

## INDONESIA'S ISLAMIC BANKING BANKRUPTCY PREDICTION FOR PERIOD 2014-2016

Anton Bawono

alfathbawono@gmail.com  
IAIN Salatiga

Aisyah Setyaningrum

aisyahsetya8@gmail.com  
IAIN Salatiga

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### **Abstract**

*This research is motivated by market share of Syariah Bank (BUS) in Indonesia which is under 5% so that chance to go bankrupt. To minimize bankruptcy, the company's performance is assessed through the financial ratios of Working Capital to Total Assets (WCTA), Earnings Before Interest and Tax to Total Assets (EBITTA), Retained Earnings to Total Assets (RETA) and Book Value of Equity to Book Value of Total Debt (BVEBVTD). The purpose of research to determine the effect of financial ratios on predicted bankruptcy bank and significance Altman Z-Score model. Data collection through indirect observation of quarterly report period 2014-2016 at 11 BUS. Analytical techniques such as stationary test, regression, classical assumption and Multiple Discriminant Analysis and factor analysis. The result of research is WCTA, EBITTA and BVEBVTD variables have positive and significant influence on bankruptcy prediction, while RETA variable has negative and significant effect. Of the four independent variables only WCTA and BVEBVTD variables can predict bankruptcy of BUS with 98.2% accuracy.*

### **Keywords:**

*Financial Ratios,  
Altman Z-Score  
Model, Sharia  
Banks*

## INTRODUCTION

The existence of sharia banking industry since 1992 in Indonesia becoming an economic expanding alternative solution in financial transaction, but until now, it still has low market share. This condition can be seen from the level of financial ratios per September 30, 2015 in table 1 below:

**Table 1**  
**Islamic Banking Ratio in September 2015**

(In percentage point)

No	Bank	Financial Ratio					
		CAR	ROA	BOPO	NIM	NPL Gross	LDR
1	BTPN Syariah	21.29	4.88	86.83	34.01	1.3	94.18
2	BCA Syariah	36.6	0.86	94.61	4.69	0.59	102.09
3	BRI Syariah	13.82	0.8	93.91	6.85	4.9	86.61
4	Bank Syariah Bukopin	16.26	0.66	93.14	3.07	3.01	91.82
5	BNI Syariah	15.38	1.32	91.6	8.21	2.54	89.95
6	Bank Panin Syariah	21.44	1.13	89.57	3.61	1.76	96.01
7	Bank Jabar Banten Syariah	22.44	-0.95	104.25	5.64	6.91	103.48
8	Bank Victoria Syariah	19.89	0.05	99.74	3.1	6.56	102.11
9	Bank Muamalat	15.04	0.36	96.26	4.18	4.64	96.09
10	Bank Syariah Mandiri	11.84	0.42	97.41	6.36	6.89	84.49
11	Bank Mega Syariah	17.81	-0.34	102.33	9.73	4.78	98.86
12	Maybank Syariah Indonesia	43.05	-10.59	145.5	6.21	18.07	227.11

Source: kinerjabank.com, 2015

Based on the table above, it can be seen that, the level of ROA of Bank BTPN Syariah and BNI Syariah show a healthy category or between the range of 1.22 to 1.5 (Harmono, 2009). Moreover, Bank Panin Syariah is at a healthy level with ROA value of 1.13, while Bank BCA Syariah and BRI Syariah have a

less healthy level with ROA value of 0.80 and 0.86 and 7 other Sharia Banks have unhealthy predicate with ROA under 0.77 (Harmono , 2009). It can be concluded that the level of ROA of Sharia Banking as of 30 September 2015 shows less healthy condition since 58% of Sharia Commercial Banks in Indonesia have ROA under 0.77 point.

This condition maybe influenced by the ASEAN Economic Community (MEA) since in 2015 year the ASEAN free market began to be applied. The MEA challenge for sharia banking is the lack of product differentiation due to sharia banking business factors focused on the real sector and maintaining the *maqasid of sharia*. The development of sharia banking in 2016 is not much different from 2015, since there is no improved economic condition in terms of human resource capacity, office network and other infrastructure and internal consolidation process. The above problems have an impact on the decrease of sharia banking asset share to the national banking assets by 4.67% compared to the year of 2015 at 4.9% (Booklet of Banking Indonesia, 2016).

Therefore we have to create a solution on how to mitigate this situation. The first step of increasing the market share of Islamic banks can be done through the assessment of the performance of banking management with a view to asses the success of management in managing a business entity. This assessment is depended on the financial ratios that are subject to the assessment of bank health in Bank Indonesia regulations. If such judgment still leads to failure in banking management, then there must be action from the competent authority. The failure of one bank is not only because of problems in individual banks alone but also because of a domino effect in other industries (Kusdiana, 2014). Therefore we can use the bankruptcy analysis Altman Z-score model. This model is used to determine the accuracy of bankruptcy prediction and as an assessment and consideration of a company's condition. In addition, the Altman Z-score model can also identify factors or variables that may affect a company's health or bankruptcy.

