

Analyzing the impact of Good Corporate Governance and Financial Performance on predicting Financial Distress using the modified Altman Z Score model

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ABSTRACT: *Business and company performance have been affected by the ever-changing economic conditions. If management can't manage the business effectively, financial performance will decline and even financial distress. The researches sought to discover which aspects of managements had the most impact on the financial success of a business. The survey type is used quantitative. The source used secondary data sources. Management ownership, Institutional ownership, and Financial performance are the factors considered in this study. There are 169 manufacturing companies participating and 62 companies fit for purpose. Technical Analysisist this research used the Altman Z-score model and adds some factors to develop financial distress model, Based on the research findings, the factors that have a large impact on the forecast of financial distress are Managerial Ownership, Institutional Ownership, Debt Ratio, Return on Equity (ROE), Retained Earnings to Total Assets (RETA), Earning Before Interest Tax to Total Assets (EBITTA), and Return on Asset (ROA). Thus, it results in the following Z-score equation: $FD = 8.982988 - 0.000632_{KM} + 0.003579_{KI} - 26.32420_{DR} - 6.878581_{ROE} - 13.56442_{RETA} - 151.3487_{EBITTA} + 125.2030_{ROA}$ and ANOVA test has been carried out on the Altman Z-score model and the modified Altman model developed by the researchers to get the mean values of 0.0119756 and 0.058778. The Modified Altman mean value is smaller than the Altman Z-score so that the Modified Altman Model is arguably better than the Altman Z-score model.*

KEYWORDS –*Good Corporate Governance, Financial Performance, Financial Distress, Altman Z-Score, ANOVA*

I. INTRODUCTION

The ever-changing economic environment affects the activities and performance of a company. If management does not run its business properly, it can lead to poor performance and the risk of financial problems.

Financial difficulties have become a popular topic not only in a company's financial position, but also in finance, as one of the powerful indicators for investors to learn more about a company's performance. Many stakeholders and employees are reluctant to engage with financially deprived companies (Kazemian et al., 2017). To determine if a company is financially sound, financial distress predictions can be used in financial planning and corrective actions can be taken to avoid potential bankruptcy. This prediction of financial distress is important to both advocates and stock exchange regulators. Therefore, before being declared bankrupt, there is a need for tools to predict financial distress as a precursor to a company's financial difficulties (Belásetal., 2015).

In addition to the ever-changing economic environment, there are also some other predictors of financial problems, including poor implementation of corporate governance. This affects business performance, worsens the company's financial situation, and ultimately causes the company to suffer financial difficulties (Sengupta & Faccio, 2011). Corporate governance is one of the key elements of business success, including the interaction of different management teams and the relationships with stakeholders. The ownership structure of a company is one of the characteristics that determines the implementation of corporate governance. Understand that the structure of ownership can affect business operations, which can ultimately affect a company's success in achieving its goals. Ownership of management and ownership of organizations covers the ownership of many types of companies (Bertuah, 2015).

Measuring financial ratios, commonly reported in financial statements, are another indicator for predicting financial problems. Financial statements are very helpful in identifying the financial position that arose from a company's business over a particular period of time. To analyze a company's financial statement, you need measurement tools such as financial ratios (Utami & Dewi Kartika, 2019). Financial indicators are a means of assessing a company's performance and financial condition (Kim Soon et al., 2013). In addition to corporate and institutional governance factors, liquidity, profitability, and financial

parameters that measure debt are often key factors in a financial crisis (Bhattacharjee & Han, 2014). Financial difficulties are an interesting topic for many researchers trying to predict the profitability of a business.

There are two reasons to conduct a survey to predict the problems of a company's financial difficulties. The first reason is used to test the relationship between financial aspects and error measurements. The second reason is used to develop models for predicting problems of financial difficulty (Brahmana, 2007). An accurate model for predicting financial distress can have a significant impact on different business stakeholders in the decision-making process and take proactive steps against situations that cause bankruptcy. It can be used as an early warning sign of the financial condition of a distressed company (Xie et al., 2011).

