# Analysis of Bankruptcy Potential in Islamic Commercial Banks Using the Grover G-Score Method for the 2012-2017 Period

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Abstract: High competition among Islamic banks is likely to cause financial difficulties due to the proportion of the number of banks that appear with few existing customers. This research aims to examine about the analysis of bankruptcy potential in Islamic bank. This research uses quantitative approach, calculated by Grover G-Score method and Discriminant analysis technique to find new coefficient. The sampling method is purposive sampling. This research used secondary data from 12 Islamic Banks that has been listed in the Financial Services Authority (OJK) 2012-2017. This study result showed that there are 57 Islamic commercial banks have G-Score value of > 0.01 which is safe and in healthy condition, while there are 3 Islamic banks that fall into the category of bankruptcy because the value obtained is G < -0.02.

## 1 INTRODUCTION

Islamic banks are one of the banks that were not deterred by the monetary crisis in 1998. It was seen that there was a strong financial crisis, which made Islamic banks stronger with the increase of Islamic banks that appeared to serve the public. It can be seen with the passage of time from the monetary crisis in 2005 the number of Islamic banks increased more to 3 units and also 17 Sharia business units. It is proven by the number of Islamic banks that indicates Islamic banks are still able to provide benefits, comfort, security of shareholders, holders of securities, borrowers, and also customers who save on Islamic banks.

The development of Islamic Commercial Banks (BUS) and Sharia Business Units (UUS) can be seen to continue to increase in number, and this shows that currently sharia can be easily reached by the wider community. As can be seen also in the Financial Services Authority (OJK), until December 2016 the offices of Islamic banking that were widespread until December 2016 throughout Indonesia reached 1869 offices with a total of 12 Islamic commercial banks (ojk.go.id)

However, with the number of Islamic banks and Sharia business units, it does not rule out the possibility of future financial problems. Like the 1997-1998 monetary crisis, there was a possibility of financial crises. Financial problems can also occur due to the large number of competitors in the banking sector, both in terms of sharia and conventional. Scramble for customers with many competitors who have superior products each to be able to attract the attention of customers.

There are so many factors that can make a bank go bankrupt, among others, is the existence of profit instability, the number of emergence of new Islamic commercial banks each year makes competition among Islamic banks themselves increasingly stringent. The course of bank activities in the future can be disrupted due to a lack of income from profit. Also, this situation is also influenced by several other factors, namely the existence of the assets of the Islamic commercial banks themselves, which experience fluctuations in each year and also the inability of the Islamic commercial banks to pay the obligations of the Islamic banks themselves. The second global crisis affecting Indonesia, which was the end of 2008, also caused a lot of economic difficulties at the time, but according to the Finance Minister Sri Mulyani the cause of the global crisis in 1997 and 2008 was very different. In 2008 the progress of products with high technology, but keeping hidden goals was the reason for the economic crisis.

The existence of early warning is felt to be able to help Islamic banks in overcoming the crises that will occur. The existence of early warning is

also felt to be able to make a tool to improve the strategy or as a guide for decision making for management in the Islamic bank. This early warning can be calculated by a number of methods. The methods that are widely used in predicting financial losses from a bank are the Altman Z-Score, Grover G-Score and Springate S-Score. With this calculation, the results will be seen to predict bankruptcy that can occur in Islamic banks.

The emergence of this bankruptcy itself can later cause many problems in banking. This problem is not only the banking management, but employees, customers, and investors who are also involved in the problems that will arise. With these methods can help banks in early warning of financial losses to the bank.

## 2  LITERATURE REVIEW

### 2.1  Bankruptcy

Bankruptcy can be interpreted as the impact of a company that is unable to carry out its business properly so that this can happen (Amin dan Zaidi, 2008). This bankruptcy can also be grouped into two groups of parts, proposed by (Martin, 1995: 376), namely:

1. Economic Failure

The company has experienced a situation where the income received at that time cannot meet the expenses of the company that should be paid. It can also be said that companies fail to get optimal profits so that income is reduced and the obligations paid are higher.

2. Financial Failure

This situation occurs because the company has difficulty in obtaining funds for the operations of the company, whether the funds are in cash or additional working capital. This difficulty usually occurs quickly if the company operates in a country where at that time it experienced financial problems, so many investors did not place their assets in companies in the country.