Based on the above description, predicting bankruptcy financial industry is very important thing to do. The emergence of various predictions model of bankruptcy is the anticipation and early warning system against the possibility of the occurrence of financial crisis. The purpose of an early warning system means

to identify and improve conditions to avoid crisis or bankruptcy conditions (Kusdiana, 2014).

Research in bank bankruptcy prediction model by Endri (2008) states that Altman Z-Score model is less appropriate if used to predict the possibility of bankruptcy in the sharia banking industry. This is because the Z-Score model is formed from an empirical study of the manufacturing industry which is certainly very different from the banking industry. In the banking industry, for example, net working capital is not big. Then, large current liabilities will result from the increase of third party funds. This becomes more reasonable since a bank, as a financial intermediary and sharia public bank is not categorized yet as go public company, so the value of equity from year to year tends to be low.

While, the study by Salimi (2015) states that the Altman Z-Score model is still effective to predict corporate bankruptcy by providing information on the solvency of the company and changes before going bankrupt through the financial ratio data. The average predictive accuracy of 3 years before the bankruptcy was 79.4%. The results of this study are similar to the accuracy performed by Hanson in Salimi (2015). The altman model is very good but can not predict 100% in bankruptcy predictions.

Based on the above description, there are gaps in research results that occur primarily in the Islamic banking sector. Because, in the previous research, only a few sharia banks were studied, while seeing the current reality of the number of sharia banks is increasing every year and in 2016 the number of Islamic banks in Indonesia has reached 13 banks (SPS OJK, 2017). Thus, the authors are motivated to investigate more deeply about the influence of financial ratios on the state of banking, especially with the Altman Z-Score model.

## LITERATURE REVIEW

### 1. Islamic Banking

Bank is a business entity that collects funds from the public in the form of savings and distributes it to the public in the form of credit and/or other forms in order to improve the standard of living of the people (Article 1 Paragraph 2 of the Islamic Banking Act No. 21 of 2008). Meanwhile, the definition of Islamic Bank is the Bank which conducts its business activities based on Sharia Principles and according to its type is categorized as Sharia

Public Bank and Sharia Rural Bank (Article 1 Paragraph 1 of Islamic Banking Act No. 21 of 2008).

The function of Islamic banking in addition to performing the function of channeling and accumulating public funds, also performs social functions, namely as a *baitul maal* institution that receives zakat funds, *infaq*, *sedakah*, grants and others to be channeled to zakat management organizations, and as Islamic financial institutions receiving money *waqf* and channeling it to the designated (*nazhir*) manager (Article 4 of Islamic Banking Act No. 21 of 2008).

## 2. Agency Theory

The company's goal is to maximize shareholder returns and wealth. This goal is often not accomplished with agency problems. Agency problems arise between the management and the shareholders or between the creditor and the shareholder (Yudiana, 2013). In a large corporation, agency problem is very potential because the proportion of company ownership by managers is relatively small. Sometimes managers prefer to expand the company rather than prosper shareholders. Another conflict is a conflict of interest between shareholders and creditors. The creditor has the right to partly the profits and assets of the company especially in the case of bankruptcy.

## 3. Bank's Bankruptcy

The definition of bankruptcy in Hadad et.al (2003) submitted by the ISDA (International Swaps and Derivatives Association) is the occurrence of one of the following events, i.e. companies issuing debt ceased to operate, the company is not solvent or unable to pay the debts.

There are two kinds of costs that will occur in company's bankruptcy, namely direct cost and indirect cost. Direct cost is a cost occurred when the company pays lawyers, accountants and other professionals in order to restructure its finances which will then be reported to the creditor. While indirect costs are potential losses faced by bankrupt companies; such as loss of customers and suppliers, the loss of new projects because management concentrates on the settlement of financial difficulties in the short term and the loss of corporate value (Hadad et al., 2003).

#### 4. Altman Z-Score Model

Prediction of bankruptcy is needed to minimize the risks that maybe occur in a company. The signs of bankruptcy are better to recognize earlier, because the management can make improvements before it is too late, so, the creditors and shareholders can anticipate the various bad possibilities that will happen.

