

Analysis of Bankruptcy Prediction by Altman Z-Score Modification (Study at PT BPR Primaesa Sejahtera Kota Manado)

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ABSTRACT

This study aims to determine the prediction of bankruptcy at PT BPR Primaesa Sejahtera Manado using the Altman Z-Score Modification model with the formula $Z = 6.56 X_1 + 3.26 X_2 + 6.72 X_3 + 1.05 X_4$, with a benchmark value of Z-Score grouped into three categories, including, bankrupt ($Z < 1.1$), grey area ($1.1 < Z < 2.6$) and not bankrupt ($Z > 2.6$). The data collection techniques were documentation and interviews. The data was analysed by descriptive analysis with a quantitative approach to PT BPR Primaesa Sejahtera Manado's financial statements consisting of balance sheets and income statements. The findings of the study indicate that the Z-Score value was 1.634125352, 1.445699781, -0.352054013, -0.298088193 and -0.465807943 implying that PT BPR Primaesa Sejahtera Manado is in the gray area, or at risk of bankruptcy. The results of the study in the 2015-2019 period shows a benchmark of $Z < 2.6$, signifying that PT BPR Primaesa Sejahtera Manado is predicted to potentially suffer bankruptcy in the future.

Keywords: Altman Z-Score Modification Method, Bankruptcy, Manado, Quantitative

INTRODUCTION

Recent rapid economic development requires all companies to compete necessitating them to recognize their overall performance. The existence of various financial institutions indicates that a country's economy is growing. To avoid bankruptcy at Rural Banks, in addition to continuing to improve the overall performance, evaluation should also be carried out peculiarly on their financial performances, such as predicting bankruptcy. Early prediction is crucial to avoid and anticipate bankruptcy. Bankruptcy prediction is to obtain information or signals of financial difficulties demanding performance improvements. According to (Sundjaja et al 2001); (Aminah et al in Muharrami et al 2018) corporate bankruptcy can be characterized by a prolonged and continuous decline in the company's. When the company is unable to meet the payment schedule or when cash flow projections indicate that the company will soon be unable to meet its obligations.

The income statements of PT BPR Primaesa Sejahtera Manado stated that the company's profit fell into a drop in 2016 and had a large loss for the last three years. The following is its net profit/loss, current and total assets for the last five years.

Table 1: Net Profit/Loss, Current and Total Assets of PT BPR Primaesa Sejahtera

Year	Net Profit/Loss	Sum of Current Assets	Amount of Assets
2015	IDR 695,780,000	Rp. 23,874,956,000	Rp.24,499,141,000
2016	IDR 612,987,000	IDR 30,806,595,000	Rp. 31,540,589,000
2017	(Rp. 2,249,509,000)	IDR 29,945,004,000	Rp. 31,006,579,000
2018	(IDR 1,845,643,000)	Rp. 28,146,803,000	Rp. 28,997,718,000
2019	(Rp. 1,063,480,000)	Rp. 29,479,791,000	Rp. 30,193,208,000

Source: PT BPR Primaesa Sejahtera's Financial Statement

These data demonstrate that in 2016 the profits made by PT BPR Primaesa Sejahtera declined, despite the number of current assets in that year was the highest among that in the last five years, while in 2017-2019 it actually suffered losses. The biggest loss occurred in 2017 followed by a decrease in its current assets in the same year. In 2018, the losses and the number of current assets decreased. While in 2019, the number of current assets increases, the losses remain occurred though much lower.

In addition, the data above illustrates that in 2017 the number of current assets of the company decreased and it suffered the largest amount of loss suffered over the past five years. This is alarming since it used current assets to pay obligations or operational costs and when they come to naught, it must pay off all liabilities with fixed assets. Furthermore, as they are decreasing, it starts having financial difficulties.

On the other hand, the number of assets in 2016 increased significantly compared with that in the previous year; however, it was not offset by the company's ability to generate profits. In fact, it did just the opposite in 2017 and 2018, the number of assets suffered another decline, while it increased in 2019.

The over year's profit declines and losses raise pertinent questions that deserve answers about the company's future bankruptcy potentials in the coming years. Thus, the purpose of this study is to determine bankruptcy predictions with the Altman Z-Score Modification at PT BPR Primaesa Sejahtera Manado based on its 2015-2019 financial statements.

