariah menggunakan metode analisis Altman Z-Score yang dimodifikasi. Penelitian ini menggunakan pendekatan kuantitatif. Sampel yang digunakan adalah 12 Bank Umum Syariah di Indonesia. Data yang digunakan untuk mengukur kesehatan dan kebangkrutan bank adalah laporan keuangan bank umum syariah periode 2017-2019. Hasil penelitian menunjukkan bahwa tingkat kesehatan 11 bank umum syariah berada pada posisi safe area atau dapat dikatakan perusahaan dalam kondisi sehat (tidak pailit) selama periode 2017-2019 dan 1 bank umum syariah yaitu Panin Dubai Bank Syariah, berada pada posisi hati-hati (gray area). Hal ini dikarenakan 11 bank umum syariah memiliki Z-Score >2.6 dan 1 bank syariah memiliki Z-Score $1.10 < Z < 2.6$.

Kata Kunci : Prediksi Kebangkrutan, Perbankan Syariah, Altman Z-Score

Abstract

Islamic banking as an entity requires an annual financial performance evaluation to ensure the health and sustainability of the company. This study aims to assess the level of soundness and bankruptcy prediction of Islamic banking using the modified Altman Z-Score analysis method. This study uses a quantitative approach. The sample used is 12 Islamic Commercial Banks in Indonesia. The data used to measure the health and bankruptcy of banks is the financial statements of Islamic commercial banks for the 2017-2019 period. The results show that the health level of 11 Islamic commercial banks is in a safe area position or it can be said that the company is in a healthy condition (not bankrupt) during the 2017-2019 period and 1 Islamic commercial bank, namely Panin Dubai Syariah Bank, is in a cautious position (gray area). This is because the 11 Islamic commercial banks have a Z-Score >2.6 and 1 Islamic bank has a Z-Score $1.10 < Z < 2.6$.

Keywords: Bankruptcy Prediction, Islamic Banking, Altman Z-Score

Introduction

The era of globalization causes the boundaries of the country's economy to be inseparable. This makes the world economy intertwined with each other. No exception when a crisis occurs in a country, the big or small impact will have an effect on other countries. M. Zidny Nafi' (2019) revealed that the indirect impact of the crisis was a decrease in liquidity, soaring interest rates and a weakening capital

market. The financial crisis also had an impact on reducing the supply of liquidity in the financial sector due to the bankruptcy of several global financial institutions, especially investment banks, which ultimately affected the cash flows of companies in Indonesia.

Even though during this crisis, Islamic banks were able to survive and overcome the problems that existed in their business activities, but Islamic banks as institutions that were also profit-oriented would of course still face various risks that could threaten their existence (Oktarina, 2017). This proves that bankruptcy is a problem that can threaten the existence of Islamic banks. Bankruptcy itself is the result of the negative performance of Islamic banks. This is evidenced by the emergence of the Muammalat bank case which indicated that it was experiencing financial problems.

Bankruptcy conditions in a company experiencing financial distress, is a condition where the financial condition of a company during a certain period generates negative net profit for several years which will eventually result in bankruptcy and the company's operating cash flow cannot be sufficient to take corrective action to prevent bankruptcy. Financial distress is the stage of declining financial conditions experienced by the company and occurs before the occurrence of bankruptcy or liquidation (Anak Agung and AANgurah Bagus, 2019).

Corporate bankruptcy is a phenomenon that often occurs in the business world, whether it is influenced by internal indicators or external indicators of the company (Kadim & Sunardi, 2018). The problem of bankruptcy in a company, including for Islamic banking, is a risk that cannot be avoided, but this risk can be minimized or prevented. To anticipate the occurrence of bankruptcy, the company must have early preparations to prevent this from happening.

Analysis of the condition of the company that is in good or bad condition can be seen from the level of the company's health. Financial distress analysis can use several models, namely the Altman, Springate, and Zmijewski models (Rahayu, 2016). According to Rita Martini et al (2021), the Altman method (Sari, 2018) has the highest bankruptcy calculation accuracy rate of 92% compared to the Springate and Zmijewski methods which have 77% and 85% accuracy, respectively. No company is predicted to be unhealthy, so the most accurate analysis model is the Z-Score (Raharja, 2017). The advantages of the Altman Z-Score model can be seen from the equation, the Altman Z-Score model equation connects liquidity, solvency, and

company profitability with bankruptcy. In addition, the advantages of this model can be used for all companies, whether public, private, manufacturing, or service companies of various sizes.

