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The Effect of Debt to Asset Ratio, Return On Assets and Total Assets Turn Over on Financial Distress (Empire Study on Chemical Sub-Industry Companies Listed on the Indonesia Stock Exchange in 2018–2020)

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Abstract

This study aims to find out, test & analyze the effect of Debt to Asset Ratio, Return on Asset Ratio, & Total Asset Turnover on Financial Distress empirical study on chemical sub-sector industrial companies listed on the Indonesia Stock Exchange in 2018-2020 either partially or simultaneously. This research is a causative quantitative study. In connection with the problems and objectives of this study, namely, to determine the effect of Debt To Asset Ratio, Return On Assets & Total Asset Turnover on Financial Distress derived from the financial position statements in the company's financial statements. The Least Square Panel data analysis method with Eviews software was used in this observation. In this observation the value of $T_{hitung} < T_{tabel}$ (1.978) a number which means that the free variable in this observation model partially has no effect on the bound variable. Whereas simultaneously there is a probability value of $0.0000 < 0.05$, which means that independent variables in this observation model simultaneously affect the dependent variable. The F value of this observation ($24.8421 > F_{tabel}$ (2.6754) is a number that means that the free variables in this observation model simultaneously affect the bound variables. The debt-to-asset ratio doesn't affect financial difficulties because assets derived from company debt do not result in the company's financial difficulties but are influenced by other factors such as equity derived from debt or purchases from debt if sales decrease, they cannot pay purchases and debt will increase burdening the company which will result in financial difficulties. The Return on assets ratio doesn't affect financial difficulties because the ratio of returning company assets is good when the company's assets can make a profit so that it doesn't result in financial difficulties, but other factors that can affect financial difficulties such as high purchase rates and low sales growth result in company losses that will cause financial difficulties. The asset turnover ratio doesn't affect financial difficulties because a good asset turnover ratio is able to generate sales of its total assets so as not to cause the company financial difficulties. Debt to asset ratio, return on assets, Asset turnover ratio simultaneously affect financial difficulties because assets derived from company debt are low, low returns on company assets or even company assets have losses, asset turnover to generate sales of its total assets is unstable and many other supporting factors.

Keywords: Debt To Asset Ratio, Chemical Industry, Financial Difficulties, Return On Assets, Total Assets Turn Over

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Introduction

Surya Esa's investment was not in vain. In the first year of his business, the ammonia business quickly became a sales support. Ammonia sales were \$40.39 million, making it 54.19% of total sales. Surya Esa targets ammonia production to exceed 700,000 tons of plant capacity in 2019. This means that the target has more than doubled compared to last year's production realization of around 300,000 mt. Meanwhile, this year's liquefied petroleum gas (LPG) production target is broadly in line with last year's production performance of 76,384 tons. The production target also exceeds the lpg plant capacity of 66,000 tons. (Dian, 2019)

PT Aneka Gas Industri Tbk (AGII), as a gas operator in the industrial sector, reported declining financial performance for the period January to September 2020. AGII recorded a net turnover of Rs 1.57 trillion in the third quarter of 2020, according to the Indonesia Stock Exchange (IDX) financial report. Year-to-date net profit attributable to the owners of AGII's parent company then fell 59.81% (year-on-year). Meanwhile, AGII's net profit reached Rp73.46 billion at the end of Q3 2019. AGII's total assets reached IDR 7.11 trillion in the third quarter of 2020, an increase of 1.28% compared to the company's total assets of IDR 7.02 trillion at the end of the year 2019. The value of AGII's debt also increased by 1.88% from INR 3.72 trillion at the end of 2019 to INR 3.79 trillion at the end of Q3 2020. At the end of the third quarter of 2020, it increased by 0.91% compared to the company's debt value. shares of Rs 3.29 trillion at the end of 2019(Anna, 2020)

Rachmat Harsono, President Director of Aneka Gas Industry, said that AGII observed several changes in business trends in the first semester of 2020, which encouraged AGII to continue to strive to maintain the resilience of the industrial gas sector. Said it happened. AGII is involved in several government projects, including the Covid-19 Emergency Hospital at Wisma Atlet DKI Jakarta & the Galang Island Emergency Hospital in Batam, Riau Islands. AGII also determines the right strategy to maintain performance while providing the best service to our customers. In addition, in anticipation of a possible decline in sales, we will endeavor to control sales, general and administrative expenses. Part of AGII's job is to implement customer retention and business development programs in high-growth areas such as installation services and medical equipment. (Noverius, 2020)