Some previous researchers have measured financial difficulties, but the results obtained have varied, and some previous researchers have: Elloumi & Gueyié, 2001 uses benchmarks, that is, companies with negative EBIT, which puts companies in financial difficulty. Negative EBIT for several years indicates that the company has not grown well. This increases the likelihood that the company will be in financial difficulty.

This study uses the second reason to develop a model that predicts financial distress by incorporating factors that influence the prediction of financial distress. The Z-score model is used by researchers in the development of this model. Due to its limitations, the Z-score analysis first performed by Altman in 1968 is inherent, including this model, as different results may be found using different Z-score study items on financial difficulties. It is considered meaningless than it should be.

II. LITERATURE REVIEW AND HIPOTHESIS

Financial Distress

Financial distress is a condition in which a company faces financial difficulties. Bhattacharjee & Han, 2014. Ahmad et al. , 2014; Rashidah et al. , 2016; Utami&Dewi, 2019. In general, companies experience financial difficulties when the value of an asset is equal to the value of a liability (Ross et al, 2013). Several predictive models of financial distress have been developed, including Beaver (1966), Altman (1968), Springate (1978), Ohlson (1980), and Zmijewski (1984). The Z-Score model is not static, but it evolves with the context of your organization and the context in which your methods are used.

Good Corporate Governance

According to the Indonesian Institute for Corporate Governance (IICG). The presence of GCG is believed to increase the confidence of investors and companies implementing GCG to achieve more efficient operational performance.

The ownership of the management lies with the directors of the company, and the greater the ownership of the management, the more the company coordinates the profits between the principal and the agent so that the management acts on behalf of the shareholders. The responsibility of the management of the company will increase (Kwiatek, 2018). Management ownership benefits the supervisory function, as ownership, which consists of the assets of directors and commissioners, provides an incentive to do the best for the company and maximize the value of the company.

Institutional investors are shares of companies owned by insurance companies, banks, investment trusts and other institutions.

Financial performance

Financial performance is the completion of work performed by the company during a specified time period, as reported in the Annual Financial Report (Munawir, 2010). The variable or metric used as the basis for the assessment is the financial report of the company in question (Sintha, 2018). Below are some metrics used to predict financial distress. The liquidity ratio is the ratio that indicates the company's ability to repay short-term debt, or the ratio that determines the company's ability to raise funds and meet its obligations at the time of billing (Kasmir, 2016). The solvency / leverage ratio is a measure used to measure the extent to which a company's assets or costs are funded by debt or a third party compared to their ability to pay capital and interest and other fixed costs. (Periansya, 2015). This ratio may be used from time to time to compare or contrast a company's financial performance, or to compare with similar companies. Profitability ratio is a measure of a company's ability to generate profits or profits over a period of time. According to J. Fred Weston (Kasmir, 2016), activity ratio is a measure of a company's asset management efficiency. The cash flow ratio reflects the sum of net income and net payments from the operating business. Improved cash flow allows businesses to repay debt, purchase fixed assets, and more.

Relationships between Variables and Hypothesis

Good corporate governance to financial distress

Since the implementation of GCG is an important part of the organization's internal environment, GCG is important to support the creation of a healthy corporate state and good performance. (Kusumayani et al., 2019). There are multiple mechanisms in GCG, but there are two indicator variables that indicate their impact on financial distress.

H1 : Good corporate governance affects financial distress.

Ownership of management over financial distress, shares owned by directors and agents are also called internal ownership. Participation in the company balances the common goals of the company's internal departments and investors. Internal ownership has a significant impact on financial difficulties, and the greater the internal ownership, the less likely it is to have financial difficulties (Manzaneque et al., 2016; Septivani & Agoes, 2014).

H1.1 : Management ownership in the mechanism of corporate governance has a significant impact on financial distress.