Bankruptcy can also be interpreted as one of the causes where the company fails to realize one of the objectives of the establishment of the company that is to make a profit. This failure in earning profits makes the company later experience financial difficulties. Financial difficulties even though small will also affect the company until it will lead to bankruptcy (Eristy,2015).

Many causes can lead a company to go bankrupt, which often happens because the location of the company is established. Most companies that stand in countries that have a medium or low economy tend to experience bankruptcy crisis. This happened due to the unavailability of a lot of funds to help the operations of a company in the form of investment from outside parties.

Darsono and Ashari (2005: 104) divided the causes of bankruptcy in the company into two main factors, namely internal factors and external factors. Internal factors are sourced from within the company itself, such as company management in carrying out each activity. External factors are factors that come from parties outside the company or also the existence of economic issues that occur at the place where the company is located. There are also external factors that directly relate to companies such as customers, investors, creditors, debtors, company competitors, to local governments and also some that are indirectly related, namely the local and global economic conditions, and the global competition.

### 2.2  Methods of Calculating Bankruptcy Predictions

There are three models for calculating bankruptcy predictions that are often used by many economists, such as:

1. Altman Z-Score Method

As quoted from Rico (2017) which says that this method is the best known model for calculating the predictions of a business entity. The Altman Z-Score method itself has three types of prediction models, the first is the model used to predict public manufacturing companies, the second model is intended to predict private manufacturing companies, and the third model is a model to predict private non-manufacturing companies. The equation that is often used is the Altman Z-Score third model:

$$Z = 6,56X_1 + 3,26X_2 + 6,72X_3 + 1,05X_4$$

Explanation:

Z : Bankruptcy Index

$X_1$ : $\dfrac{\text{Working Capital}}{\text{Total Asset}}$

$X_2$ : $\dfrac{\text{Retained Earning}}{\text{Total Asset}}$

$$X3 \quad \frac{EBIT}{Total\ Asset}$$

$$X4 \quad \frac{Book\ Value}{Book\ Value\ of\ Liabilities}$$

Bankruptcy index classification of the Altman's Z-score third model, namely:

a. Z scores for values < 1,1 means that the company is experiencing financial difficulties and high risk.

b. Z scores for values $1,1 \leq Z \leq 2,6$ then the company cannot be predicted whether it will go bankrupt or not; the company is considered to be in the gray area.

c. Z score for values > 2,6 then the company is in a very healthy state, will not go bankrupt.

2. Grover G-Score Method

This model is an updated model of the previous bankruptcy prediction model, the Altman Z-Score, and is the most recent bankruptcy prediction model. The previous Altman Z-Score method only focused its method to test manufacturing companies that had gone public. This test was carried out with the same sample before with the Altman Z-Score method which is 70 samples of the company, with 35 healthy samples and 35 samples experiencing economic difficulties. This model is also respected to adjust to companies that exist today. Finally, after testing, Grover (2001) produced a method with the equation:

$$G\text{-}Score = 1,650X1 + 3,404X2 - 0,016ROA + 0,057$$

Explanation:

$$X1 \quad \frac{Working\ Capital}{Total\ Asset}$$

$$X2 \quad \frac{EBIT}{Total\ Asset}$$

$$ROA \quad \frac{Net\ Profit}{Total\ Asset}$$

The results of the above calculations later can categorize the company into three health conditions, namely:

a. If the value $G \leq -0,02$ means that the company is experiencing bankruptcy.

b. If the value $G \geq 0,01$ means that the company is not experiencing bankruptcy.

3. Springate S-Score Method

This method also according to Lintang (2017) adapts from the Altman Z-Score method as the basis.

The initial formulation of this method has 19 ratios of computation which finally simplified into 4 ratios and used until now. With these 4 ratios it is felt to be easy to calculate and the results can make it easier to predict companies that are bankrupt or not bankrupt. The model produced by this method is:

$$S\text{-}Score = 1,03X1 + 3,07X2 + 0,66X3 + 0,4X4$$

Explanation:

$$X1 \quad \frac{Working\ Capital}{Total\ Asset}$$

$$X2 \quad \frac{Net\ Profit\ Before\ Tax}{Current\ Liability}$$

$$X3 \quad \frac{EBIT}{Total\ Asset}$$

$$X4 \quad \frac{Sales}{Total\ Asset}$$

According to Springate, companies will be classified as bankrupt if they have a score less than 0.862 (S < 0.862). Conversely, if the S-Score calculation results exceed or equal 0.862 (S 8 0.862), the company is included in the classification of healthy companies financially.