The Corona virus outbreak has not prevented PT Aneka Gas Industri Tbk (AGII) from continuing to do business. The company is also trying to maximize gas sales in the medical sector which has the potential to increase during the pandemic. President Director of AGII Rachmat Harsono said, currently AGII is the leader of the medical gas market in Indonesia because it serves around 80%-85% of the gas needs. As of the third quarter of 2019, the medical gas business segment contributed 23% of AGII's total revenue overall. At that time, revenue from the medical gas segment was recorded at Rp 374 billion while AGII's total revenue reached Rp 1.61 trillion. AGII has always targeted revenue growth of 1.5 times to 2 times above the national economic growth. However, because Indonesia was hit by the Corona virus, the economic growth projections changed. (Handoyo, 2020)

The issuer of the natural gas refining and processing industry, PT Surya Esa Perkasa Tbk (ESSA) has prepared several strategies to survive in the midst of the corona pandemic. Because the Covid-19 pandemic can have an impact on the selling price of commodities and the demand for their products. The company's current strategy is to focus production at the maximum level while controlling costs on all fronts and maintaining efficiency in all operations, In addition, the AGMS also approved the use of net profit for the 2019 financial year of US\$ 2.63 million for several purposes. Despite having prepared a number of moves to deal with the effects of corona, Lufy said, ESSA has not been able to provide performance projections so far this year. (Khomarul, 2020)

The information that motivates researchers to make these observations includes:

- a. The transaction value reached Rp. 101 billion, with ESSA shares rising 13%.

- b. Aneka Gas Industri (AGII) has full control over the Gassamator.
- c. Surya Esa Perkasa (ESSA) adds a new plant Anomia.
- d. Aneka Gas Industri (AGII) for dividend of Rp. 9.97 million
- e. When the Corona outbreak hit, Aneka Gas Industri (AGII) maximized its medical gas business.
- f. Aneka Gas Industri (AGII) net profit fell due to the pandemic,
- g. Surya Esa Perkasa (ESSA) Strategy to survive in Corona Pandemic
- h. Aneka Gas Industri (AGII) Strategy to Face Declining Sales in 2020

The formulation of the problem in this study is an empirical study on industrial companies in the chemical subsector listed on the Indonesia Stock Exchange in 2018-2020: the ratio of liabilities to assets, the rate of return to the ratio of total assets, and how is the impact of total asset turnover on the financial crisis indicated? at the same time. The purpose of this study is to identify, test & analyze the effect of empirical studies on the ratio of debt to assets, asset profitability, and total asset turnover to financial difficulties partially & simultaneously

Kajian Literatur

Signal Theory

(Brigham, 2009) Signal theory is the theory that investor's view dividend changes as signals of management's expected earnings

Debt-To-Asset Ratio

According to (Kasmir, 2017) the Debt To Asset Ratio is as follows: "Debt To Asset Ratio is a ratio used to view or compare the debt that a company has with the assets owned by the company, or in other words, to see how much the company's assets are financed by debt". The Debt To Asset Ratio formula according to Cashmere (Cashmere, 2017) is as follows:

$$\text{Debt to Asset Ratio} = \frac{\text{Total Debt}}{\text{Total Assets}} \times 100\%$$

Return On Assets

(Mangsa Simatupang, 2015), in (LL Susanto Wibowo, 2021) The Return On Assets (ROA) ratio describes the company's ability to generate profit from the company's total assets. It is a comparison between retained earnings after interest and taxes with the company's total assets as a whole. (Munawir, 2010) applying in everyday life, & making accounting a habit in managing personal finances. According to (Sudana, 2011) return on assets (ROA) is very important for management, because it is to evaluate the effectiveness & efficiency of the company's management in managing all its assets.

Total Asset Turnover Rasio

According to (Sofyan Syafri, 2009) The greater the Total Asset Turn Over ratio, the better because the company is considered effective in managing its assets. according to (Syamsudin, 2014) The amount of TATO value will indicate assets that rotate faster in generating sales to make a profit.