Institutional ownership to financial distress, ownership of an institutional investor is a stock owned by a country, legal entity, trust, fund, or foreign entity that can oversee the operation of the company. Institutional ownership does not affect financial difficulties (Manzaneque et al., 2016; Sayari & Mugan, 2017).

H1.2 :Institutional ownership of corporate governance mechanisms does not have a significant impact on financial distress.

Financial performance to financial distress

Companies that successfully overcome financial difficulties are those with good financial performance reflected in financial indicators (Kristanti et al., 2016). The following variables are financial performance indicators that show the impact of financial distress

H2 :Financial performance affects financial distress.

The relationship between WCTA and financial distress, working capital (WCTA) ratio to total assets is the ratio of net working capital. Earlier (Moch et al., 2019; Supriyanto & Darmawan, 2018; Desiyanti et al., 2019; Almansour, 2015) studied that working capital has a positive impact on financial difficulties. There is a positive relationship between working capital and total assets, so the company will not be in financial difficulty. This is because working capital consists of short-term assets and liabilities. If the value of capital is higher than the value of debt, the company is free from financial difficulties. Relationship between current ratio and financial distress.

H2.1 : WCTA has a big impact on financial distress.

Studies (Desiyaanti et al., 2019; Khaliq et al., 2014) show that current wealth ratios have a significant impact on economic distress. The current ratio measures a company's ability to meet short-term debt from current assets. The higher the ratio, the less likely you are to have financial problems.

H2.2 : Current ratio has a great impact on financial distress

Ratio of debt to financial distress according to a study (Islami & Rio, 2019), the debt ratio, or what is commonly known as a liability to total assets, is included in the solvency ratio, which measures the amount of a company's total assets covered by total liabilities. The higher the total debt, the higher the financial ratio, but the smaller the leverage ratio, the lower the company's debt. This also reduces the company's financial risk in repayment of the loan. From a shareholder's perspective, higher ratios result in more interest payments and ultimately less dividend payments. Debt ratios have a significant impact on forecasting financial difficulties.

H2.3 : Debt ratio has a big impact on financial difficulties

Relationship between the market value of stocks and the book value of total liabilities for financial distress this indicator shows whether the company is being utilized. Previously, this ratio had a positive impact on financial distress (Baimwera & Muriuki, 2014), but when this ratio was positive, the company went into financial distress and even went bankrupt. The higher the book value of capital, the more companies use debt as an indicator of their capital and the greater the bankruptcy.

H2.4 : The market value of stocks relative to the book value of total debt has a significant impact on financial distress.

ROE with financial distress, the larger companies, the shorter the payback period of the investment that investors and shareholders will get. Great profits reduce the likelihood that a company will experience financial difficulties / pressures as it will allow the company to have sufficient working capital and fulfill its obligations when the deadline is reached. Therefore, return on equity has a significant impact on economic distress (Desiyaanti et al., 2019).

H2.5 : Return on equity has a major impact on financial distress

Relationship between RETA and financial distress, the ratio of retained earnings (RETA) to total assets represents the company's ability to generate cumulative returns on total assets. A low RETA indicates that the company's assets are counterproductive and can cause financial problems by making it difficult to raise and invest in the company. A study (Almansour, 2015) shows that RETA had a positive impact on the financial crisis.

H2.6 : RETA has a big impact on financial distress

Ratio of EBITA to financial distress, the EBITTA ratio measures whether a company's assets are being used fairly to generate a company's profits (Baimwera & Muriuki, 2014). When the cost is high, the company's assets are used to reduce the occurrence of delicate financial problems. On the other hand, a low EBITTA factor indicates that companies tend to have financial problems.

H2.7 : EBITTA has a big impact on financial distress

ROA to financial distress, in a study (Arshida, 2012), ROA provides insights on how management can effectively use resources to generate revenue. It is calculated by dividing the company's annual earnings by total assets. Earlier literature has shown that return on investment is an important factor in explaining business failure Example, Altman (1968), Altman, Haldeman and Narayanan (1977), Izan (1984), McGurr and DeVaney (1998), Laitinen and Laitinen (2000), Zapranis and Ginoglou (2000), Ginoglou, Agorastos and Hatzigagios (2002) and Beaver, McNichols, and Rhie (2005) found that ROA is an important variable.