# 3 METHODOLOGY

The approach in this study was carried out with a quantitative approach. According to (Sugiyono, 2011: 14) explains that quantitative research is research used to examine a certain population or sample. The sampling technique is done by calculating according to certain criteria that are in accordance with the research. Quantitative research is used to test the hypotheses in the research conducted. This quantitative research is intended to identify bankruptcy predictions in Islamic banks.

Data collection for this research was carried out through literature study, which then produced secondary data. Secondary data are obtained from other people's research or search through existing documents or data that support research. The data that will be used in this study are the financial statements of the Islamic commercial banks in the form of income statements and also the balance sheet reports issued by the Islamic commercial banks each year and also by the Financial Services Authority (OJK).

The sample uses the purposive sampling method. The number of samples used in this study is 60 research data. The sample criteria that are determined are Islamic commercial banks registered

with the Financial Services Authority (OJK) until the 2017 period and have complete financial statements according to the year that is used as the object of research during 2012-2017.

The data obtained are then analyzed for potential bankruptcy in Islamic banks with the Grover G-Score method.
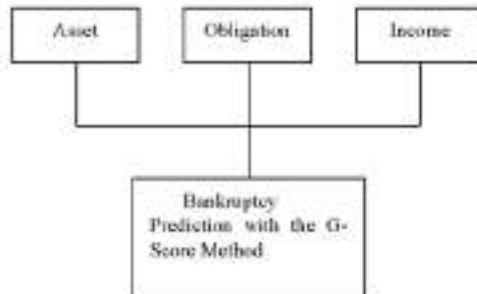


Figure 1. Analysis Model

## 4 RESULT AND DISCUSSION

Below is the calculation result of the equations in the Grover G-Score method:

Table 1. Grover G-Score

| Indicator | G-Score | Classification |
|---|---|---|
| BCA Syariah (BCAS) 2012 | 0.847001223 | HEALTHY |
| BCA Syariah (BCAS) 2013 | 0.830427258 | HEALTHY |
| BCA Syariah (BCAS) 2014 | 0.877079803 | HEALTHY |
| BCA Syariah (BCAS) 2015 | 7.3748 | HEALTHY |
| BCA Syariah (BCAS) 2016 | 8.9268 | HEALTHY |
| BCA Syariah (BCAS) 2017 | 0.047107704 | HEALTHY |
| Mandiri Syariah (BSM) 2012 | 1.376780177 | HEALTHY |
| Mandiri Syariah (BSM)2013 | 1.354124819 | HEALTHY |
| Mandiri Syariah (BSM)2014 | 0.149965328 | HEALTHY |
| Mandiri Syariah (BSM) 2015 | 0.201379247 | HEALTHY |
| Mandiri Syariah (BSM) 2016 | 0.188714903 | HEALTHY |
| Mandiri Syariah (BSM) 2017 | 0.388945192 | HEALTHY |
| Muamalat 2012 | 0.221177149 | HEALTHY |
| Muamalat 2013 | 1.266446835 | HEALTHY |
| Muamalat 2014 | 0.946591501 | HEALTHY |
| Muamalat 2015 | 0.068474658 | HEALTHY |
| Muamalat 2016 | 0.062277272 | HEALTHY |
| Muamalat 2017 | 0.208635118 | HEALTHY |
| BJB Syariah (BJBS) 2012 | 1.425242536 | HEALTHY |
| BJB Syariah (BJBS) 2013 | 1.403726303 | HEALTHY |
| BJB Syariah (BJBS) 2014 | 0.205551454 | HEALTHY |
| BJB Syariah (BJBS) 2015 | 0.295619049 | HEALTHY |
| BJB Syariah (BJBS) 2016 | -0.231990239 | HEALTHY |
| BJB Syariah (BJBS) 2017 | -0.129505267 | HEALTHY |
| Victoria Syariah (BVIS) 2012 | 1.404976153 | HEALTHY |
| Victoria Syariah (BVIS) 2013 | 1.44612031 | HEALTHY |
| Victoria Syariah (BVIS) 2014 | 0.178368607 | HEALTHY |
| Victoria Syariah (BVIS) 2015 | 0.167263357 | HEALTHY |
| Victoria Syariah (BVIS) 2016 | 0.219274703 | HEALTHY |
| Victoria Syariah (BVIS) 2017 | 0.312256343 | HEALTHY |
| Mega Syariah 2012 | 1.321411038 | HEALTHY |
| Mega Syariah 2013 | 1.35975874 | HEALTHY |
| Mega Syariah 2014 | 1.290198815 | HEALTHY |
| Mega Syariah 2015 | 0.217257911 | HEALTHY |
| Mega Syariah 2016 | 0.313471541 | HEALTHY |
| Mega Syariah 2017 | 0.387211834 | HEALTHY |
| Aceh Syariah 2012 | 0.36646312 | HEALTHY |
| Aceh Syariah 2013 | 0.33190104 | HEALTHY |
| Aceh Syariah 2014 | 0.319163936 | HEALTHY |
| Aceh Syariah 2015 | 0.294193936 | HEALTHY |

