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Altman model for measuring financial distress: Comparative analysis between sharia and conventional insurance companies

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Abstract

The purpose of this study is to examine the financial ratios that affect the condition of financial distress of an insurance company employing the Altman model and then comparing the financial distress of Islamic and conventional insurance companies. The sample of this study consisted of 36 Islamic insurance companies and 49 conventional, the sample was selected by purposive sampling. The statistical method used to test the research hypothesis is multiple linear regression analysis and sample t-test. The results showed that Retained Earning to Total Asset (RETA), Earning Before Interest and Taxes to Total Asset (EBITTA), Book Value of Equity to Book Value of Total Debt (BVEBVTD) are significant variables to determine the financial company's distress and there are differences between the financial distress of Islamic financial distress insurance and conventional insurance. The results of this study are expected to provide information for internal and external parties about the Altman ratio which is very dominant in predicting financial distress as well as providing information on which insurance company is good for avoiding financial distress. For parties with an interest in the differences between Islamic insurance companies and conventional insurance, the results of this study can be used as material for consideration and evaluation of determining which company to choose.

Introduction

A company was founded to achieve long-term profitability. Furthermore, the company is also aimed to be able to sustain (survive) in business competition, develop (growth), and carry out other social functions in society. Increasingly tight corporate competition in this era of globalization requires companies to try to be stronger in winning the competition. Competition is carried out by various types of companies such as trading companies, manufacturing companies, and service companies. The competition carried out by trading companies is selling goods that are in accordance with the price desired by consumers, competition by manufacturing companies, how goods are made according to consumer desires, and service companies by providing satisfying services to consumers (Manurung, 2010). One of the companies that competed was a service company. One of the companies engaged in services is insurance. An insurance company is a company that is willing and able to bear every risk that will be faced by the insured, both individuals and business entities (Kasmir, 2014b). The word insurance comes from the Dutch word *assurantie* which means to bear something that must happen (Huda & Heykal, 2010). Insurance companies in terms of their management are divided into two, namely conventional managed insurance and insurance managed based on sharia principles (Islamic insurance) (Hidayatulloh, 2014). Conventional insurance can simply be understood as transferring risk from the insured party to the insurer. Meanwhile, Islamic insurance can be understood as a transfer of risk that is managed based

on sharia principles, where one of the principles is to help each other (*tabarru'*) (Hidayatulloh, 2014). The existence of a sharia insurance business in Indonesia cannot be separated from the existence of a conventional insurance business that has existed for a long time. Before the realization of the sharia insurance business, there were various kinds of conventional insurance companies that had long developed. Based on the belief of the world's Muslims and the benefits obtained through the concept of sharia insurance, various insurance companies were born that carry out insurance businesses based on sharia principles. In competition, insurance companies focus more on consumer confidence and provide services according to consumer desires. That way, insurance companies that want to compete must increase customer service and trust. If the insurance company cannot fulfill the consumer's wishes, the insurance company will not run well and cannot achieve the goals set by the company. If the company is not able to improve its performance, it will gradually experience difficulties in maintaining its liquidity, which can result in or financial distress that will eventually result in bankruptcy.

Financial distress is the decline of the financial condition experienced by a company, which occurs before bankruptcy or liquidation. Financial distress can be experienced by all companies. The probability is getting bigger if the economic conditions in the country where the company operates are experiencing an economic crisis. The final distress also can be caused by external and internal factors. External factors such as natural disasters, economic conditions, and certain geographical conditions. Meanwhile, internal factors such as inefficient management, abuse of authority, imbalance in the capital, and fraud can lead to company bankruptcy. The risk of company bankruptcy if it is not quickly detected will be a loss and destruction for the company. Therefore it is necessary to analyze the symptoms of bankruptcy so that the company can anticipate bankruptcy in the future.

The possibility of financial and operating difficulties in insurance companies in the future can be detected early through various analysis models that have been developed by researchers concerning financial distress, one of which is commonly used to predict the potential financial distress of an insurance company, namely Multiple Discriminant Analysis (MDA) model Altman (Z-Score). Altman's research used 66 samples of companies that were divided into two, 33 of which were bankrupt and 33 companies that were not bankrupt. Altman's study was able to obtain a prediction accuracy of 95% for the data one year before bankruptcy. For data two years before bankruptcy 72%. In addition to that, it is also known that companies with very low profitability have the potential to go bankrupt. Until now, Z-score is still widely used by researchers, practitioners, and academics in accounting and others. Altman used his bankruptcy model to become the first Altman (1968), the revised Altman, and the modified (Altman et al., 1998). The development of Altman's model can be seen from the first being used to predict the bankruptcy of a public manufacturing company. Then Altman revised the bankruptcy model into a model that could be used to predict the possibility of bankruptcy models for private and public manufacturing companies. Furthermore, Altman modified his model so that it could be applied in all companies, such as manufacturing, non-manufacturing, and bond issuing companies. Altman et al. (1998) uses four types of financial ratios, namely working capital to total assets, retained earnings to total assets, earnings before interest and taxes to total assets, book value of equity to book value of total debt.