H2.8 : Return on assets has a great impact on financial distress

Relationship between SATA and financial emergencies, sales to total asset ratio (SATA) are also known as total asset ratio. This metric measures an administrator's ability to manage assets to increase sales. More sales increase profits and reduce the risk of financial problems. A study (Ray, 2011) shows that total wealth ratios have a negative impact on financial problems.

H2.9 : SATA has a big impact on financial distress

Relationship between CFOTA and financial distress, cash flow from operating activities to total assets reflects the ability of the company to generate cash flows from its assets (Arshida, 2012). In Sri Lanka, a study was conducted to analyze financial parameters and predict business failures. The results showed that this association was clearly negative. Companies with low cash flow cannot use their business to generate cash flow.

H2.10 : Cash flow from operating activities to total assets has a great impact on financial difficulties.

From the explanation of the relationship between variables and hypotheses that have been explained above, the following is the following research framework:

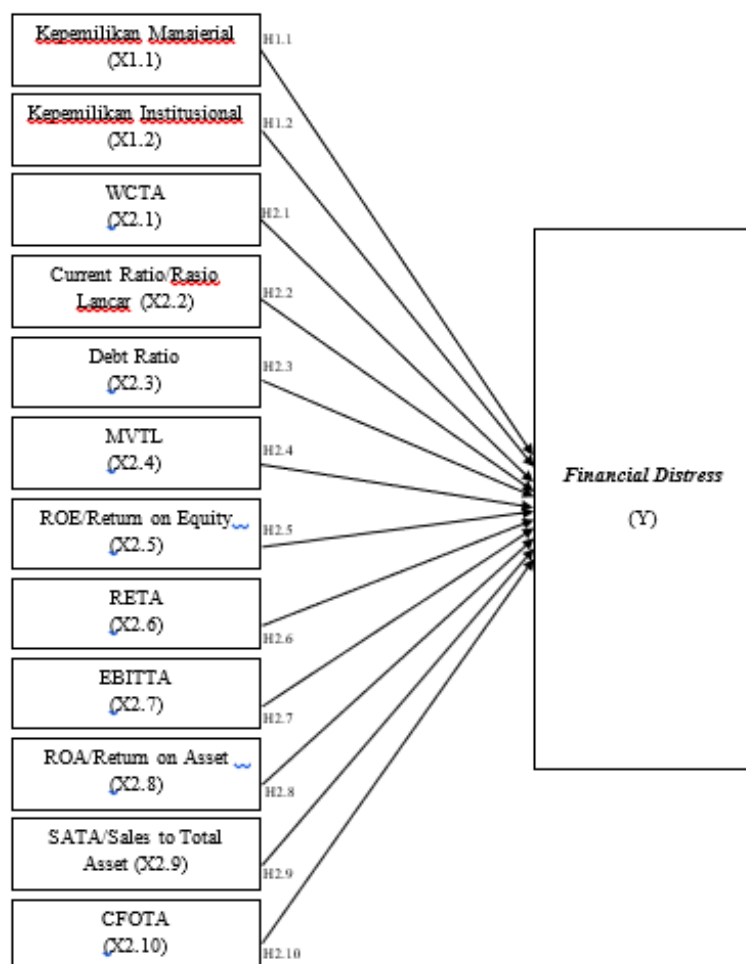


Figure 1 Research Framework

III. RESEARCH METHOD

Measurement

Based on the data obtained, this study will explain the calculation of numerical data in the survey. Relationships between variables are quantitative because they require a structural approach focused on testing

hypotheses using statistical tools. The variables used in this study are financial distress a dependent variable, GCG, and financial performance as independent variables

Population and Samples

The population used in this survey is a manufacturing company listed on the Indonesia Stock Exchange. Sampling in this study used targeted sampling, that is, sampling according to the considerations and criteria established by the researcher. The criteria used in this study are: (1) Manufacturing company listed on the Indonesia Stock Exchange. (2) Manufacturing company submitting complete financial report of for 2 years from 2016 to 2017. (3) Companies with no criteria for variables. (4) Companies that do not report in rupiah.