The development of the Altman Model can be seen starting from the first, namely the first Altman Z-Score model that can be used to predict the bankruptcy of a public manufacturing company. After finding the first bankruptcy model, Altman then revised the bankruptcy model into a model that can be used to predict the probability of bankruptcy for private and public manufacturing companies, this model is called the revised Altman model or Z'-Score. Furthermore, Altman modified the model which is also called the Modified Altman Z-Score model (not using the sales turnover ratio). This model is designed to be applied to non-manufacturing companies, both public and private companies. (Dian Purnamasari, 2018)

Previous research was conducted by Endri (2009) who analyzed the accuracy of the revised Altman Z-Score model in predicting bankruptcy at Islamic Commercial Banks for three years from 2005-2007. The variables used by the Altman Z-Score model for companies that have not gone public are the ratio of working capital/total assets (X1), retained earnings/total assets (X2), EBIT (Earning Before Interest&Tax)/total assets (X3), book value shares/book value of debt (X4), and Sales/total assets (X5). The result is that the Revised Altman Z'-Score Model is not appropriate to predict bankruptcy in Islamic banking. This is because the Revised Altman Z-Score model should only be used to analyze manufacturing companies.

Other research has also been carried out by Prabowo and Wibowo (2015) who tried to compare the Altman Z-Score, Zmijewski, and Springate models in Predicting Bankruptcy of Delisting Companies on the IDX for the 2008-2013 period. From these results, it was found that there were differences in test results between one model and another. The results of this study stated that the Altman Z-Score model was the best predictor method compared to Zmijewski and Springate. Based on the research gap, this study will re-examine the prediction of Islamic banking bankruptcy using the Modified Altman Z-Score Model.

Literature Review

Agency Theory

In agency theory, the principal employs the agent to perform tasks for the benefit of the principal, including the delegation of decision-making authorization from the principal to the agent. This theory has the assumption that each individual is solely motivated by their respective interests so that if the agent does not act according to the interests of the principal, it will cause a conflict of interest between the principal and the agent which is called an agency conflict. The conflict of interest is in the form of information asymmetry. Conflicts of interest that occur between the agent and the principal can cause agency problems. To monitor and reduce the conflict, the principal and agent agree to bridge the conflict with a third party, namely by using an auditor (Bahana Takbir Aljana, 2017).

With a third party, the principal can control and supervise the agent in terms of managing the company so as to create good corporate governance. The management of good corporate governance can minimize manipulation so that sharia good governance can be realized. Good corporate governance will have an impact on improving the financial performance of an entity. Improved financial performance will also make the company avoid the threat of bankruptcy.

Bankruptcy

Firdausi (2017) explains that Bankruptcy is a severe liquidity difficulty which causes a company to no longer be able to run the company's operations properly. Bankruptcy is also defined as the failure of the company in carrying out the company's operations to be able to generate profits. In addition, bankruptcy is also often called the liquidation of the company or the closure of a company. The key factor in identifying whether a company is in a state of bankruptcy is the company's inability to fulfill its obligations. Bankruptcy is a condition where the company experiences negative net operating income for several years and for more than one year has not made dividend payments, terminated employees or eliminated dividend payments.

Altman Z-Score Model Analysis

Altman Z-Score model is an indicator to measure the potential for bankruptcy of a company. A number of studies have been conducted to determine the usefulness of

financial ratio analysis in predicting the failure or bankruptcy of a company. A well-known and pioneering multivariate bankruptcy prediction model is the bankruptcy model developed by Altman (1969). The model uses discriminant analysis statistical techniques.