Bankruptcy predictions have been modeled by many economists, but Altman (1968) was the first to apply Multiple Discriminant Analysis (MDA). Altman method has the formula:

$$Z = 0.012 X_1 + 0.014 X_2 + 0.033 X_3 + 0.006 X_4 + 0.999 X_5$$

Where : Z : *Bankruptcy Index*

$X_1$  : *Working Capital to Total Assets*

$X_2$  : *Retained Earnings to Total Assets*

$X_3$  : *Earning Before Interest and Taxes to Total Assets*

$X_4$  : *Book Value of Equity to Book Value of Total Debt*

$X_5$  : *Sales to Total Asset.s*

As time went by and adjusted to various types of companies, Altman then modified its model to be applicable to all companies, such as manufacturing, non manufacturing and emerging market issuers. In this Z-score modification Altman eliminates variable  $X_5$  (sales to total Assets) because this ratio is very varied in industries with different Assets sizes (Lukviaman and Ramadhani, 2009). The following Z-Score equations are modified Altman et al (1995):

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

Where: Z : *Bankruptcy Index*

$X_1$  : *Working Capital to Total Assets*

$X_2$  : *Retained Earning to Total Assets*

$X_3$  : *Earning Before Interest and Taxes to Total Assets*

$X_4$  : *Book Value of Equity to Book Value of Total Debt.*

Based on research by Kusdiana (2014), the classification of a healthy and bankrupt company based on Z-score model by Altman Modification is:

- a. If the Z value shows below 1.1, this will be categorized as a bankrupt company;

- b. If the Z value is in range  $1,1 < Z < 2.6$  this will be categorized as *grey area* (indefinable whether it is healthy or not).
- c. If the Z value is greater than 2.6 this will be categorized as healthy company.

## 5. Financial Ratio

Financial ratios that can illustrate bankruptcy predictions of a banking or non-manufacturing company according to the prediction model of bankruptcy Altman Z-score are as follows:

### a. *Working Capital to Total Assets*

This ratio shows the company's ability to generate net working capital from its total assets (Endri, 2008). Working capital or working capital according to Yudiana (2013) is a fund that is used to finance the operations of everyday company. Net working capital derived from current assets minus current liabilities (current debt, bank debt, tax debt and customer advances) (Raharjaputra, 2009). While total assets is the amount of current assets and fixed assets owned by the company.

If net working capital is negative, the company will face a problem in covering its short-term liabilities because current assets are not sufficient to cover the liability, so the probability of non-bankruptcy is less. In contrast, companies with net positive working capital rarely face difficulties in paying off their liabilities, resulting in greater bankruptcy probabilities (Endri, 2008).

The effect of WCTA on bankruptcy prediction based on the research results of Nada (2013: 225) states that, Z-Score is low value which one of them is caused by small value of WCTA variable. The value of WCTA which reached minus due to the current liabilities amount is greater than the amount of current assets.

Different results of research are presented by Irfan and Yuniati (2014: 16) which states that the WCTA variable partially significant effect on financial distress on the five telecommunication companies studied. Similarly, the result of Kusdiana (2014: 88) study stated that the average value of WCTA is 0.0685, the positive value generated by X1 indicates that the bank has been able to fulfill its short-term obligations, although the performance of the bank is

still relatively small. The smaller this ratio means that the condition of bank liquidity is getting worse. Generally when the bank is experiencing financial difficulties, working capital will drop faster than total assets and cause this ratio to fall. Both studies are supported by Matturungan et al (2016: 22-23) which states that WCTA variables have a positive and significant influence on the prediction of corporate bankruptcy in Indonesia.

b. *Retained Earning to Total Assets*

This ratio shows the company's ability to generate retained earnings from the total assets of the company (Endri, 2008). Retained Earning or retained earnings is net balance after deducted by tax which by general meeting of shareholders decided not to be distributed but re-entered as working capital for bank operations (Dendawijaya, 2009). While total assets is the amount of current assets and fixed assets owned by the company.

The lower the ratio of RETA, the smaller is also the role of retained earnings to total assets of the company, so the probability of the company experiencing financial distress conditions higher. Meanwhile, if the ratio of RETA is greater then show that retained earnings play a role in forming company fund, so the probability of company experiencing financial distress condition smaller (Irfan and Yuniati, 2014).

According to Endri's research (2008: 44-47), RETA variables have a positive influence on bankruptcy predictions. The study was supported by the results of the Nada (2013: 233) and Kusdiana (2014: 16) research which stated that the RETA variable has a positive influence and is one of the most influential variables on the prediction of corporate bankruptcy.

While the results of different studies shown by Irfan and Yuniati (2014: 16) which states that, the value of RETA probability of  $0.882 > 0.05$ . So it can be concluded that the partial RETA variable has no significant effect on financial distress on the five telecommunications companies. Matturungan et al (2016: 22-23) also stated that the RETA variable has a negative and insignificant influence on the prediction of corporate bankruptcy in Indonesia.



c. *Earning Before Interest and Taxes to Total Assets*

This ratio shows the company's ability to generate profits from the company's assets, before interest and tax payments (Endri, 2008). EBIT is derived from the income difference with the operational and non-operating expenses of an enterprise in each period before being deducted by interest and tax. While total assets is the amount of current assets and fixed assets owned by the company.