Theoretical Review

Analysis of Statements, Financial Ratios and Bankruptcies

Financial statement analysis is performed with the basic purpose of recognizing and obtaining information about the profitability of the risk level or company's soundness by measuring its financial ratios (Hanafi and Halim, 2016: 6), (Munawir, 2010). Financial ratio analysis is a technique to evaluate a company's financial statements by combining the numbers in the income statement and balance sheets. It provides information about the financial condition systematically and displays the results of the company's operations in the past and present. A company's bankruptcy is usually preceded by financial distress which is characterized by uncertainty about the company's future profitability (Butet in Wulandari et al., 2017: 16).

Altman Z-Score Modification

Edward I. Altman, a researcher from the United States, in 1969 developed the Altman Z-Score method to predict bankruptcy by using calculations of financial ratios and combining several common financial ratios and assigning different weights to each other (Hanafi, 2014: 656), (Kasmir, 2012). According to Eka Oktarina, 2017:5; Harahap Et Al 2009 Model Altman Z-Score to predict bankruptcy there are three kinds namely The First Altman Model (*Original*), Altman Model Revision and Altman Model Modification.

The formula is:

$$Z = 6,56X1+3,26X2+6,72X3+1,05X4$$

Notes:

Z = Bankruptcy Index

X1 = Net Working Capital / Total Assets

X2 = Retained Earnings / Total Assets

X3 = Profit Before Tax / Total Assets

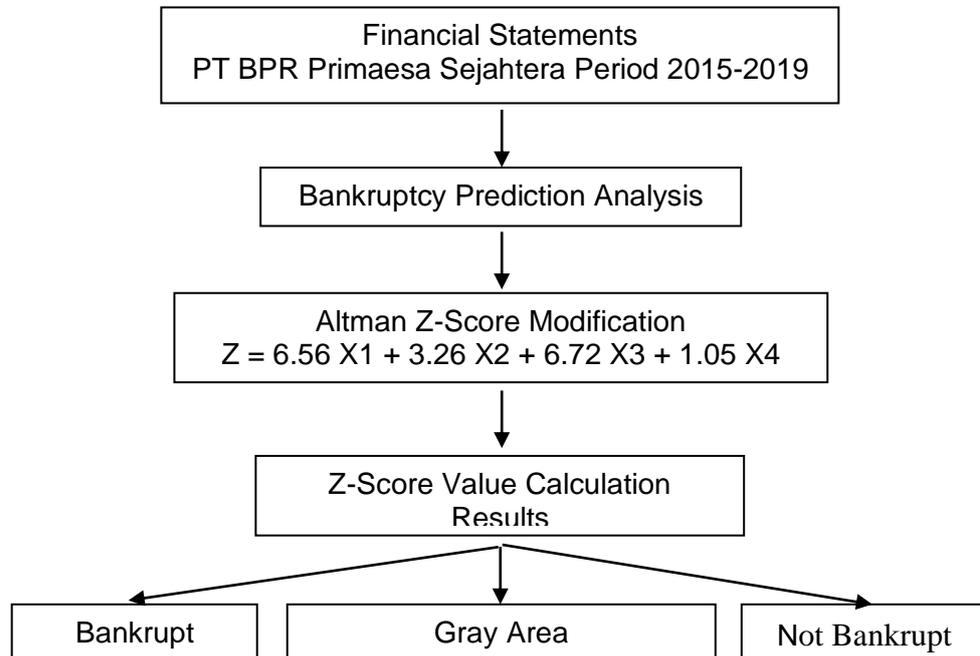
X4 = Book Value of Equity / Book Value of Total Liabilities

Altman Z-Score in Indonesian Banking Sectors

There are several research of implementing the Z-Score, (Efriadi et al 2019) use Altman Z-score and S-score to predict the BPR Multi Artha Sejahtera company conditions. Overall, both Z-Score and S-Score were able to predict the level of BPR multi artha sejahtera in 2011-2015. (Alam et al 2016) conducted research using Z-Score, G-Score and X-Score at the village credit institute. Overall all models can predict the rate of bankruptcy. (Hilyatin et al 2017) conducted research predicting bankruptcy from Bank Muamalat Indonesia by using altman z-score method. Overall, in 2012-2016 z-score scoring of 0.825, 0.659, 1.243, 0.982 and 0.892. Based on this method, Bank Muamalat Indonesia is predicted to go into bankruptcy. Sagho et al 2015 conducted research using Altman Z-Score method on all banking companies registered with Indonesia stock exchange in 2011 to 2013 and found all companies are in good health. (Kusdiana 2014) found that there are differences between the CAMEL model and Altman's Z-Score in the accuracy of predicting bank bankruptcy. The difference in the results of the two models in predicting the bankruptcy of banking sectors in Indonesia with the type I error and type II error. The accuracy of Altman's Z-Score Model predictions is better at predicting the bankruptcy of commercial banks in Indonesia compared to the CAMEL Model. This is due to the accuracy of the prediction model produced by Altman's Z-Score model in predicting bank bankruptcy experiencing a high probability of bankruptcy