In this study using the modified Altman Z Score analysis method. In this type of analysis, Altman makes adjustments so that it can be used in various types of company industries, such as manufacturing, non-manufacturing, and bond issuing companies in developing countries. In this model, Altman eliminates the X₅ variable (sales to total assets) because this ratio varies greatly in industries with different asset sizes (Hery, 2017). The modified Z-Score equation is as follows:

$$Z'' = 6.56X_1 + 3.26 X_2 + 6.72 X_3 + 1.05 X_4$$

Description :

Z = Overall Index

X₁ = Working Capital/Total Asset

X₂ = Retained Earnings/Total Assets

X₃ = Earnings Before Interest and Taxes/Total Assets

X₄ = Book Value of Equity/Total Liabilities

The company classification is based on the following modified Altman model Z-Score value:

- a. If the Z value <1.1 then the company is classified as bankrupt (financial distress)
- b. If the value is 1.1 < Z < 2.6 then it is included in the gray area (cannot be determined whether the company is classified as healthy or bankrupt)
- c. If the Z value > 2.6, it is a company that has not experienced bankruptcy (safe area)

Methods

This type of research is an evaluation research. In this study using the modified Z-Score (Altman) analysis method. The research approach is a quantitative approach. This study uses a saturated sample that uses all Islamic banking in the form of Islamic Commercial Banks. The total sample used is 12 Islamic banking. This study uses two variables, namely the dependent and independent. In this model the independent variables are (Working Capital/Total Assets), (Retained Earnings/Total

**Prediction of Bankruptcy in Islamic Banking in Indonesia:
Modified Altman Z-Score Method Approach**
Surepno dan Er Melinda Swissa

Assets), (Earth Before Interest and Taxes/Total Assets), (Book Value of Equity/Total Liabilities). While the dependent variable is the Z-Score. Sources of data used in this study is secondary data. The secondary data in this study is in the form of financial statements of Islamic Commercial Banks (BUS) in Indonesia for the 2015-2017 period. Data collection techniques in this research are literature study and documentation study. Data analysis techniques carried out by the author in this study are as follows:

1. Calculate all financial ratios of Islamic Commercial Banks (BUS) contained in the research sample.
2. Perform data processing on financial ratio variables. In this study using the modified Altman Z-Score analysis method. The formula used in this analysis is as follows: **$Z'' = 6.56 X_1 + 3.26 X_2 + 6.72 X_3 + 1.05 X_4$**

Description :

Z = Overall Index

X₁ = Ratio of Working Capital to Total Assets (Working Capital/Total Asset)

X₂ = Retained Earnings Ratio To Total Assets (Retained Earnings/Total Assets)

X₃ = Profit Before Interest and Tax Ratio to Total Assets (*Earnings Before Interest and Taxes/Total Assets*)

X₄ = Book Value of Equity to Total Liabilities (Book Value of Equity/Total Liabilities)

3. Calculate the modified Z-Score value of each research sample for the 2015-2017 period.
4. Classify the research sample with the following criteria:
 - a. If the Z value < 1.1 then the company is in bankruptcy (financial distress)
 - b. If the value 1.1 < Z < 2.6 then it is included in the gray area (gray area)
 - c. If the Z value > 2.6, it is a company that has not experienced bankruptcy (safe area)

Results and Discussion

Analysis of BNI Syariah's Modified Z-Score Results

The results of the calculation of the BNI Syariah Z-Score in the 2017-2019 period are as follows:

Table 1
Z-Score Calculation Results for Modified BNI Syariah
Period 2017-2019

Year	WCTA	RETA	EBTTA	BVETL	Z-Score	Classification
	6.56	3.26	6.72	1.05		
2017	5,278	0.104	0.079	0.397	5,858	<i>Safe Area</i>
2018	5,007	0.113	0.090	0.268	5,478	<i>Safe Area</i>
2019	4,809	0.120	0.107	0.201	5,237	<i>Safe Area</i>

Source: Processed data 2021

Based on the table above, it shows that for 3 consecutive years BNI Syariah is in a safe area position or it can be said that the company is in good health. This can be seen from the Z-Score value > 2.6 . Although the Z-Score value is in the healthy category, the Z-Score value has decreased from 5,858 in 2017 to 5,478 in 2018, and in 2019 it fell again to 5,237. A decrease in the Z-Score from year to year in a company can indicate that the company's financial performance is declining, if it is not addressed immediately, there is a possibility that this decline will continue.

