

## Analysis of bankruptcy prediction with Altman Z-Score method in Shariah rural bank in Central Java period 2011-2016

Umi Kholifah, Atieq Amjadallah Alfie, Rosida Dwi Ayuningtyas

Faculty of Economics  
Universitas Wahid Hasyim  
e-mail: atiqalfie@unwahas.ac.id

---

### Abstract

This research describes the implementation of Altman Z-Score to predict sharia rural bank bankruptcy in Central Java since 2011 – 2016. The research background is sharia rural bank competition to achieve public trust, especially small industries as the main funding focus. Qualitative methods is used to this research and analyze annual report of twelve sharia rural bank in Central Java. The annual report were analyzed with Altman Z-Score Modification formula then analyze WCTA, RETA, EBITTA, BVEBVD ratios. Data gained to analyze and scoring sharia rural bank bankruptcy. Based on research analysis shows that Rural Sharia Banking Bankruptcy is raise year by year. In the 2011 to 2016, Rural Sharia Banking in the bankruptcy area are 5, 7, 8, 7, 6, and 9. Although Rural Sharia Banking from 2011 to 2016 which in the grey area are 4, 5, 4, 5, 6, and 3. In the 2011 just 3 Rural Sharia Banking which notice that in the non-bankruptcy level. Based on this research, the manager should to stabilized and to health the bank. It was to banking function runs normally and not going to bankruptcy.

Keywords: Bankruptcy, Sharia Rural Bank, Altman Z-Score

---

### Abstrak

Penelitian ini menggambarkan implementasi Altman Z-Score untuk memprediksi kebangkrutan Bank Pembiayaan Rakyat Syariah (BPRS) di Jawa Tengah tahun 2011 hingga 2016. Latar belakang penelitian ini adalah kompetisi bank syariah untuk mencapai kepercayaan publik, terutama industri kecil sebagai fokus pendanaan utama. Metode kualitatif digunakan untuk penelitian ini dan menganalisis laporan tahunan dua belas bank syariah pedesaan di Jawa Tengah. Laporan tahunan dianalisis dengan rumus Altman Z-Score Modification kemudian menganalisis rasio WCTA, RETA, EBITTA, BVEBVD. Data diperoleh untuk menganalisis dan menilai kebangkrutan bank pedesaan syariah. Berdasarkan analisis penelitian menunjukkan bahwa Kebangkrutan BPRS meningkat dari tahun ke tahun. Pada tahun 2011 hingga 2016, nilai kebangkrutan BPRS berada pada nilai 5, 7, 8, 7, 6, dan 9. Meskipun BPRS dari 2011 hingga 2016 yang di wilayah abu-abu adalah 4, 5, 4, 5, 6, dan 3. Pada tahun 2011 hanya 3 BPRS yang berada pada posisi non bankruptcy. Berdasarkan penelitian ini, manajer harus menstabilkan kondisi keuangan perbankannya, untuk menghindari kebangkrutan.

Kata kunci: Bankruptcy, Sharia Rural Bank, Altman Z-Score

---

## INTRODUCTION

Building Indonesia's economy cannot be separated from the role of several parties, including the Government, institutions in the financial sector and business actors. One business actor who

has a strategic role in developing Indonesia's economy is Micro, Small and Medium Enterprises (Hartono: 2008). Micro, Small and Medium Enterprises (MSMEs) are one component of business actors that have a substantial contribution in creating jobs (Central Statistics Agency: 2010). MSMEs make a very important contribution to the Indonesian economy when a crisis occurs, where MSMEs have the resilience to face the economic crisis that occurs because MSMEs do not have much dependence on external factors such as debt in foreign currencies, and imported raw materials in carrying out operational activities.

MSMEs have an important role to play in the government, so the Pakto 1988 policy was issued which provides fresh air for rural banks to grow and develop in Indonesia, the policy has opened up new opportunities especially in rural areas to obtain business capital. Therefore, the community and micro and small-scale business actors need a financing system that is more supportive of the success of their business, of course, with the sharia system, namely the profit-sharing system. This type of transaction can be carried out by Islamic banking which is an institution with operational principles based on the concept of Islamic sharia, which expects the absence of interest (riba), and applies a profit-sharing system to each transaction (Antonio: 2001).