The following is a tabular list of sample size decisions depending on the sample selection:

Table 1 Population List and Sample

No	Criteria	Total
1	Manufacturing company listed on the Indonesia Stock Exchange	169
2	Manufacturing company submitting complete financial report of for 2 years from 2016 to 2017	(23)
3	Companies with no criteria for variables	(57)
4	Companies that do not report in rupiah	(27)
Total Research Sample		62
Observation Period 2 years = 2 x 62		124

Data Analysis

The data collection method was target sampling using the population used in this study for up to 62 manufacturers (62) that met the survey criteria. The analysis in this study uses the modified Altman Zscoremodel by analyzing the financial statements of the company under review. For data analysis, we used descriptive statistics and logistic regression analysis. The tests in this study were performed using Eviews11 software.

IV. RESULT

The feasibility test of the logistic model used was performed before testing the hypothesis. This study is based on an omnibus test model. If the probability of 2log decreases from block 0 to block 1, you can use regression. The results of the regression model feasibility test are shown in Table 1 below.

Table 2 Results of feasibility test of omnibus regression model Test of model coefficients

-2Log likelihood	Df	Probabilitas
53.07957	12	0,000

Source: *Secondary data processed, 2021*

Table 2 above shows that independent factors can be used to estimate the statistically compelling potential for economic distress at a manufacturer on the Indonesia Stock Exchange. This is done by comparing the first two log probabilities (2LL) (block number = 0) with the last two log probabilities (2LL) (block number = 1). This test is compared and run. The magnitude of the reduction is reported with a 2 log likelihood (2LL) with a significant chi-square value of 0.000 <0> 0.05. Table 2 shows the test results.

Table 3 Hosmer and Lemeshow Test Results

H-L Statistic	1.5394	Prob. Chi-Sq(10)	0.9988
Andrews Statistic	71.5280	Prob. Chi-Sq(12)	0.0000

Source: *Secondary data processed, 2021*

This test shows that the Hosmer-Lemeshow chi-square test has a chi-square test value of 1.5394 and a severity (p) of 0.9988. The model has importance values above 0.05, so observations can be predicted based on these insights. This means that independent factors such as strong corporate governance and financial performance can predict the potential for financial distress.

The classification matrix shows the ability of regression models to predict the risk of financial distress.

Table 4 Matrix Classification

	Estimated Equation			Constant Probability		
	Dep=0	Dep=1	Total	Dep=0	Dep=1	Total
E(# of Dep=0)	111.59	2.41	114.00	104.81	9.19	114.00
E(# of Dep=1)	2.41	7.59	10.00	9.19	0.81	10.00
Total	114.00	10.00	124.00	114.00	10.00	124.00
Correct	111.59	7.59	119.17	104.81	0.81	105.61
% Correct	97.88	75.85	96.11	91.94	8.06	85.17
% Incorrect	2.12	24.15	3.89	8.06	91.94	14.83
Total Gain*	5.95	67.79	10.93			
Percent Gain**	73.73	73.73	73.73			

Source: Secondary data processed, 2021

The prediction of the potential for financial distress in the regression model is 96.11%. This shows that the regression model used can accurately predict 96.11% of financial difficulties. Logistic regression can accurately predict companies that have not experienced the financial difficulties of 97.88% and correctly predicts PR experiencing financial distress with 75.85% or 96.11% overall predictability. The results for the Nagelkerke R Square are shown in the following table.