Analysis of the results of the Z-Score Modification of Bank Mega Syariah

The results of the calculation of the Z-Score of Bank Mega Syariah in the 2017-2019 period are as follows:

Table 2
Z-Score Calculation Results for Bank Mega Syariah
Modification 2015-2017 period

Year	WCTA	RETA	EBTTA	BVETL	Z-Score	Classification
	6.56	3.26	6.72	1.05		
2017	26,600	0.525	0.498	0.683	28,306	<i>Safe Area</i>
2018	41,404	0.895	0.435	0.949	43,683	<i>Safe Area</i>
2019	5,344	0.125	0.054	0.845	6,368	<i>Safe Area</i>

Source: Processed data 2021

The table above shows that Bank Mega Syariah for 3 consecutive years is in a safe area position or it can be said that the company is in a healthy condition. This can be seen from the Z-Score value > 2.60 . In 2017 the Z-Score value of 28,306 then increased in 2018 which was 43,683. However, the Z-Score value decreased in 2019 to 6,368.

Analysis of Modified Z-Score Results of Bank Muamalat Indonesia

Bank Muamalat Z-Score calculation results for the 2017-2019 period are as follows:

Table 3
Calculation Results of the Modified Z-Score of Bank Muamalat 2017-2019 period

Year	WCTA	RETA	EBTTA	BVETL	Z-Score	Classification
	6.56	3.26	6.72	1.05		
2017	4,618	0.015	0.006	0.116	4,755	<i>Safe Area</i>
2018	4,920	0.025	0.005	0.122	5.072	<i>Safe Area</i>
2019	4,637	0.033	0.003	0.120	4,793	<i>Safe Area</i>

Source: Processed data 2021

The table above shows that Bank Muamalat Indonesia has been in a safe area for 3 years in a row or it can be said that the company is in a healthy condition. This can be seen from the Z-Score value > 2.60 . The Z-Score value increased from 4.755 in 2017 to 5.072 in 2018, and in 2019 it decreased again to 4,793. A decrease in the company's Z-Score can indicate that the company's financial performance is declining, if it is not addressed immediately, there is a possibility that this decline will continue.

Analysis of Modified Z-Score Results of Bank Syariah Mandiri

The results of the calculation of the Z-Score of Bank Syariah Mandiri in the 2017-2019 period are as follows:

Table 4
Calculation Results of the Modified Z-Score of Bank Syariah Mandiri Period 2017-2019

Year	WCTA	RETA	EBTTA	BVETL	Z-Score	Classification
	6.56	3.26	6.72	1.05		
2017	5,388	0.127	0.037	0.232	5,784	<i>Safe Area</i>
2018	5.501	0.131	0.056	0.217	5,905	<i>Safe Area</i>
2019	5,255	0.151	0.103	0.165	5,674	<i>Safe Area</i>

Source: Processed data 2021

The table above shows that for 3 consecutive years, Bank Syariah Mandiri is in a safe area position or it can be said that the company is in good health. This can be seen from the Z-Score value > 2.60 . Although in 2018 the Z-Score value increased from 5,784 to 5,905. However, in 2019 the Z-Score value decreased from the previous 5,905 to 5,674.

Analysis of the Results of the Modified Z-Score of BCA Syariah

The results of the calculation of the BCA Syariah Z-Score in the 2017-2019 period are as follows:

Table 5
BCA Syariah Modified Z-Score Calculation Results
2017-2019 period

Year	WCTA	RETA	EBTTA	BVETL	Z-Score	Classification
	6.56	3.26	6.72	1.05		
2017	5,636	0.081	0.070	1,402	7,189	<i>Safe Area</i>
2018	5,607	0.094	0.069	1,352	7,122	<i>Safe Area</i>
2019	5,123	0.102	0.065	1,472	6,762	<i>Safe Area</i>

Source: Processed data 2021

The table above shows that for 3 consecutive years BCA Syariah is in a safe area position or it can be said that the company is in good health. This can be seen from the Z-Score > 2.60. However, the Z-Score value has decreased from year to year, namely from 2017 which was 7,189, in 2018 it was 7,122 then in 2019 it was 6,762.