The occurrence of liquidation in a number of banks has made investors and creditors worried that the company will experience financial difficulties that could lead to bankruptcy. From 2006 to 2016 there were seventy-six rural bank or rural Islamic bank which were liquidated by Bank Indonesia (BI) / Financial Services Authority (OJK) where seventy-three of them were BPRs (96.05%) and only three rural Islamic bank were legalized by the Bank Indonesia (3.95%).

The revocation of the BPRS business license (liquidation) which is currently very worrying about Islamic banking. Sharia banking, including small and safe BPRS issued, is proven to be the same as BPR. For this reason, Prediction Analysis of bankruptcy of the BPRS is needed. The problem of bankruptcy in a company, including for sharia people's finance banks, is an unavoidable risk, but this risk can be minimized or prevented. Altman found a formula to predict the bankruptcy of a company known as the altman z-score model name or analysis of Multiple Discriminant Analysis (MDA).

Ramadhani and Niki Lukviarman (2009) state that the altman z-score model for predicting bankruptcy is of three types, namely the first altman model, the revised altman model, and the modified altman model. This model of the Atlman z-score modification was chosen because Islamic banks are different from the company manu-invoice, so Islamic banks are not suitable using the original altman z- score model or altman z-score revision.

Several previous studies related to the prediction of bankruptcy with the Altman z-score method, the results of the research obtained have differences in the following research gap table

**Table 1.** Summary of Research Gap Previous Research

Research Gap	Result	Author	Method
There are differences in the results of the study on the prediction of bankruptcy with the Altman Z-score method in all commercial banks and Islamic rural bank	Not bankrupt because the average z-score value is 5.29 ( $Z > 2.90$ )	Rohmah (2015) Dwi Nuraini (2015) Sharfina (2015)	Analysis of the Altman Z-Score method
	Bankruptcy because of the z-score below 1.81 ( $Z < 1.23$ )	Endri (2009)	Analysis of the Altman Z-Score method

Source : Endri (2009), Dwi Nuraini (2015), Rohmah (2015), Sharfina (2015)

Based on the description of Table 1, it is interesting to conduct a research on bankruptcy analysis in the Islamic banking sector by using the Altman Z-Score method to find out the development of financial conditions at the Islamic People's Financing Bank in Central Java, whether it is potentially bankrupt.

### **Bankruptcy Prediction**

According to Muhammad Akhyar Adnan and Eha Kurniasih (2000: 137) Bankruptcy can be interpreted as a failure of the company to run the company's operations to generate profits. Bankruptcy as failure is defined in several senses. Weston and Brigham (1993) provide definitions of several terms related to the failure of a business.

1. Economic failure  
This means that the company's income cannot cover the total cost, including the cost of capital.
2. Business failure  
Including companies that in failure have caused losses to their creditors.
3. Technical insolvency (technical insolvency)  
A company is declared technically insolvent if the relevant person cannot fulfill short-term obligations at maturity. Technical insolvency reflects the condition of a lack of liquidity and its nature may only be temporary.
4. Insolvency in bankruptcy  
An insolvent company in bankruptcy if the total liability exceeds the actual value of its assets. This condition is more serious than technical insolvency, often leading to the liquidation of the company.
5. Legal bankruptcy  
Although the term bankruptcy is commonly used for companies that fail, a company has not been bankrupt according to law except (1) fulfills the criteria set by law and (2) declared bankrupt by the court.

Based on the above understanding, it can be concluded that the prediction of bankruptcy means a forecast or forecast where a company cannot repay all its cumulative obligations with existing assets

### **Factors Causing Bankruptcy**

Munawir (2002) explained that in broad outline the causes of bankruptcy were divided into two factors, both of which were specifically related to the company or general in nature.

1. The factors include Internal factors are causes that arise from within the company itself, which includes financial and non-financial causes.
  - a. Because that covers the financial sector, namely:
    - 1) Debt that is too large, creates a heavy fixed burden for the company.
    - 2) "Current Liabilities" are greater than "Current Assets".
    - 3) Number of uncollectible accounts.
    - 4) Errors in the policy of giving dividends.
    - 5) Not enough depreciation funds.
  - b. Because that includes non-financial fields, namely:
    - 1) There was an error with the founders of the company.
    - 2) Poor organizational structure of the company.
    - 3) Errors in choosing a company leader.
    - 4) The existence of "Managerial Incompetency".
2. External Factors are causes that arise or originate from the company and which are outside the power or control of the leader of the company or business entity, and for example:
  - a. There is intense competition.

