

Conference Paper

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

Dian Filianti and Dina Fitriisa Septiarini

Department of Islamic Economics, Airlangga University, Airlangga Street No.4, Surabaya, Indonesia

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 $G < -0.02$.

Keywords: Bankruptcy, Islamic Commercial Bank, Grover G-Score

Corresponding Author:

Dian Filianti

dianfilianti@feb.unair.ac.id

Received: 10 February 2019

Accepted: 14 March 2019

Published: 28 March 2019

Publishing services provided by
Knowledge E

© Dian Filianti and Dina Fitriisa

Septiarini. This article is distributed under the terms of the [Creative Commons](#)

[Attribution License](#), which permits unrestricted use and redistribution provided that the original author and source are credited.

Selection and Peer-review under the responsibility of the ICIEBP Conference Committee.

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

 **OPEN ACCESS**

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

$$X1: \frac{\text{Working Capital}}{\text{Total Asset}}$$

$$X2: \frac{\text{Retained Earning}}{\text{Total Asset}}$$

$$X3: \frac{\text{EBIT}}{\text{Total Asset}}$$

$$X4: \frac{\text{Book Value}}{\text{Book Value of Liabilities}}$$

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:

$$G\text{-Score} = 1,650X_1 + 3,404X_2 - 0,016ROA + 0,057$$

Explanation:

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

$$X_2: \frac{\text{EBIT}}{\text{Total Asset}}$$

$$ROA: \frac{\text{Net Profit}}{\text{Total Asset}}$$

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:

$$S\text{-Score} = 1,03X_1 + 3,07X_2 + 0,66X_3 + 0,4X_4$$

Explanation:

$$X1: \frac{\text{Working Capital}}{\text{Total Asset}}$$

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

$$X3: \frac{\text{EBIT}}{\text{Total Asset}}$$

$$X4: \frac{\text{Sales}}{\text{Total Asset}}$$

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 ($S \geq 0.862$), 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.

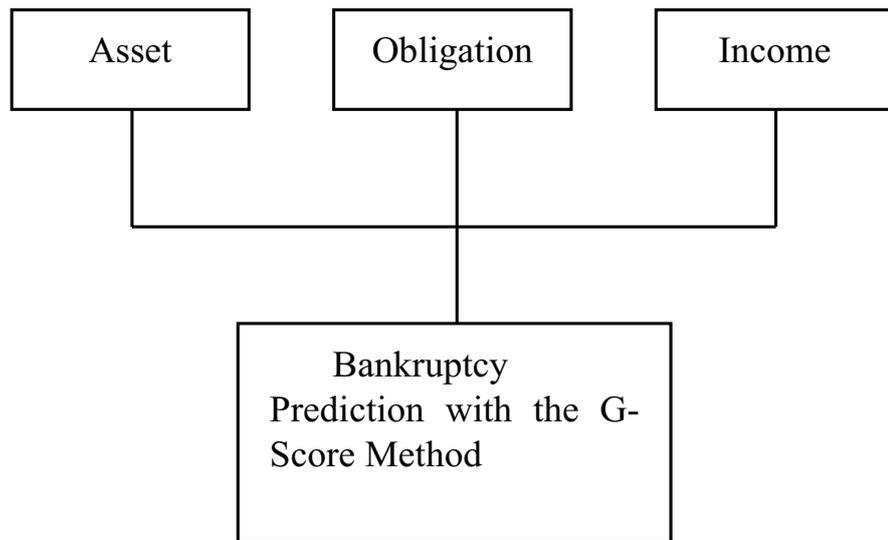


Figure 1: Analysis Model.

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	0.877079303	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

Indicator	G-Score	Classification
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	1.299198815	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

Indicator	G-Score	Classification
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	-,2931	,08645	,06113
	2,00	,9711	1,47950	,19427

Source: Results, 2017 (processed)

TABLE 3: Independent Sample Test.

		Lavene's Test for Equality of variance		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2 tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Value G	Equal variances assumed	0,651	0,423	-1,198	58	,236	-1,26417	1,05487	-3,37572	,84738
	Equal variances not assumed			-6,207	44,166	,000	-1,26417	,20366	-1,67457	-,85377

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.

5. 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.