Analysis of BRI Syariah Modified Z-Score Results

The results of the calculation of the BRI Syariah Z-Score in the 2017-2019 period are as follows:

Table 6
BRI Syariah Modified Z-Score Calculation Results
Period 2017-2019

Year	WCTA	RETA	EBTTA	BVETL	Z-Score	Classification
	6.56	3.26	6.72	1.05		
2017	4,938	0.060	0.032	0.228	5,258	<i>Safe Area</i>
2018	4,819	0.009	0.027	0.470	5,325	<i>Safe Area</i>
2019	4,998	0.012	0.018	0.429	5,457	<i>Safe Area</i>

Source: Processed data 2021

The table above shows that for 3 consecutive years BRI Syariah is in a safe area position or it can be said that the company is in good health. This can be seen from the Z-Score > 2.60. The Z-Score value has increased from year to year. In 2017 the Z-Score value was 5.258, then in 2018 it was 5.325. In 2019, it increased again to 5,457.

Analysis of Modified Z-Score Results of Bank Jabar Banten Syariah

The results of the calculation of the BJB Syariah Z-Score in the 2017-2019 period are as follows:

Table 7
Z-Score Calculation Results Modified West Java Banten
Syariah Period 2017-2019

Year	WCTA	RETA	EBTTA	BVETL	Z-Score	Classification
	6.56	3.26	6.72	1.05		
2017	5.559	0.302	0.368	1,591	7,820	<i>Safe Area</i>
2018	5,168	0.335	0.037	1,192	6,732	<i>Safe Area</i>
2019	5,116	0.286	0.037	1,238	6,677	<i>Safe Area</i>

Source: Processed data 2021

Based on the table above shows that for 3 consecutive years Bank Jabar Banten Syariah is in a safe area position or it can be said that the company is in good health. This can be seen from the Z-Score > 2.60. However, for 3 consecutive years the company has also experienced a decrease in the Z-Score value, as seen in 2017 the Z-Score value of 7,820, in 2018 the Z-Score value of 6.732 then fell back to 6.677 in 2019.

Analysis of the Modified Z-Score Results of the Panin Dubai Sharia Bank

The results of the calculation of the Z-Score of Bank Panin Dubai Syariah in the 2017-2019 period are as follows:

Table 8
Z-Score Calculation Results of the Modified Panin Dubai
Sharia Bank 2017-2019 period

Year	WCTA	RETA	EBTTA	BVETL	Z-Score	Classification
	6.56	3.26	6.72	1.05		
2017	0.932	0.325	0.093	0.014	1.364	<i>Gray Area</i>
2018	1.106	0.384	0.148	0.015	1,653	<i>Gray Area</i>
2019	1.092	0.428	0.146	0.015	1,681	<i>Gray Area</i>

Source: Processed data 2021

The table above shows that for 3 consecutive years Panin Dubai Syariah is in the gray area position or it can be said that the company is in a state of caution. It can be seen from the Z-Score $1.10 < Z < 2.6$. The Z-Score value has increased from year to year, namely in 2017 it was 1.364, in 2018 it was 1.653 then in 2019 it was 1.681.

Analysis of the Results of the Modified Z-Score of the Bukopin Islamic Bank

The results of the calculation of the Z-Score of Bank Syariah Bukopin for the 2017-2019 period are as follows:

Table 9
Calculation Results of the Modified Z-Score of Bukopin Sharia Bank Period 2017-2019

Year	WCTA	RETA	EBTTA	BVETL	Z-Score	Classification
	6.56	3.26	6.72	1.05		
2017	4,730	0.094	0.001	0.719	5.544	<i>Safe Area</i>
2018	4,581	0.105	0.002	0.864	5.552	<i>Safe Area</i>
2019	5,328	0.098	0.002	0.804	6,232	<i>Safe Area</i>

Source: Processed data 2021

The table above shows that for 3 consecutive years Bukopin Syariah Bank is in a safe area position or it can be said that the company is in good health. This can be seen from the Z-Score > 2.60. For three consecutive years the company has also shown a significant increase, as evidenced in 2017 the Z-Score value was in the position of 5.544 until in 2019 it became 6.232.