- b. Reduced demand for products produced.
- c. Falling prices.

## **METHODS**

The population of this study is the Islamic People's Financing Bank (BPRS) in Central Java in the period 2011-2016. The sampling technique with non-probability sampling technique is purposive sampling. Because the selected sample has been selected (fulfilling the criteria) so that it is relevant to the research data. Based on the above criteria, of the 26 at rural Islamic bank (BPRS) in Central Java only 12 banks were included in the criteria, twelve of which were:

1. BPRS Khasanah Ummat Kab. Banyumas
2. BPRS Bumi Artha Sampang Kab. Cilacap
3. BPRS Gunung Slamet Kab. Cilacap
4. BPRS Gala Mitra Abadi Kab. Grobogan
5. BPRS Ikhsanul Amal Kab. Kebumen
6. BPRS As'ad Alif Kab. Kendal
7. BPRS Al-Mabrur Kab. Klaten
8. BPRS Artha Mas Abadi Kab. Pati
9. BPRS Sukowati Kab. Sragen
10. BPRS Mitra Harmoni Kota Semarang
11. BPRS Dana Mulia Kota Surakarta
12. BPRS Dana Amanah Kota Surakarta

The discriminant analysis used in this study is a descriptive analysis of the Z-Score model formulated by Altman, with the following formula:

$$Z = 6.56.X1 + 3.26.X2 + 6.72.X3 + 1.05.X4$$

The approach in this study is a descriptive approach with the measurement results of the Z-score calculation. Data in the form of financial statements originating from the bank's official website are processed manually to obtain values from variables X1, X2, X3, and X4. After obtaining the values of variables X1, X2, X3, and X4, then the variable values are included in the predictive discriminant analysis model of the non-manufacturing company from Altman with the help of Microsoft Excel computer software to obtain the Z-Score value. Then the value of the Z-score is compared to the applicable provisions, namely:

1. If Z is <1.88 then it includes bankrupt / unhealthy companies.
2. If  $1.88 < Z < 2.99$  then includes the gray area (critical condition).
3. If  $Z > 2.99$ , this includes healthy companies.

From the results above, it is known that banks are predicted to experience bankruptcy and that they will not experience bankruptcy. The next step is to calculate the average Z-score of BPRS in Central Java to find out BPRS that have a greater risk of bankruptcy.

## **Results and Discussion**

Based on the results of the analysis of BPRS financial report data in Central Java data obtained by WCTA, RETA, EBITTA, and BVEBVD. Based on the bank's health status data, several analyzes can be produced as follows:

1. In 2011 there were 5 banks that went bankrupt, the five banks were PT. BPRS Mitra Harmoni Kota Semarang, PT. BPRS Amanah Fund, PT. BPRS Dana Mulia, PT. BPRS Khasah Ummat and PT. BPRS Gunung Slamet with the value of Z-score <1.1, which is sequentially valued at - 0.7741, 0.0802, 0.3341, 0.7553 and 1.0836

There are 4 banks that are not bankrupt, here the bank is in a gray state if it does not improve quickly, the bank will be in a bankrupt state but if the bank is able to improve the health of the bank itself then the bank cannot bankrupt. Banks stated in the gray area condition, namely, PT. BPRS Sukowati Sragen, PT. BPRS Al Maburur, PT. BPRS Ikhsanul Amal and PT. BPRS Bumi Artha Sampang with a Z-score of  $1.1 < z < 2.6$  with the order of 1.1229, 1.1572, 1.4608, and 1.5640 and there are 3 banks that are not bankrupt and declared healthy according to the Altman Z method -score because the cut off value of  $z > 2.6$  is PT. BPRS Artha Mas Abadi, PT. BPRS Gala Mitra Abadi, and PT. BPRS Asad Alif.

2. In 2012 there were 7 banks that went bankrupt, the seven banks were PT. BPRS Mitra Harmoni Kota Semarang, PT. BPRS Amanah Fund, PT. BPRS Dana Mulia, PT. BPRS Gala Mitra Abadi, PT. BPRS Khasah Ummat, PT. BPRS Al Maburur and PT. BPRS Gunung Slamet with z score  $< 1.1$ , which is sequentially valued at -0.50099, 0.2263, 0.5520, 0.6002, 0.6223, 0.9051 and 0.9740.