The smaller the value of EBITTA ratio reflects that the company's ability to generate earnings before interest and tax from the used assets is getting smaller, so the probability of occurrence of financial distress is higher. Conversely, the greater the value of the EBITTA ratio indicates that the firm optimizes its assets in generating operating profit before interest and tax, so the probability of occurring financial distress is being smaller (Irfan and Yuniati, 2014).

According to Endri's research (2008: 44-47), the EBITTA variable has a positive effect on firm bankrupt prediction supported by Irfan and Yuniati research (2014: 16) stating that EBITTA variable has probability value of  $0.033 < 0.05$ . So it can be concluded that the partial variable EBITTA significant effect on financial distress on the five telecommunications companies. Other studies that support is the result of research Kusdiana (2014: 91) and Matturungan et al (2016: 22-23) stating that EBITTA variable has a positive and significant impact on the prediction of corporate bankruptcy in Indonesia.

While the results of different research conducted by Nada (2013: 230) stating that, EBITTA variable has a negative effect on the prediction bankruptcy Islamic banks but not too significant.

d. *Book Value of Equity to Book Value of Total Debt*

This ratio indicates a company's ability to fulfill the obligations of its own book value of capital. Book value of equity or often called paid-up capital is effectively paid up capital by the owner (Muhammad, 2013). While the book value of total debt or book value of debt obtained by summing current liabilities with long-term liabilities (Endri, 2008).

If the BVE / BVD ratio is negative, this indicates that the smaller the company's ability to meet its short-term and long-term liabilities from equity, so the higher the probability

of financial distress for the company. Whereas, if the BVE / BVD ratio is positive, it states that the company can fulfill its obligation from equity so that the financial distress probability for the company is lower (Irfan and Yuniati, 2014).

According to Endri's research (2008: 44-47) BVEBVTD variable positively affects the prediction of corporate bankruptcy based on z-score function  $Z = 0.717 X_1 + 0.847 X_2 + 3.107 X_3 + 0.420 X_4 + 0.998 X_5$ . This research is supported by research of Tone (2013: 230) which states that BVEBVTD variable have positive effect on bankruptcy prediction of syariah bank but not too significant. Similar results were also presented by Irfan and Yuniati (2014: 16) and Kusdiana (2014: 88) stating that the BVEBVTD variable has no significant effect on the bankruptcy prediction of the bank.

The different results of the four studies above are Matturungan et al (2016: 22-23) which stated that, BVEBVTD variable has a negative and significant influence on prediction of corporate bankruptcy in Indonesia with Z-score model that is  $Z = -0.958 + 1.354 X_1 - 0.118 X_2 + 12.454 X_3 - 0.114 X_4$ .

## RESEARCH METHOD

In this research we use descriptive-quantitative approach. According to Surakhmad (1990: 139-140), descriptive method is used for collecting, composing, analyzing and interpreting data, and comparing equations and differences of certain phenomena then taking comparative study among elements studied. While quantitative research is a quantitative measurement of data objectively and statistically through scientific calculations derived from a sample of people or people who are asked to answer a number of questions about the things surveyed and aims to test the hypothesis (Wijaya, 2013: 6).

The sample of this research is the Islamic Commercial Bank (BUS) in Indonesia that registered in Indonesia Financial Authority (OJK) and has published the minimum financial report from the third quarter of 2014 to the 4th quarter of 2016. Based on these conditions, from 13 BUS registered in OJK and 11 BUS has fulfilled the requirements, namely Bank Rakyat Indonesia Syariah, Bank Negara Indonesia Syariah, Bank Tabungan Pensiunan Negara, Bank Muamalat, BCA Syariah, Maybank Syariah, Bank Mega Syariah, Bank Syariah Mandiri, Bank Jabar Banten Syariah, Bank Bukopin Syariah and Bank Panin Syariah.

Data collection technique used in this research is indirect observation, which is by collecting document of quarterly banking financial report year 2014-2016. The quarterly financial report was chosen because it has the highest accuracy in the prediction bankruptcy of banks in Indonesia than the semester or annual financial statements. This is in line with Hadad's (2004: 2) study which states that, the 3-month or quarterly prediction model is worthy of being used as a model of bankruptcy prediction of commercial banks in Indonesia. At the modeling stage, this model has 94.9% classification accuracy and 82.6% level of validation accuracy.

The type of data used in this study is secondary data. Secondary data is a data obtained from sources that publish and are ready to use and able to provide information in decision making although it can be processed further (Wijaya, 2013: 19). Secondary data obtained through literature study that can be through the articles that either from the journal, books or from the internet associated with this research.