The purpose of this study is to develop an Altman model to predict the financial distress of Islamic and conventional insurance companies in Indonesia, and whether there are differences in financial distress between Islamic and conventional insurance companies. Insurance companies are chosen as the object of research because most insurance companies target the upper class. In addition to that, the upper-class people are also more aware of the importance of insurance than the lower class people. The paradigm of insurance in today's society is synonymous with death, accident, or illness. So that when someone is invited to have insurance they are unable to meet the financial needs of themselves and their families. If such a paradigm is allowed to continue in society, the development of insurance companies will remain slow and tend to experience financial distress.

Literature Review

Analysis of the Altman Z-Score

Model The Z-score analysis model by Altman (1968) is the analytical model that first applied Multiple Discriminant Analysis (MDA). Multiple Discriminant Analysis can be used to differentiate the population groups and as a categorization criterion. The discrimination analysis used by Altman is to identify several kinds of financial ratios, then develop them into a Z-score model to conclude events.

According to Altman (1968) in his book The Journal of finance in 1968 to formulate analysis calculation Zscore Altman model are as follows:

$$Z = 1.2\,X_1 + 1.4\,X_2 + 3.3\,X_3 + 0.6\,X_4 + 1.0\,X_5$$

Description:
Z is Overall Index, X1 is Working Capital to Total Assets, X2 is Retained Earnings to Total Assets, X3 is Earning Before Interest and Taxes to Total Assets, X4 is Market Value of Equity to Book Value of Liabilities, and X5 is Sales to Total Assets.

Analysis Altman Z-Score Model for Islamic and Conventional Insurance

The analysis model in predicting financial distress in insurance companies in this study is the Altman Z-score discriminant model. This model can be calculated using SPSS version 25 to determine the discriminant function to find efficiency for each Altman ratio. In financial terms, these ratios used in the Altman method can be categorized into three major groups, namely: The analysis model in predicting the financial distress of insurance companies in this study is the Altman Z-score discriminant model. This model can be calculated using SPSS version 25 to determine the discriminant function. to find the efficiency for each ratio Altman. In financial management, race This io ratio used in the Altman method can be categorized into three major groups, namely: Liquidity Ratio which consists of X_1. Inability to pay these obligations can lead to potential financial distress. In this study, $X_{1\,is}$ proxied as working capital to total assets (WCTA). The two profitability ratios consisting of X2 and X3. In this study, $X_{2\,is}$ proxied as Retained Earning to Total Asset (RETA) and $X_{3\,is}$ proxied as Earning Before Interest and Tax to Total Asset (EBITTA). The three Solvency Ratios consisting of X4. This ratio measures the extent to which the company's assets are financed by debt (Kasmir, 2014a). If a financing company uses more debt, there is a risk that there will be payment difficulties in the future because the debt is bigger than the assets owned. If this situation cannot be resolved, and the potential for financial distress will be great. In this study, $X_{4\,is}$ proxied as Book value of equity to book value of total debt (BVEBVTB).

Working Capital to Total Assets Impacts Against Financial Distress

Working capital to total assets is a measure of current assets to total capitalization (Lakshan & Wijekoon, 2013). This ratio shows the company's ability to generate networking capital from all its total assets. This working capital is used to finance company operations or to overcome financial difficulties that may occur (Fitriyah & Hariyati, 2013). Large working capital indicates that the company is able to carry out company operations so that it will reduce the occurrence of financial distress.

Another study was conducted by Lakshan and Wijekoon (2013) who examined 70companies respectively distress and non-distress and used logistic regression analysis. The result states that this ratio has the power to predict the financial company's distress. Alifiah, (2014) conducted another study on companies in the trade and service sector in Malaysia. The results show that the working capital ratio has a significant negative effect on the company's financial distress. This means that companies in the service and trade sector in Malaysia with a high ratio of

working capital are less likely to experience financial distress. The same results were obtained by Rahmawati and Hadiprajitno (2015), who examined the analysis of financial ratios against conditions of financial distress in manufacturing companies listed on the Indonesia Stock Exchange in 2008-2013. The results of his research state that the working capital ratio to total assets has a significant negative effect on the company's financial distress. Based on the description above, the first hypothesis can be stated, namely:

H_1: Working Capital to Total Asset (WCTA) negatively affects the financial distress of Islamic insurance companies and conventional insurance companies.