Analysis of the Results of the Modification of the Z-Score of the Victorian Sharia Bank

The results of the calculation of Bank Victoria Syariah Z-Score in the 2017-2019 period are as follows:

Table 10
Z-Score Calculation Results Modified Bank Victoria Syariah Period 2017-2019

Year	WCTA	RETA	EBTTA	BVETL	Z-Score	Classification
	6.56	3.26	6.72	1.05		
2017	5.514	0.017	0.003	1,714	7,248	<i>Safe Area</i>
2018	5,258	0.019	0.020	1.175	6,472	<i>Safe Area</i>
2019	5.514	0.017	0.003	1,714	7,248	<i>Safe Area</i>

Source: Processed data 2021

Based on the table above, it shows that for 3 consecutive years, Bank Victoria Syariah is in a safe area position or it can be said that the company is in good health. This can be seen from the Z-Score > 2.60. Although the Z-Score value had decreased in 2018, the Z-Score value increased again in 2019, which was 7,248.

Analysis of Modified Z-Score Results of Bank Maybank Syariah Indonesia

The results of the calculation of the Z-Score of the Sharia National Pension Savings Bank for the 2017-2019 period are as follows:

Table 11
Z-Score Calculation Results of the Modification of the Sharia National Pension Savings Bank for the 2017-2019 Period

Year	WCTA	RETA	EBTTA	BVETL	Z-Score	Classification
	6.56	3.26	6.72	1.05		
2017	5,280	0.474	0.667	0.440	6,861	<i>Safe Area</i>
2018	5,409	0.630	0.725	0.395	7,159	<i>Safe Area</i>
2019	5.504	0.788	0.820	0.332	7,444	<i>Safe Area</i>

Source: Processed data 2021

Based on the table above, it shows that for 3 consecutive years the Sharia National Pension Savings Bank is in a safe area position or it can be said that the company is in good health. This can be seen from the Z-Score > 2.60. The Z-Score value from year to year has increased from the previous 6,861 to 7,159, and in 2019 it increased again to 7,444.

Analysis of Modified Z-Score Results of Bank Aceh Syariah

The results of the calculation of the Z-Score of Bank Aceh Syariah in the 2017-2019 period are as follows:

Table 12
Calculation Results of Modified Z-Score of Bank Aceh Syariah Period 2017-2019

Year	WCTA	RETA	EBTTA	BVETL	Z-Score	Classification
	6.56	3.26	6.72	1.05		
2017	5,736	0.080	0.158	0.377	6,351	<i>Safe Area</i>
2018	5.562	0.079	0.157	0.317	6,115	<i>Safe Area</i>
2019	5,750	0.075	0.146	0.357	6,328	<i>Safe Area</i>

Source: Processed data 2021

Based on the table above, it shows that for 3 consecutive years, Bank Aceh Syariah is in a safe area position or it can be said that the company is in good health. This can be seen from the Z-Score > 2.60. Although the Z-Score value had decreased in 2018, the Z-Score value increased again in 2019, which was 6,328.

The first variable used is the ratio of working capital to total assets (working capital to total assets). In this ratio, companies that experience operating losses will continuously shrink the number of current assets related to total assets, such

as the results of research on BTPN Syariah where for three years the value of X1 has decreased, namely in 2017 by 5.708, in 2018 by 5.409 and in 2019 amounted to 5,280. Among the assessments of the liquidity ratio, this ratio is the most important because it assesses the ratio of total assets as the best indicator.

The second variable used is the ratio of retained earnings to total assets (Retained Earnings to Total Assets). In this ratio, the new company may show a low ratio of retained earnings to total assets because it does not have time to increase cumulative profits. Therefore, it can be proven that newly established companies are likely to be classified in the bankrupt category relatively higher. For example, at Bank Aceh Syariah, in 2017 the X2 value was 0.080, in 2018 it was 0.079, and in 2019 it was 0.075.