| | | |
|---|---|---|
| Aceh Syariah 2016 | 0.20952002 | HEALTHY |
| Aceh Syariah 2017 | 0.292700837 | HEALTHY |
| BRI Syariah (BRIS) 2012 | 1.306207278 | HEALTHY |
| BRI Syariah (BRIS) 2013 | 1.299252218 | HEALTHY |
| BRI Syariah (BRIS) 2014 | 0.183170225 | HEALTHY |
| BRI Syariah (BRIS) 2015 | 0.225736845 | HEALTHY |
| BRI Syariah (BRIS) 2016 | 0.13742884 | HEALTHY |
| BRI Syariah (BRIS) 2017 | 0.209449354 | HEALTHY |
| Panin Dubai Syariah (PDSB) 2012 | 1.254277713 | HEALTHY |
| Panin Dubai Syariah (PDSB) 2013 | 1.293121228 | HEALTHY |
| Panin Dubai Syariah (PDSB) 2014 | 0.348028636 | HEALTHY |
| Panin Dubai Syariah (PDSB) 2015 | 0.301077973 | HEALTHY |
| Panin Dubai Syariah (PDSB) 2016 | 0.214962323 | HEALTHY |
| Panin Dubai Syariah (PDSB) 2017 | -0.27689870 | HEALTHY |
| Syariah Bukopin (BSB) 2012 | 1.268606041 | HEALTHY |
| Syariah Bukopin (BSB) 2013 | 1.319643182 | HEALTHY |
| Syariah Bukopin (BSB) 2014 | 1.462792744 | HEALTHY |
| Syariah Bukopin (BSB) 2015 | 0.19005341 | HEALTHY |
| Syariah Bukopin (BSB) 2016 | 0.156486797 | HEALTHY |
| Syariah Bukopin (BSB) 2017 | 0.260424803 | HEALTHY |
| Maybank Syariah 2012 | 1.360227288 | HEALTHY |
| Maybank Syariah 2013 | 1.410144401 | HEALTHY |
| Maybank Syariah 2014 | 0.8726884 | HEALTHY |
| Maybank Syariah 2015 | -0.354249067 | HEALTHY |
| Maybank Syariah 2016 | 0.076590447 | HEALTHY |
| Maybank Syariah 2017 | 0.304531025 | HEALTHY |
| BNI Syariah (BNIS) 2012 | 1.377202365 | HEALTHY |
| BNI Syariah (BNIS) 2013 | 1.25575395 | HEALTHY |
| BNI Syariah (BNIS) 2014 | 1.404113313 | HEALTHY |
| BNI Syariah (BNIS) 2015 | 0.06653162 | HEALTHY |
| BNI Syariah (BNIS) 2016 | 0.066339924 | HEALTHY |
| BNI Syariah (BNIS) 2017 | 0.277499282 | HEALTHY |

Source: Results, 2017 (processed)

Judging from the results listed in the table above, shows that the all Islamic banks have a healthy classification. This classification is based on the classification of the Grover G-Score method which is healthy if G > 0.01 and there is a potential bankruptcy if G < -0.02. This good result indicates that Islamic commercial banks are still able to survive to continue to develop Islamic finance in Indonesia. Although Maybank Syariah 2015 and BJBS 2016 have a non-positive value but are still declared healthy, the health must also be considered because if there is no improvement in the performance of the Islamic commercial bank, the potential for bankruptcy can occur. BCAS 2015 and BCAS 2016 have the highest G-Score results among other Islamic commercial banks, namely 7.3748 and 8.9268.