Table 5 Coefficient of Determination

McFadden R-squared	0.763461
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Source: Secondary data processed, 2021

The coefficient of determination of the logistic regression model is expressed as the squared value of the formula McFadden. According to McFadden R-squared, the variability of dependent variable opportunities for financial difficulties can be explained by the good governance of independent variables and the company's financial performance, which is 76.34%, ignoring the remaining 23%. The following variables make up 66% of the variance. Table 6 shows the complete set of logistic regression estimation results. This is:

Table 6 Estimation Regression Logistic Covariance coefficient calculated using the Huber White method

Variable	Coefficient	Std. Error	z-Statistic	Prob.
KI	-0.000632	0.000211	-2.997853*	0.0027
KM	0.003579	0.001465	2.443543*	0.0145
WCTA	1.629485	4.121217	0.395389	0.6926
CR	-2.512699	2.680082	-0.937546	0.3485
DR	-26.32420	9.164869	-2.872294*	0.0041
MVTL	0.001499	0.003694	0.405676	0.6850
ROE	-6.878581	2.198521	-3.128731*	0.0018
RETA	-13.56442	6.664590	-2.035296*	0.0418
EBITTA	-151.3487	65.54891	-2.308943*	0.0209
ROA	125.2030	44.22526	2.831029*	0.0046
SATA	3.962387	2.626669	1.508522	0.1314
CFTA	-1.361751	2.135715	-0.637609	0.5237
C	8.982988	4.238395	2.119432	0.0341

Source: Secondary data processed, 2021

Note: *significant at the 5% level

Based on table 6, the Logistic Regression equation can be written:

$$FD = \ln\left(\frac{Pi}{1-Pi}\right) = 8.982988 - 0.000632KI + 0.003579KM + 1.629485WCTA - 2.512699CR - 26.3242DR + 0.001499MVTL - 6.878581ROE - 13.56442RETA - 151.3487EBITTA + 125.203ROA + 3.962387SATA - 1.361751CFTA$$

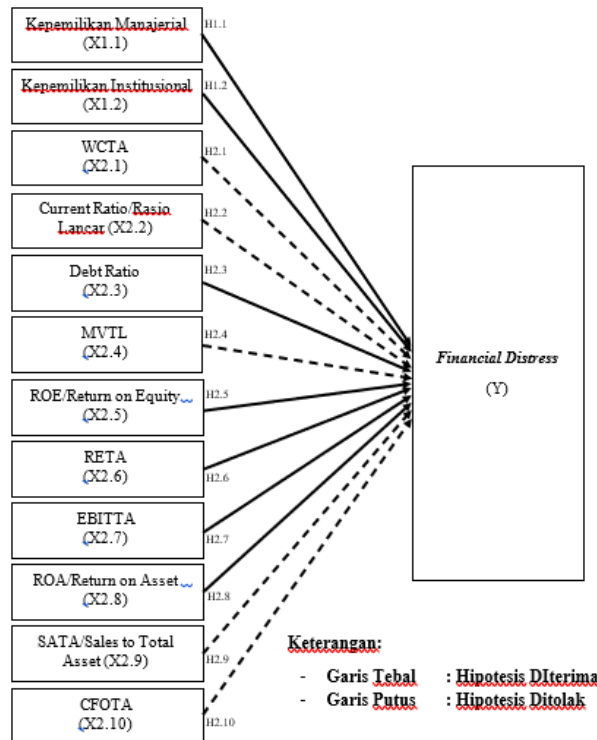


Figure 2 framework of hypothesis testing results

ANOVA test comparison of modified Altman model prediction and Altman Zscoremodel

Table 7 Test Equality of Means Between Series

Method	df	Value	Probability
t-test	246	-2.022171	0.0442
Satterthwaite-Welch t-test	195.1879	-2.022171	0.0445
Anova F-test	(1,246)	4.089174	0.0442
Welch F-test*	(1,195.188)	4.089174	0.045

Source: Secondary data processed, 2021

The ANOVA test for comparison of prediction errors measured by MSE, or mean squared error, has a probability of $0.0442 < 0.05$ and shows an F statistic of 4.089174. Means that there is a difference in predictive power between the two models of financial distress.