There are 5 banks that are not bankrupt, here the bank is in a gray state if it does not improve quickly, the bank will go bankrupt but if the bank is able to improve the health of the bank itself then the bank can not bankrupt. Banks stated in the gray area condition, namely, PT. BPRS Asad Alif, PT. BPRS Sukowati Sragen, PT. BPRS Ikhsanul Amal PT. BPRS Bumi Artha Sampang and PT. BPRS Artha Mas Abadi with a Zscore value of  $1.1 < z < 2.6$  with the order of 1.1084, 1.1224, 1.2689, 1.3827 and 1.5573. And no bank is not bankrupt and declared healthy according to the Altman Z score because the cut off value is  $z > 2.6$ .

3. In 2013 there were 8 banks that went bankrupt, the eight banks were PT. BPRS Amanah Fund, PT. BPRS Dana Mulia, PT. BPRS Mitra Harmoni Kota Semarang, PT. BPRS Khasah Ummat, PT. BPRS Gunung Slamet, PT. BPRS Ikhsanul Amal, PT. BPRS Al Maburur, and PT. BPRS Sukowati Sragen with a z score of  $< 1.1$ , which is sequentially valued at 0.1828, 0.4046, 0.4926, 0.6593, 0.8089, 0.9714, 1.0333, and 1.0768

There are 4 banks that are not bankrupt, here the bank is in a gray state if it does not improve quickly, the bank will be in a bankrupt state but if the bank is able to improve the health of the bank itself then the bank can not bankrupt. Banks stated in the gray area condition, namely, PT. BPRS Asad Alif, PT. BPRS Bumi Artha Sampang, PT. BPRS Artha Mas Abadi and PT. BPRS Gala Mitra Abadi with a Zscore value of  $1.1 < z < 2.6$  with a sequence of 1.1084, 1.1224, 1.2689, 1.3827 and 1.5573. And no bank is not bankrupt and declared healthy according to the Altman Z score because the cut off value is  $z > 2.6$

4. In 2014 there were 7 banks that went bankrupt, the seven banks were PT. BPRS Dana Mulia, PT. BPRS Khasah Ummat, PT. BPRS Mitra Harmoni Kota Semarang, PT. BPRS Amanah Fund, PT. BPRS Gunung Slamet, PT. BPRS Al Maburur and PT. BPRS Sukowati Sragen with a z score of  $< 1.1$ , which is sequentially valued at -0.2451, 0.0873, 0.2281, 0.3638, 0.7584, 1.0235 and 1.0546. There are 5 banks that are not bankrupt, here the bank is in a gray state if it does not improve quickly, the bank will go bankrupt but if the bank is able to improve

the health of the bank itself then the bank can not bankrupt. Banks stated in the gray area condition, namely, PT. BPRS Artha Mas Abadi, PT. BPRS Bumi Artha Sampang, PT. BPRS Asad Alif, PT. BPRS Ikhsanul Amal, and PT. BPRS Gala Mitra Abadi with Zscore value  $1.1 < z < 2.6$  with the order of 1.4196, 1.5117, 1.5595, 1.8024 and 2.0062. And there are no banks that are not bankrupt and are declared healthy according to the Altman Z score method because the cut off value is  $z > 2.6$