Conceptual Framework

To clarify the direction of the research, the conceptual framework in this study is described as follows:



RESEARCH METHOD

This is a descriptive study with a quantitative approach, aimed at describing the symptoms of bankruptcy at PT BPR Primaesa Sejahtera Manado by calculating financial data to solve problems in accordance with the research objectives, namely finding out bankruptcy predictions at the company. This research was conducted at PT BPR Primaesa Sejahtera located at Jl. Piere Tendean Komp. Mega Mas Blok 1D1 No. 20 Malalayang, Manado, North Sulawesi.

This research was conducted for two months, from December 2019 until January 2020. The data source in this study was secondary data which are a source of research data obtained indirectly through intermediary media (obtained and recorded by other parties). They are generally in the form of evidences, historical records or reports compiled in archives (documentary data) which either are published or unpublished (Indriantoro and Bambang, 2018: 143).

The data source in this study was the published financial statements consisting of the balance sheets and income statements of PT BPR Primaesa Sejahtera for the period of 2015-2019. The data were collected through:

1. Documentation

It is to obtain data by reading and observing documents related to the research such as the published financial statements consisting of income statements and balance sheets.

2. Interview

It was conducted by dialogues with one of employees of PT BPR Primaesa Sejahtera to gather information about the company's profile, management structure and products.

RESULTS AND DISCUSSION

The Calculation Results of Financial Ratios in the Altman Z-Score Modification

Table 2. Calculation Results Financial Ratios in the Altman Z-Score Modification Method at PT BPR Primaesa Sejahtera for the 2015-2019 Period

Ratio	Period				
	2015	2016	2017	2018	2019
X1	0.167102226	0.151159733	0.026625962	0.063749327	0.031352449
X2	0.0429702	0.045976789	-0,029408597	-0,119406017	-0,1499007
X3	0.032702494	0.022898621	-0.07254941	-0.06364787	-0,035222491
X4	0.169610608	0.143170352	0.05398451	0.095898598	0.051325157

Source: Data Processed in 2020

The results indicate that the X1 and X4 ratio from 2015-2019 is positive, while the X2 and X3 ratio in 2017-2019 is negative. The X1 ratio in 2016, 2017 and 2019 are lower than those in the previous years. The decline in the X1 ratio in 2016 was due to an increase in total assets of the year, however it was not offset by an increase in net working capital proportionate to the increase in total assets. While the decline in the X1 ratio in 2017 and 2019 was due to a decrease in the amount of working capital of the year. In 2018, the amount of working capital increased compared with that in the previous year. This was also followed by an increase in the X1 ratio of year.

The table shows the value of the X1 ratio over the past five years tended to decline. It leads to a conclusion that the company's capability to produce net working capital remains limited. Similarly, the X2 ratio for the past five years decreased. In 2016 the X2 ratio was higher than that in the previous year, although insignificantly increased. The increase in the ratio was due to the increasing amount of retained earnings higher than that in the previous year, however, it continued to decline constantly for the last three years. The X2 ratio in 2017-2019 is negative denoting that the company's ability to create retained earnings over year is lacking.

The X3 ratio in 2016 was lower, and followed by another sharp decrease in 2017. This was influenced by the significant amount of losses the company suffered in 2017, compared with those in other years. Due to its significant losses in the last three years, the calculation with total assets as the denominator yields a very low and negative X3 ratio. The X3 ratio in 2018 and 2019 was slightly better than those in the previous years, due to the decline in the amount of losses. However, the losses remained too major making it obvious that the company's ability to generate profit before tax is inconsiderable.

Comparable with the X1 ratio above, the X2 ratio for the past five years has decreased. In 2016, the X2 ratio was higher than that in the previous year, although insignificantly increased. This was due to the increasing amount of

retained earnings higher than that in the previous year, however, it continued to decline constantly for the last three years. The X2 ratio in 2017-2019 was negative denoting that the company's ability to create retained earnings over year is inadequate.

Identical to the X3 ratio, the X4 ratio in 2016 decreased. The reason was the book value of total liabilities increased. In 2017 there was a decrease in the X4 ratio due to a decline in book value of equity before the increase in the total book value of liabilities. It resulted the calculation of the X4 ratio in 2017 was lower than that in the previous year due to the book value of equity increased while the book value of total liabilities decreased.