Retained Earnings Impacts to Total Assets Against Financial Distress

This ratio is an indicator showing the efficiency of management to manage the production, sales, administration, and other events (Ray, 2011). The high ratio shows that investment is mostly financed from retained earnings rather than equity and debt from outside (Baimwera & Muriuki, 2014). Companies that have high ratios also show that these companies finance their assets through their profits so they don't use large debt. The higher the resulting ratio means the company has a high profit to finance its assets and pay dividends, thus reducing the possibility of financial distress.

Baimwera and Muriuki (2014) examined the factors that form financial distress corporate using the ratio of liquidity, leverage, profitability, and growth. The result is that the growth ratio has a significant influence in predicting financial distress. Research conducted by Altman in 1968 stated that this ratio has a significant negative effect, which means that the higher this ratio, the lower the possibility of financial distress corporate. Based on the description above, the second hypothesis can be stated, namely:

H_2: Retained Earnings to Total Asset (RETA) has a negative effect on the financial distress of Islamic insurance companies and conventional insurance companies.

Earnings Before Interest and Taxes Impacts to Total Assets Against Financial Distress

Earnings Before Interest and Tax to Total Assets (EBITTA) is a profitability ratio. This analysis is used to measure the company's ability to manage its resources effectively which can be seen from the sales and investment results (Ray, 2011). The EBITTA ratio measures whether the company's assets are used rationally to generate profits from its operating activities (Baimwera & Muriuki, 2014). If the resulting ratio is high, the company's assets have been used rationally so that it can reduce financial distress. On the other hand, a low EBITTA ratio indicates that the possibility of a company experiencing financial distress is getting bigger.

Research by Fitriyah and Hariyati (2013) analyzed the effect of liquidity, profitability, and leverage on the conditions of financial distress property and companies real estate using logit regression. The result states that the profitability ratio represented by EBITTA has a negative and significant effect on the company's financial distress. Baimwera and Muriuki, (2014) also examines the factors forming the financial distress company's using liquidity ratios, leverage, profitability, and growth. The results state that the profitability ratio has a significant influence in predicting financial distress. Rahmawati and Hadiprajitno (2015) examined the analysis of financial ratios against conditions of financial distress in manufacturing companies listed on the Indonesian stock exchange in 2008-2013. The results obtained say that EBITTA has a significant effect on financial distress. Based on the description above, the third hypothesis can be stated, namely:

H_3: Earning Before Interest and Tax to Total Asset (EBITTA) has a negative effect on the financial distress of Islamic insurance companies and conventional insurance companies.

Influence of Equity Book Value to Book Value of Total Debt to Financial Distress

Equity book value to total debt book is used to measure the ability of a company to manage the fund company's overall embedded rotating assets within a certain period (Ramadhan, 2011). This ratio is

obtained from the following equation: This ratio can be used to measure the company's ability to pay all of its obligations, both in the short and long term if the company is liquidated (Baimwera & Muriuki, 2014). The book value of equity is calculated based on the book value of assets, while the book value of debt includes current debt and long-term debt (Damayanti et al., 2017).

Wulandari and Septiarini (2018) analyzes the book value of equity to the book value of total debt on financial distress. The results state that the solvability ratio represented by BVEBVTB has a positive effect on financial distress. Based on the description above, the fourth hypothesis can be stated, namely:

H_4: Book Value of Equity to Book Value of Total Debt (BVEBVTB) has a positive effect on the financial distress of Islamic insurance companies and conventional insurance companies.

The Differences of Financial Distress Condition of Sharia Insurance and Conventional Insurance Companies

Wulandari and Septiarini (2018) conducted a study to determine the differences in the conditions of financial distress of Islamic life insurance companies in Indonesia and Malaysia in the 2013-3105 period with the Altman Z-score model. Using a quantitative approach with the test Mann Whitney. The sampling method used was purposive sampling. This study uses secondary data taken from the official website of each company. The data used are the company's financial statements which include sheet balances and income statements. The results of the Altman Z-score discriminant model were then tested using SPSS version 22. The results of the test Mann-Whitney show that there is a significant difference between the financial difficulties of Islamic life insurance companies in Indonesia and Malaysia.