References

- [1] Anshori, Muslich & Sri Iswati. 2009. Metodologi Penelitian Kuantitatif. Surabaya: Airlangga University Press (AUP).
- [2] Antonio, Muhammad. 2001. Bank Syariah Dari Teori Ke Praktik. Jakarta: Gema Insani Press.
- [3] Baridwan, Zaki. 2004. Intermediate Accounting "Pengantar Akuntansi", Buku 2, Edisi 21, Salemba Empat. Jakarta.
- [4] Darsono & Ashari. 2005. Pedoman Praktis Memahami Laporan Keuangan. Yogyakarta: PT ANDI.
- [5] Harahap, Sofyan Syafri. 2002. Analisa Kritis Atas Laporan Keuangan. Jakarta: PT Raja Grafindo Persada.

- [6] Heri Sudarsono.2008. Bank & Lembaga Keuangan Syariah. Edisi 2.Yogyakarta: Ekonisia.
- [7] Intan Syahni, I Wayan S., ni Nyoman Y. (2016).“Analisis Prediksi Kebangkrutan Dengan Menggunakan Metode g-score, x-score, dan z-score Pada Lembaga Perkreditan Desa di Kecamatan Buleleng Periode 2013-2014”.
- [8] Karim,Adiwarman.2014.Bank Islam Analisis Fiqh Dan Keuangan.Jakarta:PT Raja GrafindoPersada.
- [9] Kasmir. 2008. Analisis Laporan Keuangan. Jakarta: Rajawali Pers.
- [10] Kustanti,Hesti.(2016). Analisis Perbandingan Efisiensi Bank Umum Syariah (BUS) dan Unit Usaha Syariah (UUS) dengan Metode *Stochastic Frontier Analysis* (SFA) Periode 2010-2014.
- [11] Kurniawati dan Nurkholis.(2016).“Analisis Model Prediksi Financial Distress Pada Perusahaan Perbankan di Indonesia”.
- [12] Martin.1995.Kebangkrutan dalam Kuliah Akuntansi: 376
- [13] Martin, A., Gayathri, V., Saranya, G., Gayathri, P., Venkatesan, dan Prasanna. (2011). A Business Intelligence Model to Predict Bankruptcy using Financial Domain Ontology with Association Rule Mining Algorithm. *International Journal on Soft Computing (IJSC)*, Vol.2, No.1, February 2011.
- [14] Moh. Sochih.(2008).Analisis Tingkat Kesehatan Bank Ditinjau Dari CAMEL (Capital,Asset,Manajemen,Earnig,and Liquidity) Untuk Mengukur Keberhasilan Manajemen Pada PT BPRS MARGIRIZKI, Banguntapan, Bantul, Yogyakarta (Studi Kasus Pada PT BPRS MARGIRIZKI Bahagia). *Jurnal Pendidikan Akuntansi Indonesia* Vol. VI No.2 Hal. 82-95.
- [15] Muhammad Syafi'i Antonio.2007.Bank Syariah dari Teori ke Praktik.Edisi 2. Jakarta:Gema Insan Press.
- [16] Munawir. 2010. Analisis Laporan Keuangan. Edisi 4. Yogyakarta: Liberty
- [17] Niken Savitri Primasari.(2017). “Analisis Altman Z-Score, Grover Score, Springate, dan Zmijewski Sebagai Signaling Financial Distress (Studi Empiris Industri Barang-Barang Konsumsi di Indonesia”.
- [18] Nugroho, Rino Adi.(2011).Analisis Perbandingan Efisiensi Bank Umum Syariah (BUS) dan Unit Usaha Syariah (UUS) Dengan Metode *Stochastic Frontier Analysis* (Periode 2005-2009).
- [19] Reksoprayitno. 2004. Sistem Ekonomi dan Demokrasi Ekonomi.Jakarta: Bina Grafika,hlm. 79.
- [20] Rico Chrisnawan dan Dr. Norita.(2017).“ Analisa Prediksi Kebangkrutan Dengan Menggunakan Metode Altman Z-Score, Grover, dan Fulmer Pada Industri Sub

Sektor Perkebunan Yang Terdaftar di Bursa Efek Indonesia (Studi Kasus Perusahaan Perkebunan Kelapa Sawit Periode 2011-2015).”

- [21] Soemitra,Andri. 2009.Bank & Lembaga Keuangan Syariah.Jakarta:Prenadamedia Group.
- [22] Sugiyono.2012.Metode Penelitian Pendidikan. Bandung: Alfabeta.
- [23] _____.2014.Metode Penelitian Kuantitatif Kualitatif dan R&D. Bandung: Alfabeta.
- [24] Sumar'in.2012.Konsep Kelembagaan Bank Syariah. Yogyakarta: Graha Ilmu.
- [25] Supranto. 2004. Statistika Teori dan Aplikasi, Jakarta: Penerbit Erlangga.
- [26] <http://www.ojk.go.id/>
- [27] <http://www.bi.go.id/>