### Variables

The operational definition of the variables used in this study is as follows:

#### a. Independent Variable

- 1) *Working Capital to Total Assets*
- 2) *Retained Earnings to Total Assets*
- 3) *Earning Before Interest and Tax to Total Assets*
- 4) *Book Value of Equity to Book Value of Total Debt*

#### b. Dependent Variable

$$Z = a X_1 + b X_2 + c X_3 + d X_4$$

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

Where:  $Z$  : *Bankruptcy Index*

$X_1$  : *Working Capital to Total Assets*

$X_2$  : *Retained Earning to Total Asset*

$X_3$  : *Earning Before Interest and Taxes to Total Assets*

$X_4$  : *Book Value of Equity to Book Value of Total Debt.*

## Analysis Technique

Analytical techniques used in this study are stationary test, regression test, classical assumption test, Multivariate Discriminant Analysis (MDA) test and factor analysis. Stationary test is used to test time series data and used to detect whether our data contain trend component or not (Ariyoso: 2009). The regression test and MDA is used to test the research hypothesis. Factor analysis is used to clarify the correlation between research variables

## RESULT

### 1. Stationary Test

The result of stationary test for each research variable can be seen in table 3 below:

**Table 3**  
**Result of Stationary Test**

No	Variable	Probability Unit Root Test
1	$X_1$ - WCTA	0.0000
2	$X_2$ - RETA	0.0041
3	$X_3$ - EBITTA (first difference)	0.0000
4	$X_4$ - BVEBVTD	0.0000
5	Y - Bankruptcy Prediction	0.0001

Source: Estimated secondary data, 2017

Based on the table above, it can be seen that the dependent and independent variables in this study meet the provisions of stationary test that has a probability value less than 0.05, except the variable  $X_3$  - EBITTA so that must be differentiated to be stationary.

### 2. Regression test

Regression test results in this case are the equation that has passed the classical assumption test. The newly formed regression is the result of differentiation of all research variables and its regression form as follows:

$$d(\text{Bankruptcy Prediction}) = -0.012949 + 6.495563 d(\text{WCTA}) - 0.085778 d(\text{RETA}) + 2.451448 d(\text{EBITTA1}) + 1.121619 d(\text{BVEBVTD})$$

Explanation:

- Constant value shows -0.012949, it states that if the average independent variables are constant, then the

- average of the bank bankruptcy prediction will decrease by 0.012949 units.
- b. The regression coefficient d (WCTA) of 6.495563 states that every increase of one unit of ratio d (WCTA) will raise the level d (predicted bankruptcy) by 6.495563 units.
  - c. Regression coefficient d (RETA) of -0.085778 states that, every increase of one unit of ratio d (RETA) will decrease the level d (prediction bankruptcy) by 0.085778 units.
  - d. Regression coefficient d (EBITTA1) of 2.451448 states that, every increase of one unit ratio d (EBITTA1) will raise the level d (predicted bankruptcy) by 2.451448 units.
  - e. Regression coefficient d (BVEBVTD) of 1.121634 states that, every increase of one unit of ratio d (BVEBVTD) will raise the level d (predicted bankruptcy) by 1.121619 units.

The regression test above shows an adjusted value of R<sup>2</sup> of 0.998, this means that variant of independent variables can explain the variant of dependent variable equal to 99.8% while the rest is explained by variant of other variables. While the value of significance on the statistical test F of  $0.000 < 0.05$ , which means that the four independent variables synchronously and significantly affect the predicted variable. Meanwhile, for the results of statistical tests t can be seen in table 4 below:

**Table 4**  
**Final Regression Test**

Variable	Coeffi- cient	Std. Error	t-Statistic	Prob.
C	-0.012949	0.010722	-1.207783	0.2310
D(WCTA)	6.495563	0.041805	155.3767	0.0000
D(RETA)	-0.085778	0.663107	-0.129357	0.8974
D(EBITTA1)	2.451448	0.273992	8.947167	0.0000
D(BVEBVTD)	1.121619	0.026749	41.93079	0.0000

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Source: Estimated secondary data, 2017

Based on the table above, it shows that three independent variables namely D(WCTA), D(EBBITA) and D(BVEBVTD) have significant effect on bankruptcy prediction variable since the *prob* values shows below 0.05. While the D(RETa) variable has an insignificant influence on the prediction of bankruptcy.

### 3. Decreminant Analysis

Discriminant analysis has the assumption that the data comes from the normal multivariate distribution and the covariance matrices of both groups are the same. The purposes of discriminant analysis according to Ghozali (2013: 290) are:

- Identify the variables that are able to differentiate between the two groups;
- Use the identified variables to construct equations or functions to compute new variables that can explain the differences between the two groups;
- Use variables that have been identified to develop rules or how to group observations in the future into one of two groups.