The results of this study prove that the conditions of Islamic life insurance companies in Indonesia are better than in Malaysia.

H_5: There are differences in conditions of financial distress in Islamic insurance companies with conventional insurance.

Research Method

The population of this study was 179 Sharia and Conventional Insurance Companies registered with the Financial Services Authority (OJK) in 2015-2018. While the sample was obtained by using purposive sampling technique, sampling namely the technique with considerations in accordance with the criteria determined, among other things is that the financial statements have been audited by an independent auditor, have the required data and information in the financial statements, and the license has not been revoked by the OJK during the research period. Based on these criteria, 85 sample companies were obtained.

Variable Definition

The variable in this study is the Modified Altman Z-score model with the following financial ratios:

Working capital to total asset (X1)

Is an indicator to measure the size of current assets when compared to the total assets owned by the company (Wulandari & Septiarini, 2018). This ratio can detect problems in the level of company liquidity which can be seen from negative working capital if it cannot fulfill its current obligations, it is likely to be close to financial distress. Working capital is obtained from current assets and current liabilities.

Retained earning to total asset (X2)

Retained earnings to total assets (retained earnings to total assets) were used to measure the cumulative profitability. This ratio shows the company's ability to generate retained earnings from the company's total assets (Wulandari & Septiarini, 2018). The ratio shows the company's ability to generate retained earnings from the company's total assets. The company's age affects this ratio because the longer the company operates, it allows it to smoothen the accumulation of retained earnings. This can cause companies that are still relatively young to show results with low ratios, but not all companies that have recently been established have low ratios because it is possible for these companies to get very large profits in their early days.

Earning before interest and taxes to total asset (X3)

Income before tax and interest on total assets are used to measure the actual productivity of the company's assets. The ratio measures the company's ability to generate profits from the assets used. This ratio is a reflection of the profitability ratio, which is a ratio that can measure management's ability to generate profits for a certain period. The results will show the company's ability to generate profits from company assets before the payment of interest and taxes (Wulandari & Septiarini, 2018).

Book value of equity to book value of total debt (X4)

The book value of equity to the total book value of debt is used to measure the ability of a company to manage company funds that are embedded in all rotating assets in a certain period. This ratio can be used to measure the company's ability to pay all of its obligations, both in the short and long term if the company is liquidated (Wulandari & Septiarini, 2018). The book value of equity is calculated based on the book value of assets, while the book value of debt includes current debt and long-term debt.

Financial Distress Altman Z-score Model

Financial distress is a condition of a company experiencing financial difficulties. The analysis model in predicting the financial distress of insurance companies in this study is the Altman Z-score discriminant model. This model can be calculated via SPSS version 25 to determine the discriminant function to find the efficiency for each Altman ratio. The Altman discriminant function applied to Islamic and conventional insurance companies in Indonesia according to (Wulandari & Septiarini, 2018) is as follows:

$$\text{Z-Score} = 1.187\ X1 - 0.210\ X2 - 0.283\ X3 + 0.194\ X4$$

Wulandari and Septiarini (2018) made an assessment with the following criteria: A company can be declared healthy or non-distressing if the Z-score value is > -0.1592. Conversely, if the company is declared unhealthy or distressed if the Z-score value is <-0.1592.

Results and Discussion

Multicollinearity Test

The value that is usually used to show multicollinearity is a tolerance value ≥ 0.10 or a VIF value ≤ 10. Table 1 shows that all the independent variable has a tolerance value above 0.1 and a VIF value below 10, so it can be concluded that the regression model in this study does not occur multicollinearity.

Table 1. Multicollinearity Test Results

Hypothesis	Variable	Tolerance	VIF	Explanation
H_1	X_1	0.905	1.105	There is multikolinieritas
H_2	X_2	0.773	1.294	There is multikolinieritas
H_3	X_3	0.736	1.359	There is multikolinieritas
H_4	X4	0.930	1.076	There is multikolinieritas

Source: Secondary data, processed in 2019

Multiple Linear Regression Analysis

Table 2. Results of Multiple Linear Regression Analysis

Variable	Regression coefficient	t	Sig	Result
Constant	0.007			
X1	1.156	24.318	0.000	hypothesis is not supported
X2	-0.248	-2.655	0.008	hypothesis is supported
X3	-0.265	-7.784	0.007	hypothesis is supported
X4	0.193	8.238	0.000	hypothesis is supported

Source: secondary data, processed in 2019

Comparison of Financial Distress Insurance Company

Table 3. Results normality test Shapiro Wilk

Financial Distress	Shapiro-Wilk		
	Df	Sig.	Information on
Sharia Insurance	144	0.163 Normally	Distributed Data
Conventional Insurance	196	0.238	Normally Distributed Data

Source: Secondary data, processed in 2019

Table 3 shows that the two research data are normally distributed with a significance value> 0.05. That way the test of two different sample subjects can be done by using the independent sample T-test.