This can happen to BCAS because when viewed on assets and also profits owned by BCAS always increase every year. This indicates that the Islamic commercial bank can utilize its assets well, so that the profits earned can also increase. It can be said that all Islamic commercial banks in Indonesia in the 2012-2016 period run all of their operational activities by maintaining the mandate given by the company.

However, in Islamic commercial banks that have a value almost included in the research classification of potential bankruptcies that occur, this is due to the fact that Islamic commercial banks were unable to obtain profits or profits which became one of the additional capital for the next time period. The inability of Islamic banks to generate profits can be caused by a decrease in the amount of assets owned and increase in liabilities that must be paid in the current year.

It can also be said that the management of Islamic commercial banks to manage finances so that all operations can run smoothly cannot be carried out properly or the mandate that has been given to the authorities to take care of Islamic commercial banks is not carried out thoroughly.

Therefore, the Grover G-Score method as a way of Islamic commercial banks to see the potential for bankruptcy can be used as an alternative to carry out the mandate so that what is taught in Islam is truly practiced in the Islamic financial system and also the mandate given to Islamic banks run optimally so that things do not happen that can later hamper the development of the Islamic commercial bank itself.

Table 2. Group Statistics

| Value | | N | Mean | Std. Dev | Std. Error Mean |
|---|---|---|---|---|---|
| Value G | 1,00 | 2 | .2931* | .08645 | .06113 |
| | 2,00 | 58 | .9711 | 1,47950 | .19427 |

Source: Results, 2017 (processed)

Table 3. Independent Sample Test

| | | Levene's Test for Equality of variance | | t-test for Equality of Means | | | | | | 95% Confidence Interval of the Difference | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | F | Sig | t | df | Sig (2-tailed) | Mean Difference | Std. Error Difference | | Lower | Upper |
| Val ue G | Equal variances assumed | 0,651 | 0,423 | -1,198 | 58 | .236 | -1,26417 | 1,05487 | | -3,37572 | 8,4738 |
| | Equal variances assumed | | | -6,207 | 44,166 | .000 | -1,26441 | .20366 | | -1,667 | -,85 |

Source: Results, 2017 (processed)

In the table above, sig. (2-tailed) value on Equal variances assumed produces a value of 0.236 which indicates sig. 0.05. This means that the data contained in the results of the Grover G-score method, the data in each bank does not prove a significant difference from one to another. It can also be said that even though there are Islamic commercial banks that have minus results such as Maybank Syariah 2015 and BJBS 2016, they do not have a too large gap that to be said weaker than other data. This difference also means that there are not many differences that occur with Islamic commercial banks that have the largest G-Score value, namely BCAS 2015 and BCAS 2015.

The whole of the results of the potential bankruptcy testing with the Grover G-Score method shows that all Islamic commercial banks for the period 2012-2017, which are the object of research, are said to be healthy or free from the threat of potential bankruptcy. Thus the $H_1$ in this study can be accepted, namely there is no Islamic commercial bank that has the potential threat of bankruptcy using the Grover G-Score method for the 2012-2017 period.

# CONCLUSION

From the analysis above, it can be concluded from this study that the results obtained from testing the potential for bankruptcy with the Grover G-Score method is that all Islamic commercial banks tested in the 2012-2016 period get good results. The classification of results obtained from the 60 data of the existing Islamic commercial banks states that Bank Central Asia Syariah (BCAS), Bank Mandiri Syariah (BSM), Bank Muamalat, Bank Rakyat Indonesia Syariah (BRIS), Bank Negara Indonesia Syariah (BNIS), Maybank Syariah, Bank Panin Dubai Syariah (PDSB), Bank Jabar dan Banten Syariah (BJBS), Bank Victoria Syariah (BVIS), Bank Syariah Bukopin (BSB), Bank Aceh Syariah, and Bank Mega Syariah in the period 2012-2017 are declared healthy or free from the potential for bankruptcy that can occur in the Islamic commercial banks.

The acceptance of $H_1$ in this study is that there is no Islamic commercial bank in Indonesia that has

the potential for bankruptcy which can threaten the welfare of the bank.

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