The first objection of this analysis is to know which variables are able to differentiate between groups of banks. The results can be seen in the wilks' lamda test in table 5 below:

**Tabel 5**

Tests of Equality of Group Means					
	Wilks' Lambda	F	df1	df2	Sig.
WCTA	.173	254.894	2	107	.000
RETa	.943	3.238	2	107	.043
EBITTA	.951	2.746	2	107	.069
BVEB-VTD	.563	41.564	2	107	.000

Source: Estimated secondary data, 2017

Based on the above test results, from the four independent variables only two significant variables are WCTA and BVEBVTD variables, so only those two variables can be used to form discriminant variables.

The second objection of discriminant analysis is the formation of discriminant functions. The function is based on g-1

(the sum of the dependent variable group is less than one). The equation of discriminant function can be seen in table 6 below:

**Table 6**

**Canonical Discriminant Function**

	Function	
	1	2
WCTA	7.863	-3.290
BVEB-VTD	.857	2.797
(Con-stant)	-2.106	-.071

Unstandardized coefficients

Sumber: Estimated secondary data, 2017

Based on the table above, the discriminant function equation is as follow:

$$Z_1 = - 2.106 + 7.863 \text{ WCTA} + 0.857 \text{ BVEBVTD}$$

$$Z_2 = - 0.071 - 3.290 \text{ WCTA} + 2.797 \text{ BVEBVTD}$$

then:

$$Z_1 = w_1 \text{ WCTA} + w_2 \text{ BVEBVTD}$$

$$Z_2 = w_3 \text{ WCTA} + w_4 \text{ BVEBVTD}$$

Where, w1 is a normalized coefficient of WCTA, so the discrimination function becomes:

$$Z_1 = 0.994 \text{ WCTA} + 0.108 \text{ BVEBVTD}$$

$$Z_2 = 0.762 \text{ WCTA} + 0.647 \text{ BVEBVTD}$$

In order to assess the importance of discriminant variables and the meaning of discriminant, functions have to be assessed by looking at standardized discriminant functions. In this case the guidance is the coefficient value of each discriminant variable. Standardized coefficients are used to assess how important discriminator variables are in shaping discriminant functions. The higher the coefficient value, the more important the variable is. Standardized Test Results can be seen in table 7 below:

**Table 7**  
**Standardized Canonical Discriminant Function Coefficients**

	Function	
	1	2
WCTA	.927	-.388
BVEBVTD	.294	.961

Source: Estimated secondary data, 2017

Based on the table above, it shows that the first function is the magnitude of WCTA coefficient 0.927 and BVEBVTD 0.294 which means that WCTA variable is more important than BVEBVTD variables in forming discriminant function. While in the second function BVEBVTD variable is more important than WCTA variable because the coefficient value is 0.961 which is greater than -0.388.

The third goal of discriminant analysis is to show the real classification of the prediction model of bankruptcy Altman Z-Score, the test results are listed in table 8 below:

**Table 8**  
**Result Altman Z--Score**

Classification Result					
	Bankruptcy Prediction	Predicted Group Membership			Total
		1	2	3	
Original	Count 1	23	2	0	25
	2	0	24	0	24
	3	0	0	61	61
	1	92.0	8.0	.0	100.0
	% 2	.0	100.0	.0	100.0
	3	.0	.0	100.0	100.0

a. 98.2% of original grouped cases correctly classified.

Source: Estimated secondary data, 2017

Based on the table above, the discriminant function is able to classify bankruptcy bank case by 98.2% and predict non-bankruptcy condition (1) by 92% and also predict of gray area (2) and bankrupt prediction (3) exactly by 100%. This illustrates that only 1.8% of the predicted Altman Z-Score bankruptcy model is not appropriate in predicting the bankruptcy of Islamic Banking in Indonesia in the 3rd quarter of 2014 to the 4th quarter of 2016.