Independent Sample T-Test

Table 4. Test Independent Sample T-Test

Financial Distress		Conclusion
Sig. (2-Tailed)	0,000	There are differences

Sources: Secondary data, processed in 2019

The results of the independent sample t-test difference show that H_5 supported (see Table 4), which means that there are differences in conditions of financial distress in Islamic insurance companies with conventional insurance.

Discussion

The results of multiple regression tests in Table 2 can be explained as follows. The first hypothesis of this study is not supported data, WCTA has a positive effect on financial distress. The results of this study are inconsistent with the results of research by Alifiah (2014) and Rahmawati and Hadiprajitno (2015) which state that working capital to total assets (WCTA) has a negative effect in predicting financial distress.

The second hypothesis is supported, namely, RETA has a negative impact on financial distress. The results of this study are with contradicts the research results of Almilia and Silvy (2003) which show that the RETA ratio has a significant positive effect on financial distress.

The third hypothesis is supported EBITTA is impacting negatively to the financial distress. The results of this study are consistent with the results of Indriyati (2010) which states that the EBITTA ratio has a negative and significant effect on financial distress; however, the results of this study contradict the results of research by (Kusmaningrum, 2018) which show that the EBITTA ratio does not affect financial distress.

The fourth hypothesis shows that the hypothesis is supported that BVEBVTD affects financial distress. The results of this study are in accordance with the results of Wulandari and Septiarini (2018) which states that the BVEBVTD ratio has a positive and significant effect on financial distress. However, it contradicts the results of research by Indriyati (2010)which shows that the BVEBVTD ratio does not affect financial distress.

The results of testing the Fifth Hypothesis in Table 7 show that there are differences in conditions of financial distress between Islamic insurance companies and conventional insurance in Indonesia. The magnitude of the difference in the mean or mean of the two samples is shown in the mean value of Islamic insurance companies whose value is higher than conventional insurance companies whose values are lower.

The results of this study indicate that the financial conditions of Islamic insurance companies are healthier/safer than conventional insurance companies, although between Islamic insurance companies and conventional insurance companies show the same healthy or safe results.

Conclusion

Based on the results of research and discussion, the following conclusions are obtained: First, the Working Capital to Total Asset (WCTA) has a positive effect on the financial distress of Islamic and conventional insurance companies in Indonesia for the 2015-2018 period. Both Retained Earning to Total Asset (RETA) has a negative effect on the financial distress of Islamic and conventional insurance companies in Indonesia for the 2015-2018 period. The three Earning Before Interest and Taxes to Total Asset (EBITTA) have a negative effect on the financial distress of Islamic and conventional insurance companies in Indonesia for the 2015-2018 period. The four Book Value of Equity to Book Value of Total Debt (BVEBVTD) has a positive effect on the financial distress of Islamic and conventional insurance companies in Indonesia for the 2015-2018 period. Fifth, there are differences in the financial distress of Islamic and conventional insurance companies in Indonesia for the 2015-2018 period. Overall, both of them showed stable and healthy results when viewed from the analysis of the Altman Z-score model, which was categorized as a safe company or not identified as bankrupt. However, Islamic insurance companies show a higher average Z-score when compared to the average Z-score of conventional insurance companies

The results of this study are expected to provide information for internal and external parties about the Altman ratio which is very dominant in predicting financial distress as well as providing information on which insurance company is good for avoiding financial distress. This study has limitations on the number of companies that meet the requirements and only focuses on using the Altman model. For further researchers, it is recommended to enter new variables, such as Total Liabilities to Total Assets, Return on Assets, Net Income to Equity or Return of Equity, and Current Assets to Total Assets or other variables. By adding these new variables, it is hoped that there will be more information on the factors that drive financial distress and the solutions to problems. In addition to that, further researchers can also see shadow accounting in insurance companies

References

Alifiah, M. N. (2014). Prediction of financial distress companies in the trading and services sector in Malaysia using macroeconomic variables. *2nd International Conference on Innovation, Management and Technology Research*, 90–98.