5. In 2015 there were 6 banks that went bankrupt, the six banks were PT. BPRS Dana Mulia, PT. BPRS Khasah Ummat, PT. BPRS Mitra Harmoni Kota Semarang, PT. BPRS Gunung Slamet, PT. BPRS Sukowati Sragen, and PT. Trustee BPRS with z score  $< 1.1$ , which is respectively value of - 0.1432, -0.0822, 0.3283, 1.0090, 1.0497, and 1.0691. There are 6 banks that are not bankrupt, here the bank is in a gray state if it does not improve quickly, the bank will go bankrupt but if the bank is able to improve the health of the bank itself then the bank can not bankrupt. Banks stated in the gray area condition, namely, PT. BPRS Artha Mas Abadi, PT. BPRS Al Maburur, PT. BPRS Asad Alif, PT. BPRS Bumi Artha Sampang, PT. BPRS Gala Mitra Abadi, and PT. BPRS Ikhsanul Amal with Zscore value  $1.1 < z < 2.6$  with the order of 1.1349, 1.2361, 1.2766, 1.4147, 1.6661 and 1.8261. And no bank is not bankrupt and declared healthy according to the Altman Z score because the cut off value is  $z > 2.6$ .
6. In 2016 there were 9 banks that went bankrupt, the nine banks were PT. BPRS Khasah Ummat PT. BPRS Dana Mulia, PT. BPRS Mitra Harmoni Kota Semarang, PT. BPRS Amanah Fund, PT. BPRS Asad Alif, PT. BPRS Gunung Slamet, PT. BPRS Bumi Artha Sampang, PT. BPRS Ikhsanul Amal, and PT. BPRS Gala Mitra Abadi with z score  $< 1,1$  which is respectively value of 0,0388, 0,5207, 0,5313, 0,6784, 0,7619, 0,9753, 1,0469, 1,0559, and 1.0774. There are 3 banks that are not bankrupt, here the bank is in a gray state if it does not improve quickly, the bank will be in a bankrupt state but if the bank is able to improve the health of the bank itself then the bank can not bankrupt. Banks stated in the gray area condition, namely, PT. BPRS Sukowati Sragen, PT. BPRS Artha Mas Abadi, PT. BPRS and Al Maburur, with a Zscore value of  $1.1 < z < 2.6$  with the order of 1.1205, 1.4210, and 1.4499. This year there are no banks that are not bankrupt and declared healthy according to Altman Z-score because the cut off value is  $z > 2.6$ .

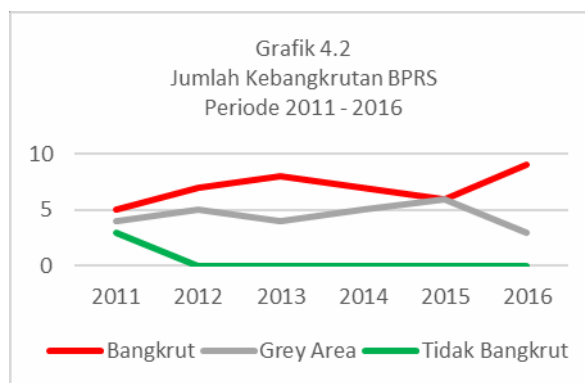
This research proves that the Bank was declared bankrupt if WCTA, RETA, EBITTA and BVEBVD decreased. If the WCTA ratio increases, the bank shows a high level of liquidity so that it is able to pay its short-term liabilities such as the amount of cash adequacy, total loans given to large customers. The smaller the value of variable X1 (working capital to total assets) indicates the existence of a small company liquidity condition.

These conditions illustrate the high level of current debt, swell fixed assets, small credit disbursements, decreasing cash funds available to banks or funds to BI and other banks, high allowance for losses on accounts receivable and others.

If the RETA ratio is stated to increase, it indicates that bank profits increase so that the bank is able to maintain its existence and show overall good management performance from year to year. Whereas EBITTA is expected to increase, the bank will be declared efficient. This is because banks are able to gain more income before taxes and zakat, so that it can be used as a

measure of the bank's operational ability to obtain profits from the use of assets owned.

BVEBVD is the ability of banks to guarantee every debt with their own capital. If the BVE BVD ratio increases or increases, it shows the greater the level of business confidence, especially investors, on the performance of bank management. Funds from these depositors are funds that will be used for Islamic banks for financing and credit distribution. The bankruptcy rate of BPRS in Central Java can be seen in the graph below:



**Figure 1:** The number of Bankruptcy of BPRS

From the table and graph above it can be concluded that the SRB is prone to bankruptcy if it does not immediately nourish itself. Bankruptcy rates are higher than the gray area level and not bankrupt. Sharia banks should continue to control all risks faced in the banking industry.