#### 4. Factor Analysis

Factor analysis aims to define the structure of a matrix data and analyze the correlation between variables which then determine how far each variable can be explained by each dimension (Ghozali, 2013). Factor analysis requires that the data matrix should be significantly seen from the Bartlett test of sphericity test and above 0.05 in the KMO (Keizer-Meyer-Olkin) test. The result of factor analysis is as follows:

**Table 9**  
Tabel Uji KMO dan Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,704
Bartlett's Test of Sphericity	Approx. Chi-Square	238,461
	Df	10
	Sig.	,000

Source: Estimated secondary data, 2017

Based on the above test results can be seen that the value of KMO greater than 0.5, then factor analysis can proceed. More will be explained in table 10 below:

**Table 10**  
Total variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,660	53,198	53,198	2,660	53,198	53,198
2	1,098	21,959	75,157	1,098	21,959	75,157
3	,719	14,389	89,546			
4	,394	7,880	97,426			
5	,129	2,574	100,000			

Source: Estimated secondary data, 2017

Based on the above test results, from the five variables in the analysis, it turns out there are only 2 computer extraction into 2 factors (based on the value of eigen value > 1). The first factor is able to explain 53.198% variation while the second factor can explain 21,595% variation, so both factors can explain 74.793% variation. This factor analysis is used to reinforce the results of MDA (Multiple Discriminant Analysis) which states that WCTA and

BVEBVTD variables have an important effect on the prediction of bankruptcy of sharia banks, it is shown in the following table:

**Table 11**  
Component Matrix

	Component	
	1	2
WCTA	,885	,333
RETA	,479	-,588
EBITTA	-,382	,737
BVEBVTD	,843	-,013
Zscore	-,890	-,314

Source: Estimated secondary data, 2017

Based on the results of the matrix table above, it is seen that the factor 1 of WCTA and BVEBVTD variables are most influential and has a loading factor value greater than other variables. While on factor 2, RETA and EBITTA variables are influential, but its loading factor value is smaller than WCTA and BVEBVTD variables.

## DISCUSSIONS

### 1) The effect of WCTA on predicted bankruptcy

Based on the regression test, the WCTA variable has a positive and significant effect on bank bankruptcy prediction with coefficient value of 6.495563 and significance 0.0000. So it can be concluded that this study accepts H1 which states that the WCTA variable has a positive and significant impact on bank bankruptcy predictions.

The WCTA has a positive effect on the bank bankruptcy prediction; it means the higher working capital the WCTA ratio will be higher. So that will affect the improvement of business development in this case is the intermediary function of sharia banking. If the intermediation function is running well, then the possibility of banks not going bankrupt is also getting higher.

This result is supported by Irfan and Yuniati (2014: 16) study which states that the WCTA variable is partially significant and has a positive value on financial distress. Other studies supporting the results of this study are Kusdiana (2014) and Matturungan (2016), which state that the WCTA variable

has a positive and significant impact on bankruptcy predictions for both banking industry and non-bank public companies.

## 2) The impact of RETA variable on predicted bankruptcy

Based on regression result, RETA (Retained Earnings to Total Assets) variable has negative and insignificant effect on bank bankruptcy prediction with coefficient value equal to -0.085778 and insignificance of 0.8974. So it can be concluded that this study rejects H2 which states that the RETA variable has a positive and significant impact on bank bankruptcy predictions.

RETA variable negatively affects the bank prediction of bankruptcy; it means the lower the RETA, the higher the possibility of companies not going bankrupt. This negative value indicates the company's inability to generate profits and manage assets. It can also occur because of the ineffectiveness of the applied management. If this is allowed to continue, it can make the company go bankrupt even if it has little debt (Byoun in Matturungan, 2016: 21). In running the company, management aspects are important things that must be made structured, so that its implementation can support the vision and mission of the company and avoid the state of bankruptcy.

The result of this research is supported by Irfan and Yuniati (2014: 16) research which stated that RETA variable has no significant effect to financial distress, and also supported by Matturungan research (2016) which produce negative influence between RETA and bankruptcy prediction of bank.

## 3) The impact of EBITTA variable on predicted bankruptcy

Based on the result of regression result, EBITTA variable has positive and significant effect to bank bankruptcy prediction with coefficient value of 2.451448 and significance 0.0000. So it can be concluded that this study accept H3 which states that EBITTA variable has a positive and significant impact on bank bankruptcy prediction.

That is, the higher the EBITTA ratio the higher the potential for bankruptcy. EBITTA is also called ROA. The greater the ROA of a bank, the greater the level of profit achieved by the bank and the greater the bank's position in terms of asset use (Dendawijaya, 2009: 118). In the ratio of ROA several aspects that play a role are asset, management, earnings and market risk. The return of these assets will increase the working capital

and can affect the soundness of the bank so the possibility for the bankrupt company becomes smaller.

This result is supported by Endri (2008), Irfan and Yuniati (2014), Kusdiana (2014) and Matturungan (2016) studies which stated that EBITTA variables have a significant and positive effect on predicted bankruptcy. Bankruptcy prediction with EBITTA variable can be applied to go public banking industry and Non-bank Company.

#### 4) The impact of BVEBVTD variable on bank's predicted bankruptcy

Based on the regression result, BVEBVTD variable has positive and significant effect to bank bankrupt prediction with coefficient value of 1.121619 and significance 0.0000. So it can be concluded that this study accept H4 which states that the variable BVEBVTD have a positive and significant impact on bank bankruptcy predictions.