The financial statements indicated an increase in authorized capital from Rp 5,000,000,000 in 2017 to Rp. 10,000,000,000 in 2018. The 2019's X4 ratio fell back down followed by a decrease in the total book value of equity and an increase in the total book value of liabilities. As with the previous ratios, it comes to a conclusion that the company's ability fulfills obligations using its own capital remains unpleasant.

Bankruptcy Prediction Rate with the Altman Z-Score Modification

Table 3. Analysis Results Using the Altman Z-Score Modification at PT BPR Primaesa Sejahtera for the 2015-2019 Period

Z-Score Modification	Period				
	2015	2016	2017	2018	2019
(6.56 X1)	1.096190604	0.991607846	0.174666312	0.418195584	0.205672062
(3.26 X2)	0.140082854	0.149884332	-0,095872028	-0,389263614	-0,48867628
(6.72 X3)	0.219760757	0.153878734	-0.487532032	-0,42771369	-0,23669514
(1.05 X4)	0.178091139	0.150328869	0.056683735	0.100693528	0.053891415
Total	1.634125352	1.445699781	-0.352054013	-0.298088193	-0,465807943
Categories	Gray Area	Gray Area	Bankrupt	Bankrupt	Bankrupt

Source: Data Processed in 2020

The findings of this study suggest that the value of Z-Score over the past five years had declined. The highest Z-Score value in 2015 was 1.634125352 with the ratio of X1 (net working capital/total assets), X3 (profit before tax/total assets) and X4 (book value of equity/book value of total liabilities) respectively is 0.167102226, 0.032702494 and 0.169610608. These are greater than those in other years. The Z-Score value in 2015 is $1.1 < Z2.6$ implying that the company was in the gray area. The Z-Score in 2016 is 0.1445699781, another fact denoting that the company was in the gray area. Compared with that in the previous year, the Z-Score value in 2016 is lower. This is due to the decreasing value of the ratio X1, X3 and X4. It arrives at a conclusion that PT BPR Primaesa Sejahtera began suffering a financial performance underachievement.

This was compounded by the Z-Score in 2017 by -0.352054013 suggesting that PT BPR Primaesa Sejahtera went bust (bankrupt). The low Z-Score value is

attributable to the low X1 ratio (working capital/total assets) compared with those in other years, and the severe losses in 2017.

Z-Score value in 2018 was -0.298088193. Similar to the previous year, the company went into bankruptcy. Even though the Z-Score in 2018 was higher than that in the previous year, it remained low, even negative.

The lowest Z-Score value was in 2019 of -0.465807943, by means of the X2 ratio (retained earnings/total assets) of -0.1499007 and the X4 ratio (book value of equity/book value of total liabilities) of 0.051325157, lower than those in the previous years. The Z-Score value in 2019 denoted that PT BPR Primaesa was bankrupt.

The results of each ratio greatly affect the Z-Score values. Since the X1 ratio conveys the company's ability to produce net working capital from the total assets, the more working capital generated by the low total assets, the higher the X1 ratio. The X2 ratio exhibits the company's ability to generate retained earnings, if the company suffers a loss, the X2 ratio will be lower, as well as the X3 ratio. The X4 ratio shows the company's ability to meet its obligations from its own capital, when the total book value of equity gets bigger, it must be balanced with a decrease in the total book value of liabilities to incur a high X4 ratio, which indicates that a company can fulfill its obligations at maturity.

The data above shows that the value of Z-Score in 2015 and 2016 is above 1.1 and below 2.6. The benchmarks indicate that the company is in the gray area. In 2017-2019 the value of Z-Score is below 1.1 and even has a negative value. The benchmarks indicate that the company went into bankruptcy. Taken together, these results suggest that, PT BPR Primaesa Sejahtera Manado is predicted to potentially suffer bankruptcy in the future, assuming the management do not promptly produce considerable improvements to its financial performance. This research similar with Kusdiana (2014) that predict the bankruptcy of Indonesian bank sector in 2007-2011.

CONCLUSIONS

Bankruptcy prediction analysis using the Altman Z-Score Modification at PT BPR Primaesa Sejahtera Manado for the 2015-2019 period resulted a Z-Score of 1,634125352, 1,445699781, -0.352054013, -0.298088193 and -0.465807943. Based on the Z-Score value, implying that the company for the 2015-2019 period is respectively in the gray area, gray area, bankrupt, bankrupt and bankrupt. The analysis results a benchmark number by $Z < 2.6$, predicting the company's potential future bankruptcy.

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