## Conclusion

This research was conducted to measure the level of risk of bankruptcy of BPRS in Central Java Period 2011-2016 using the Z-score method developed by Edward I. Altman, so some conclusions can be drawn as follows:

- a. The use of WCTA in analyzing the prediction of bankruptcy of BPRS in Central Java can be interpreted with the results of a positive and negative trend because WCTA is a picture of the magnitude of the condition of a company's liquidity compared to its total assets, as well as the position of working capital. The value of the X1 variable (working capital to total assets) indicates that the liquidity condition of the bank is getting better. by multiplying the WCTA ratio with the Z-score coefficient, the most positive trend will be obtained, namely BPRS Gala Mitra Abadi 4,7671. Banks that experience a negative trend are Islamic Rural Banks with a value of 0.0337. So, the higher the value of WCTA, the bank will be in a liquid state and can pay off obligations and make financing according to Islamic principle.
- b. The use of RETA in analyzing bankruptcy prediction of BPRS in Central Java can be interpreted with the results of positive and negative trends because RETA shows overall good management performance from year to year. Normally the longer the company lives, the greater the ratio. This is because the greater retained earnings or the better the company's performance each year due to net income each period increases so that the Retained Earning to Total Assets Ratio is also bigger each year by multiplying the RETA ratio with the z score coefficient, then the average the average

- Retained Earning ratio for the total assets of BPRS is on average negative every year. PT. BPRS Harmoni Kota Semarang has a negative X2 ratio for six years in a row. The small net profit makes the SRB unable to set aside its income to strengthen its liquidity.
- c. The use of EBITTA in analyzing the prediction of bankruptcy of BPRS in Central Java can be interpreted with the results of positive and negative trends because EBITTA measures the bank's operational ability to obtain profits from the use of assets owned. By comparing the EBITTA (X3) ratio with the Z-score coefficient, the results of the positive trend average will be obtained from 2011 - 2016. The highest ratio is shown by PT. BPRS Gala Mitra Abadi in 2014 with a ratio of 0.5257. This shows the efficiency of management in using assets to achieve income before tax and zakat.
  - d. The use of BVEBVD in analyzing the prediction of bankruptcy of BPRS in Central Java can be interpreted with the results of positive and negative trends because BVEBVD can describe how much the company's ability to guarantee its debt with its own capital. By comparing the BVE / BVD ratio with the coefficient of Z-score, the average value of the ratio will be obtained with a value of 0.126 where almost the SRB has a decrease in the X4 ratio. This is due to the growth of liabilities, especially customer deposit funds in the form of wadiah on BPRS which is not matched by the addition of equity owned. For BPRS, total liabilities held are classified as very small because customer funds which are the main components of bank liabilities are also relatively small.

Based on the research results, it states that the majority of BPRS experience bankruptcy. It was marked by the increasing number of BPRS that experienced bankruptcy from year to year. Some SRBs that experience bankruptcy the following year can conduct bank health business so that they enter the Gray Area. In 2011 there were 3 SRBs that did not experience crises (healthy), including PT. BPRS Asad Alif, PT. BPRS Gala Mitra Abadi, and PT. BPRS Artha Mas Abadi. In the following year, this BPRS experienced financial problems that moved to the Gray Area until 2016.

## References

- A, Djazuli, Yadi Januari, 2002, Lembaga-Lembaga Perekonomian Umat (Sebuah Pengenalan), Raja Grafindo Persada, Jakarta.
- Abrori, Hilman, 2015, Analisis Perbandingan Risiko Kebangkrutan pada Bank Syariah Devisa dan Non Devisa dengan Menggunakan Metode Altman Z- Score, UIN Walisongo, Semarang.
- Adnan, H., dan D. Arisudhana, 2012. Analisis Kebangkrutan Model Altman Z-Score dan Springate Pada Perusahaan Industri Property, *skripsi*. Universitas Budi Luhur Jakarta, Jakarta.
- Adnan, Muhammad Akhyar dan Eha Kurniasih, 2000, Analisa Tingkat Kesehatan Perusahaan Untuk Memprediksi Potensi Kebangkrutan Dengan Pendekatan Altman, Jurnal Akuntansi dan Auditing Indonesia, Vol. 4, No. 2.
- Alam, Intan Syahni, et.al., 2016, "Analisis Prediksi Kebangkrutan dengan Menggunakan Metode G-Score, X-Score, dan Z-Score pada Lembaga Perkreditan Desa di Kecamatan Buleleng Periode 2013-2014", Jurnal Manajemen e-Journal Bisma Universitas Pendidikan Ganesha, Vol. 04, No. 2.
- Altman, I Edward, 1968 "Financial Ratios, Discriminant Analysis And The Prediction of Corporate Bankruptcy". *The Journal of Finance*. Vol. 23 No. 4.