Almilia, L. S., & Silvy, M. (2003). Analisis faktor-faktor yang mempengaruhi status perusahaan pasca IPO dengan analisis multinomial logit. *Jurnal Ekonomi dan Bisnis Indonesia*, *18*(4), 374–390. https://doi.org/10.22146/jieb.6648.

Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *The Journal of Finance*, *23*(4), 589–609. https://doi.org/10.1111/j.1540-6261.1968.tb00843.x

Altman, E. I., Hartzell, J., & Peck, M. (1998). Emerging market corporate bonds — a scoring system. In R. M. Levich (Ed.), *Emerging Market Capital Flows* (pp. 391–400). https://doi.org/10.1007/978-1-4615-6197-2_25.

Baimwera, B., & Muriuki, A. M. (2014). Analysis of corporate financial distress determinants: A survey of non-financial firms listed in the NSE. *International Journal of Current Business and Social Sciences*, *1*(2), 58–80.

Damayanti, L. D., Yuniarta, G. A., & Sinarwati, N. K. (2017). Analisis pengaruh kinerja keuangan, ukuran komite audit dan kepemilikan manajerial terhadap prediksi financial distress (studi pada perusahaan manufaktur yang terdaftar di Bursa Efek Indonesia periode 2011-2015). *Jurnal Ilmiah Mahasiswa Akuntansi Undiksha*, *7*(1), 1–12. http://dx.doi.org/10.23887/jimat.v7i1.9675

Fitriyah, I., & Hariyati. (2013). Pengaruh rasio keuangan terhadap financial distress pada perusahaan properti dan real estate. *Jurnal Ilmu Manajemen*, *1*(3), 760–773.

Hidayatulloh, H. (2014). Asuransi syariah dan gagasan amandemen undang-undang nomor 02 tahun 1992 tentang perasuransian. *Salam; Jurnal Filsafat Dan Budaya Hukum*, *1*(2), 213–226.

Huda, N., & Heykal, M. (2010). *Lembaga Keuangan Islam*. Jakarta: Kencana.

Indriyati, I. T. (2010). Analisis Laporan Keuangan dan Penggunaan Z-Score Altman untuk Memprediksi Tingkat Kebangkrutan Perusahaan Properti yang Terdaftar di Bursa Efek Indonesia Periode 2006-2008. Universitas Sebelas Maret Surakarta.

Kasmir. (2014a). *Analisis Laporan Keuangan*. Depok: Raja Grafindo Persada.

Kasmir. (2014b). *Bank dan Lembaga Keuangan lainnya* (Revisi). Depok: Raja Grafindo Persada.

Kusmaningrum, R. H. (2018). Analisis Pengaruh WCTA, RETA, EBITTA, MVETL, STA Terhadap Prediksi Kondisi Financial Distress Perusahaan (Studi Pada Perusahaan Manufaktur yang Terdaftar di BEI Pada Tahun 2012-2016). Universitas Diponegoro.

Lakshan, A. M. I., & Wijekoon, W. M. H. N. (2013). The use of financial ratios in predicting corporate failure in Sri Lanka. *The GSTF Journal on Business Review*, *2*(4), 37–43.

Manurung, L. (2010). *Strategi dan Inovasi Model Bisnis Meningkatkan Kinerja Usaha : Studi Empiris Industri Penerbangan Indonesia*. Jakarta: Elex Media Komputindo.

Rahmawati, A. I. E., & Hadiprajitno, P. B. (2015). Analisis rasio keuangan terhadap kondisi financial distress pada perusahaan manufaktur yang terdaftar di Bursa Efek Indonesia tahun 2008-2013. *Diponegoro Journal of Accounting*, *4*(2), 737–747.

Ramadhan, S. (2011). Analisis pengaruh struktur kepemilikan, komisaris independen, karakteristik perusahaan dan rasio keuangan terhadap kondisi financial distress pada perusahaan

publik. *Jurnal Akuntansi Bisnis*, *4*(1), 1–33. http://dx.doi.org/10.30813/jab.v4i1.408

Ray, S. (2011). Assessing corporate financial distress in automobile industry of India: An application of Altman's model. *Research Journal of Finance and Accounting*, *2*(3), 155–168.

Wulandari, T. M., & Septiarini, D. F. (2018). Perbandingan proyeksi financial distress pada perusahaan asuransi jiwa syariah di Indonesia dan Malaysia periode 2013-2015 dengan menggunakan model diskriminan Altman Z-Score. *Jurnal Ekonomi Syariah Teori dan Terapan*, *5*(12), 1028–1043.