The third variable is the ratio of earnings before tax to total assets (Earning Before Interest to Total Assets). This ratio shows a measure of the actual productivity of the company's assets regardless of taxes. The highest scores in 2019 were Bank Aceh Syariah and Bank Panin Dubai Syariah at 0.146, in 2018 BTPN Syariah was at 0.725, and for 2017 BTPN Syariah was achieved with a value of 0.667.

The fourth variable is the ratio of book value of equity to total liabilities (Book Value of Equity to Total Liabilities). In this ratio, the lowest score is Bank Panin Dubai Syariah, namely in 2019 at 0.015, in 2018 at 0.015, and in 2017 at 0.014. This ratio shows that how much the company's assets can decline in value exceeds the assets and the company can become bankrupt.

Of the 12 banks sampled, it was found that 11 Islamic commercial banks are in the safe zone category or it can be said that the company is in a healthy condition, while 1 Islamic commercial bank is in the gray area category. The results of this study show that the financial condition of Islamic commercial banks (BUS) in Indonesia in the 2017-2019 period showed quite good results. Based on the analysis results of the Modified Altman Z-Score model which has the highest Z-Score value in 2019 is BTPN Syariah and the highest Z-Score value in 2018 and 2017 is Bank Mega Syariah. Meanwhile, Panin Dubai Syariah has the lowest Z-Score for three consecutive years.

Conclusions

Based on the results of the discussion on bankruptcy analysis using the Modified Altman Z-Score Model for Islamic Commercial Banks (BUS) in the 2017-2019 period, it can be concluded that the health conditions of 11 Islamic commercial banks (BUS) in the 2017-2019 period are in a safe area position or can be said to be in the healthy category and 1 sharia commercial bank (BUS) was in the gray area or cautious position. In 2017-2019 the highest Z-Score in 2019 was BTPN Syariah and the highest Z-Score in 2018 and 2017 was Bank Mega Syariah. BTPN Syariah's Z-Score in 2019 was 7,444, while the highest in 2018 was 43,683 while in 2017 the Z-Score value was 28,306.

Meanwhile, the one who got the lowest Z-Score for three consecutive years was Panin Dubai Syariah Bank. In 2019 the Z-Score value of Bank Panin Dubai Syariah was 1.681, while in 2018 it was 1.653 and in 2017 the Z-Score value of Bank Panin Dubai Syariah was 1.364.

In this study, Islamic Commercial Banks (BUS) whose Z-Score values continue to increase are BRI Syariah, Bank Bukopin Syariah, BTPN Syariah and Bank Panin Syariah. Meanwhile, those whose Z-Score has decreased for three consecutive years are BNI Syariah, BCA Syariah, and Bank Jabar Banten Syariah.

Sharia Commercial Banks (BUS) whose Z-Score values tend to increase in the 2017-2019 period are expected to be able to maintain financial performance stability by monitoring and improving their performance so that they can obtain even better results in the coming period. For Islamic Commercial Banks (BUS) whose Z-Score values fluctuate or even experience a decline, it is necessary to be careful in making policies that can have an impact on the company's financial performance and companies must try to make better use of their assets to gain profits. This decline in performance does not recur in the next period.

For investors, it is hoped that it can be a reference in making investment decisions at Islamic Commercial Banks (BUS) in Indonesia. Although in this study there is only one Islamic commercial bank that is in the gray areas category, caution is still needed in choosing to invest the funds they have in order to minimize losses that may occur in the future. This study only uses 3 financial reporting periods, so for further research it is expected to be able to increase the number of financial reporting periods studied.