That is, the higher the BVEBVTD ratio the higher the bank does not go bankrupt. This happens because the ratio of BVEBVTD affects the level of capital deposited in the bank. The higher paid up capital in banks; it is expected improving the intermediary function and streamline asset turnover. So it will increase the operating profit and cause the bank to stay in a healthy state or bankruptcy will not occur.

However, the BVEBVTD coefficient value is smaller than the two other variables. This happens because the book value of equity or paid-up capital in BUS from quarter I to the next quarter only changes in small amount. Moreover, in annual base, the level of paid-in capital in banks tends to remain unchanged.

The results of this study are supported by Endri (2008) and Tone (2013) research which state that the BVEBVTD variable has a positive but not very significant effect on bankruptcy prediction.

#### 5) The important roles of WCTA, RETA, EBITTA and BVEBVTD on predicting bankruptcy

Based on the regression test results, there are only three variables that have a positive influence on bank bankruptcy predictions. Meanwhile, one variable, RETA has a negative influence on bank bankruptcy prediction. So it can be concluded

that the results of this study rejected H5 which states that the variables WCTA, RETA, EBITTA and BVEBVTD have a positive and simultaneous effect on bank bankruptcy predictions.

While the MDA test results stated that the WCTA and BVEBVTD variables have the highest loading values of the other two variables that are equal to 0.956 and 0.386, so it can be concluded that discriminant score can interpret as a measure of health or prediction of corporate financial bankruptcy. Or in other words, WCTA and BVEBVTD variables have high accuracy to predict bankruptcy of banks.

This research is different from previous research because in previous studies researchers only use one variable whether WCTA or BVEBVTD. There is no research that states that these two variables can form a shared discriminant function. This happens because of differences in research objects and periods of financial statements of the company. In the previous research, researchers mostly conduct their study on manufacturing companies. As for BUS there are only a few researchers such as Tone (2013) and Endri (2008), but the sample used does not include all BUS in Indonesia. So, as far as my knowledge, this study is the brand new research that takes all BUS as object and gives outstanding results.

#### 6) *Altman Z-score* model on predicting bankruptcy

Based on MDA test, the discriminant function is able to classify bankrupt criteria. First the function is able to predict 98,2% for bank not to go bankrupt. Second, the function is able to predict 92% for bank being in grey area. Third, the function is also able to predict 100% in predicting bank's bankruptcy. So it can be concluded that this study accept H6 which states that Altman Z-score method can predict more than 79.4% in bank's bankruptcy prediction.

The Altman Z-Score model is suitable or significant in predicting bankruptcy which means that this prediction already describes the true position of BUS in Indonesia. The results of this study are supported by Salimi (2015) which states that the Altman model has an accuracy of 79.4% in predicting bankruptcy bank. The results of this study are similar to the accuracy performed by Hanson (2003) in salimi (2015) which states that, the Altman model is very good but can not predict 100% in bankruptcy predictions.

## Conclusion and Suggestion

As we have discussed above, this study was conducted based on market share of Islamic banks in which shows only 5% of National Banks in Indonesia. This indicates ineffective Sharia banks performance. Therefore it will lead to the bankruptcy. Assessing bankruptcy required deep assessment of company performance through its financial ratios; there are Working Capital to Total Assets (WCTA), Earnings before Interest and Tax to Total Assets (EBITTA), Retained Earnings to Total Assets (RETA) and Book Value of Equity to Book Value of Total Debt (BVEBVTD). The purpose of this study was intended to explain about influence of those financial ratios on bankruptcy prediction of banks based on Altman Z-Score Model.

The result suggests that WCTA, EBITTA and BVEBVTD variable show positive and significance effect on bankruptcy prediction, while the RETA variable shows negative and insignificance. Based on this study, there are only two variables, WCTA and BVEBVTD, which could precisely predict bankruptcy with 98.2% accuracy.

Based on the results of the factor analysis, it is seen that the factor 1 of WCTA and BVEBVTD variables are most influential and has a loading factor value greater than other variables. While on factor 2, RETA and EBITTA variables are influential, but its loading factor value is smaller than WCTA and BVEBVTD variables.

We recommend in order to make better results, the future researches have to increase the number of variables and conduct research on Islamic Business Unit (UUS) and Islamic Rural Bank (BPRS) and Islamic Financial Services Cooperative (KJKS) since the prediction model of bankruptcy is needed to minimize the failure of corporate management and to improve the effectiveness of the implementation of Good Corporate Governance. On the other hand, this study uses only one model, Altman Z-Score model. It should be coupled with other financial ratios with other bankrupt prediction models such as the Springate model and the Zmijewski model.

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