- Altman, I Edward, 2000 “*Predicting Financial Distress Of Companies Revisiting The Z-Score and Zeta Models*”, *Journal of Accounting Research*, Empirical Research in Accounting, Vol. 23 No. 24-30.
- Antonio, Muhammad Syafi'i, 2001, *Bank Syaria'h: Dari Teori ke Praktek*, Gema Insani Press, Jakarta.
- Arikunto, Suharsimi, 2010, *Prosedur Penelitian Suatu Pendekatan Praktek*, Rineka Cipta, Jakarta.
- \_\_\_\_\_, 2013, *Prosedur Penelitian Suatu Pendekatan Praktek*, Rineka Cipta, Jakarta.
- Bahri, Saiful dan Widyawati, 2015, “Analisis Prediksi Kebangkrutan pada Perusahaan yang di-Delisting di Bursa Efek Indonesia”, *Jurnal Ilmu dan Riset Manajemen*, Vol. 4 No. 2.
- Damayanti, Maya, 2014, “Prediksi Kebangkrutan Perusahaan Asuransi Syariah berdasarkan Metode Altman Z- Score”, Universitas Islam Negeri Syarif Hidayatullah, Jakarta.
- Departemen Agama RI, 2009, *Al-Aliyy Al quran dan Terjemahnya*, Penerbit Diponegoro, Jakarta.
- Departemen Perbankan Syariah, 2016, *Laporan Perkembangan Perbankan Syariah*, Bank Indonesia, Jakarta.
- Endry, 2009, “Prediksi Kebangkrutan Bank untuk menghadapi dan mengelola Perubahan Lingkungan Bisnis : Analisis Model Altman Z-Score”, *Jurnal Perbanas Quarterly Review*, Vol. 02, No. 01.
- Nuraini, Dwi, 2015. *Potensi Kebangkrutan Pada Sektor Perbankan Syariah untuk Menghadapi Perubahan Lingkungan Bisnis*. *Jurnal Ekonomi*, Vol 14 No.2.
- Hanafi, Mamduh M, dan Abdul Halim, 2007. *Analisis Laporan Keuangan edisi III*, UPP AMP YKPN Yogyakarta.
- Hartono, 2008, “Analisis Efisiensi Bank Pembiayaan Rakyat di wilayah Jabodetabek dengan Pendekatan data *Envelopment Analysis*”, *Jurnal Manajemen dan Agribisnis Institut Pertanian Bogor*, Vol. 05, No. 02 .
- Irfan, Mochamad dan Tri Yuniati, 2014, “Analisis *Financial Distress* dengan Pendekatan Altman Z- Score untuk Memprediksi Kebangkrutan Perusahaan Telekomunikasi”, **Jurnal Ilmu dan Riset Manajemen**, Vol. 3 No. 11.
- Iswadi, Tony, 2017, “Analisa Kinerja Keuangan dan Prediksi Kebangkrutan Bank Pembiayaan Rakyat Syariah” Al Masraf, **Jurnal Lembaga Keuangan dan Perbankan**, Vol. 2 No. 1.
- Kartika, Syarfina Putri, 2015, “Potensi Kebangkrutan pada Sektor Perbankan Syariah untuk Menghadapi Perubahan Lingkungan Bisnis dengan Menggunakan Model Altman Z-Score Modifikasi”, Universitas Islam Negeri Syarif Hidayatullah, Jakarta.
- Moleong, Lexy J., 2007, **Metode Penelitian Kualitatif**, Remaja Rosdakarya, Bandung.
- Martin, John D, et. Al, 1998, **Basic Financial Management, Fifth Edition, Prentice-Hall, Inc, Haris Munandar (Penterjemah). Dasar-dasar Manajemen Keuangan**, Jilid Dua, Edisi Kelima, Raja Grafindo Persada, Jakarta.
- Maryati, 2014 “Peran Bank Pembiayaan Rakyat Syariah dalam Pengembangan UMKM dan Agribisnis Pedesaan di Sumatera Barat” **Journal of Economic and Economic Education (ECONOMICA)**, Vol. 3 No. 2.
- Muhari, S dan Hosen, Muhammad Nadtaruz-zaman, 2014 “Tingkat Efisiensi BPRS di Indonesia : Perbandingan Metode SFA dengan DEA dan hubungannya dengan CAMEL”, **Jurnal Keuangan dan Perbankan**, Vol.18 No. 308.
- Munawir, 2002, **Analisa Laporan Keuangan**, Liberty, Yogyakarta.
- Nugroho, M. Iqbal Dwi, 2012 , **Analisis *Financial Distress* dengan Menggunakan Model Altman Z-Score Modifikasi 1995**, Universitas Diponegoro Semarang, Semarang.
- Oktariana, Eka, 2017, **Analisis Prediksi Kebangkrutan dengan metode Altman Z- Score**