References

- Aljana, Bahana Takbir dan Agus Purwanto, “Pengaruh profitabilitas, struktur kepemilikan, dan Kualitas Audit terhadap Manajemen Laba,” *Diponegoro Journal Accounting*, Vol.6, No.3, (2017): 2.
- B.M.S, Rio Evan dan Cut Ermianti. “Analisis Kebangkrutan Perusahaan dengan Model Altman *Z-Score* pada Perusahaan Makanan dan Minuman yang Terdaftar di Bursa Efek Indonesia Periode 2011-2014,” *Jurnal Plans*, Vol.10, No.2 (2015): 43-56.
- Buari, Diah Isti Ridha, dkk, “Analisis Tingkat Kebangkrutan pada Perusahaan Manufaktur di Bursa Efek Indonesia (Studi pada Perusahaan yang Terdaftar di Bursa Efek Indonesia 2013-2015)”, *Jurnal Bisnis dan Ekonomi*, Vol.24, No.1, (2017): 24-32.
- Firdausi, Yuli Kurnia, “Analisis Z-Score Untuk Memprediksi Financial Distress Pada Perusahaan Tekstil dan Garment” *Majalah Ekonomi*, Vol. XXII, No.1 (2017): 22.
- Hasbi, M. Zidny Nafi’. “Dampak Krisis Keuangan Global Terhadap Perbankan di Indonesia: Perbandingan antara Bank Konvensional dan Syariah,” *Jurnal Lisan Al-Hal*, Vol.13, No.2 (2019): 385-386.
- Hery, *Kajian Riset Akuntansi (Mengulas Berbagai Hasil Penelitian Terkini dalam Bidang Akuntansi dan Keuangan)* (Jakarta: PT.Grasindo, 2017).
- Ilham, Dwi Nuraini dan Sharfina Putri Kartika, Potensi Kebangkrutan Pada Sektor Perbankan Syariah Untuk Menghadapi Perubahan Lingkungan Bisnis, *Jurnal Ekonomi*, Vol.14, No. 2 (2015): 113-146.
- Kadim, Abdul dan Sunardi, Nardi, “Analisis Altman *Z-Score* Untuk Memprediksi Kebangkrutan Pada Bank Pemerintah (BUMN) di Indonesia Tahun 2012-2016”, *Jurnal Sekuritas*, Vol.1, No.3 (2018): 143.
- Katarina Intan Afni Patunrui dan Sri Yati, Analisis Penilaian *Financial Distress* Menggunakan Model Altman (*Z-Score*) Pada Perusahaan Farmasi Yang Terdaftar di Bursa Efek Indonesia Periode 2013-2015”, *Jurnal Akuntansi, Ekonomi dan Manajemen Bisnis*, Vol.5, No.1 (2017): 55-71.
- Kurnia, Okta Dwi, dkk, “Analisis Laporan Keuangan Dalam Memprediksi Kebangkrutan Pada Perusahaan Manufaktur (Studi pada 3 Perusahaan Plastik yang *Listing* dan 1 Perusahaan *Delisting* di BEI periode 2009-2012”, *Jurnal Administrasi Bisnis*, Vol.22, No.1 (2015): 1-7.
- Maheswara, Anak Agung Gede Oka dan A.A. Ngurah Bagus Dwirandra. “Profitabilitas Memoderasi Pengaruh Financial Distress pada Opini Audit Going Concern,” *E-Jurnal Akuntansi*, Vol.298, No.1 (2019): 421.

**Prediction of Bankruptcy in Islamic Banking in Indonesia:
Modified Altman Z-Score Method Approach**

Surepno dan Er Melinda Swissa

- Martini, Rita,dkk.“Penerapan Metode Altman Untuk Mendeteksi Risiko Kebangkrutan,”*Jurnal Penelitian Ekonomi dan Akuntansi*,Vol.6,No.3,(2021): 256
- Oktarina, Eka.“Analisis Prediksi Kebangkrutan Dengan Metode Altman Z-Score pada PT.BRI Syariah” (Skripsi, UIN Raden Fatah Palembang, 2017): 2.
- Prabowo, Reza dan Wibowo, “Analisis Perbandingan Model Altman Z-Score, Zmijewski, dan model Springate dalam Memprediksi Kebangkrutan Perusahaan *Delisting* di BEI Periode 2008-2013, *Jurnal Akuntansi*, Vol. 11 No. 1 (2015).
- Wardiyah, Mia Lasmi.*Analisis Laporan Keuangan*,Bandung:CV.Pustaka Setia,2017.
- Zulaikah,Siti dan Nisful Laila, “Perbandingan *Financial Distress* Bank Syariah di Indonesia dan Bank Islam di Malaysia Sebelum dan Sesudah Krisis Global,”*Jurnal Ekonomi Syariah Teori dan Terapan*,Vol.3, No.11, (2016): 900-914.