Table 8 Test Equality of Means

Variable	Count	Mean	Std. Dev.	Std. Err. Of Mean
MSE1	124	0.019756	0.106336	0.009549
MSE_ALTMAN	124	0.058778	0.186724	0.016768
All	248	0.039267	0.152890	0.009709

Source: Secondary data processed, 2021

The results of the Equality of Means Test get the mean MSE1 or Modified Altman model of 0.0119756, while the mean MSE ALTMAN value of 0.058778. To see a better predictive model, it can be seen from the smallest mean value. So it can be concluded that if viewed from the mean value, the Modified Altman prediction model is better for predicting financial difficulties. The Modified Altman model adds another variable outside of financial ratios, namely GCG with Managerial Ownership and Institutional Ownership indicators using 2 year data sampling.

V. DISCUSSION AND CONCLUSION

Based on these results, we can conclude that strong corporate governance, as measured by institutional ownership and management accountability, has a statistically significant impact on financial distress. It has also been shown that debt ratios, return on equity, retained earnings on total assets, pre-interest income on total assets, and return on total assets have a significant impact on financial difficulties. However, working capital to total assets, current ratio, sales to total assets, MVTL, and cash flows from operating activities to total assets are variables that do not significantly affect a company's financial position. Therefore, the researcher obtained the Altman model development using the equation $FD = 8.982988 - 0.000632KM + 0.003579KI - 26.32420DR$

6.878581ROE 13.56442RETA 151.3487EBITTA + 125.2030ROA, and in another model test using Anova, the development model It shows that the error value is small. Better than the previous Altman model.

Limitation

This research has the following restrictions on researchers: B. Because we are using manufacturing samples, the company samples used in this study are limited and should be generalized to other industries such as services, financial institutions, real estate, and other industries. You can not. The samples taken in this study consisted of two consecutive years. Also, the determination of whether the company is in need is measured in this study for the second consecutive year from EBIT, and the Altman predictive model used in this study uses a modified 1968 ALTMAN model that is not controlled by other measurements. To do. Given that the company under investigation still exists on the Indonesia Stock Exchange, the premise of a company's bankruptcy may be suspected.

Suggestions for further research

Due to the limitations of this research, further researchers add years of observation, increased the number of research samples of companies that went bankrupt under the law, and developed models based on the latest development models. We propose to expand the research by doing so. Company data and predictive models will be more accurate. However, it is necessary to pay attention to the differences in the nature of each company type. In addition, it takes into account external factors from the macrosector such as inflation, exchange rates and interest rates, so it is more commonly known which factors affect a company's financial distress. And more researchers will be able to improve their predictive models of financial distress and expect more perfect models and conclusions.

Impact on management

The administrative implications of this study can be used as information for the decision-making of corporate stakeholders sampled in this study. This includes the impact of good corporate governance and some financial indicators that have a significant impact on a company's financial position. GCG influences policy makers to pay attention to good corporate governance when conducting business activities to avoid financial difficulties. The practical implications of the results of this study are that the size of the shareholding can affect the potential for financial distress, so manufacturers need to be aware of the level of institutional and management ownership of the company. It means that there is. In addition, he oversees corporate governance to ensure that shareholders are properly supervising. Managers also need to pay attention to financial indicators such as the leverage ratio, so manufacturers should be careful to increase the value of the leverage ratio to reduce the company's financial distress. Maximizing debt when borrowing also contributes to this, allowing companies to maximize their profits from debt. In relation to returns on assets and returns on stocks. The practical implications of this finding are that manufacturers pay attention to raising the levels of ROE, RETA, and EBITTA as the magnitude of the ratio value can affect the potential for financial distress. It means that you need to. Manufacturers must consider the pursuit of high profitability.

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