- pada **PT. BRI Syariah**, UIN Raden Fatah, Palembang.
- Rifqi, Muhammad, 2010, **Akuntansi keuangan Syariah**, P3EI Press, Yogyakarta.
- Riska, Natariasari dan Nofiandre, 2013, “Analisis Prediksi Kebangkrutan Menggunakan Model Z- Score Altman pada Perusahaan Perbankan yang terdaftar di Bursa Efek Indonesia Periode 2008-2010”, **Jurnal Sosial Ekonomi Pembangunan** tahun IV No. 10.
- Riyanto, Bambang, 2001, **Dasar-Dasar Pembelanjaan Perusahaan**, BPFE, Yogyakarta.
- Pass, Christopher dan Bryan Lowes, 1998, **Kamus Lengkap Ekonomi**, Erlangga, Jakarta.
- Peraturan Pemerintah (PP) N0. 72 Tahun 1992 Tentang Bank Berdasarkan Prinsip Bagi Hasil. Peraturan Pengganti Undang-Undang (PERPU) Nomor 01 Tahun 1998 tentang Kepailitan.
- Peraturan Perundang-undangan Lembaga Penjamin Simpanan (LPS) Nomor 39 Tahun 2005 tentang Penjaminan Syariah.
- Ramadhani, Ayu Suci dan Niki Lukviarman, 2009, “Perbandingan Analisis Prediksi Kebangkrutan Menggunakan Model Altman Pertama, Altman Revisi Dan Altman Modifikasi Dengan Ukuran Dan Umur Perusahaan Sebagai Variabel Penjelas (Studi Pada Perusahaan Manu-faktur yang Terdaftar Di Bursa Efek Indonesia)”. **Jurnal Siasat Bisnis**. Vol. 13, No. 1.
- Sjahdeni, Sutan Remy, 1999, **Perbankan Islam dan Kedudukannya dalam Tata Hukum Perbankan Indonesia**, Pustaka Utama Grafiti, Jakarta.
- Sudarsono, Heri, 2003, **Bank Dan Lembaga Keuangan Syari’ah; Deskripsi Dan Ilustrasi**, Ekonisia, Yogyakarta.
- Sugiyono, 2008, **Metode Penelitian Kuantitatif Kualitatif dan R&D**, Alfabeta, Bandung.
- \_\_\_\_\_, 2012, **Metode Penelitian Kuantitatif Kualitatif dan R&D**, Alfabeta, Bandung.
- Supardi dan S. Mastuti. 2003. **Validitas Penggunaan Z-Score Altman Untuk Menilai Kebangkrutan Pada Perusahaan Perbankan Go Public di Bursa Efek Jakarta**, Kompak, No. 7.
- Ulfah, Maria, 2017, **Analisis Prediksi Kebangkrutan Berdasarkan Model Altman’s Z-Score pada PT. BPRS Al- Wadi’ah Tasikmalaya**, IAIN Purwokerto, Purwokerto.
- Umar, Husein, 2002, **Research Methods in Finance and Banking**, Gramedia Pustaka Utama, Jakarta.
- Undang-Undang (UU) No. 14 Tahun 1967 tentang Pokok – Pokok Perbankan. Undang-Undang (UU) No. 07 Tahun 1992 Tentang Perbankan.
- Undang-Undang (UU) No. 10 Tahun 1998 tentang perubahan UU No. 7 Tahun 1992 tentang Perbankan.
- Undang-Undang (UU) No. 10 Tahun 1999 tentang Perbankan. Undang-Undang (UU) No. 21 Tahun 2008 tentang Bank Syariah.
- Weston, J. Fred, and Eugene F. Brigham, 1993, *Essential of Managerial, Ninth Edition, The Dryden Press, a Division of Holt, Rinehart and Wiston, Inc.* Alfonso Sirait (penterjemah). **Dasar-dasar Manajemen Keuangan. Jilid Dua**, Edisi Ketujuh, Erlangga, Jakarta.