According to (Kasmir, 2017) states the definition of Total Assets Turnover (TATO) is an asset management ratio that measures the turnover of all company assets, & is calculated by dividing sales by total assets and measuring how much total sales are obtained from each rupiah from assets. Here is the formula for calculating Total Asset Turnover, namely:

$$\text{Total Asset Turnover} = \frac{\text{Sales}}{\text{Total Assets}} \times 100\%$$

Financial Difficulties

The definition of financial difficulties according to (Hery, 2016) is as follows: "Financial distress is a condition in which a company has difficulty in fulfilling its obligations, a condition where the company's income cannot cover total costs & suffers losses. Financial difficulties affect the risk of financial performance. whether financial performance reflects the performance of a certain period can reduce financial distress (Asyikin, Jumirin., Grahita Chandrarin., 2018). According to (Gujarati, 2007) factors causing financial distress from within

Companies are more micro. The factors from within the company are Cash flow difficulties, The amount of debt, Losses in the company's operational activity for several years. In this study, financial difficulties using Z-Score

Frame of Mind

Within this framework of thinking is the ratio of debt to assets, the return on assets, & the turnover of total assets to financial difficulties.

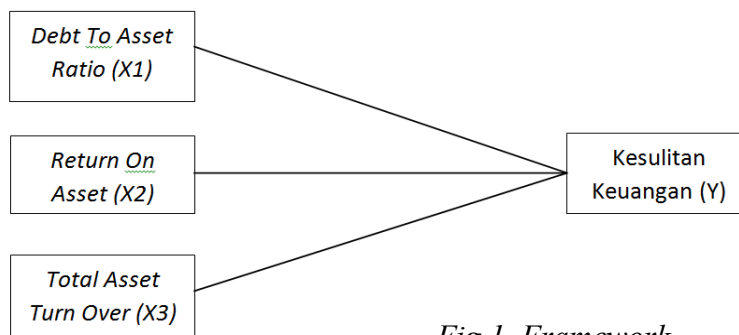


Fig 1. Framework

Based on signal theory (Signaling Theory), the theory according to experts & the framework that has been described earlier, the researcher formulates this observational hypothesis which is explained as follows:

H1 : Financial Distress is influenced by Debt To Asset Ratio

Ha1 : Debt To Asset Ratio has no effect on Financial Distress

H2 : Return on Assets affects Financial Difficulties

Ha2 : Financial Distress is not affected by Return On Asset

H3 : Total Asset Turn Over affects Financial Difficulties

Ha3 : Total Asset Turn Over has no effect on Financial Distress

H4 : Financial Difficulties Affected by Debt To Asset Ratio, Return On Assets & Total Asset Turn over

Ha4 : Financial Distress has no effect oleh Debt To Asset Ratio, Return On Asset & Total Asset Turn Over

Metode

(Sugiyono, 2017) Population is a generalized area consisting of objects or subjects that have certain qualities & characteristics that are inaugurated by researchers to be study & after that in the end. The population in this study is manufacturing companies in the chemical industry subsector listed on the Indonesia Stock Exchange in 2018 & remained listed until 2020 as many as 12 companies

Sample

Samples are part of the number & characteristics possessed by the population (Sugiyono, 2017). Here is a table of the sample selection process described in this observation based on the

criteria previously described, namely:

Table 1. Sample Selection Process

No	Criteria	Data
1	Manufacturing companies in the chemical industry subsector that were listed on the Indonesia Stock Exchange in 2018 & remained listed until 2020.	12
2	Companies that are not listed or delisted on the IDX during the study period.	0
3	Companies that use dollar currency in their financial statements.	0
4	Companies that present incomplete reports related to research variables.	1
Total Samples/Year		44
Total Observation Data During The Study Period (3 Years)		132
Source: (IDX, 2022) , Processed Data		

The data used is in the form of numbers. In this observation, researchers used quantitative data in the form of numerical financial statements contained in the annual report to calculate the debt to asset ratio, return asset ratio, total asset turnover ratio, & financial distress. The data is downloaded from its web address on the IDX. And continued with the company's sample selection procedure in determining the survey sample, this observation resulted in a survey sample of 132 samples, a total of 11 companies, during the three-year data collection period. This study used the least squares panel data analysis method using EViews software. To test in part as well as in whole.

Analysis Models

This research uses the Panel Least Square data analysis method using EViews software. Research using EViews test equipment has met the requirements of panel data processing both partially and simultaneously. Furthermore, a test of classical assumptions is carried out. The following are the results of testing classical assumptions using the Fixed Effects Model against the Common Effects Model with Chow Test, to ensure further model selection, the Hausman Test is used followed by multicollinearity test, autocollation test, heteroskedasticity test, normality test, model feasibility test (R²), to partial test (t).

Results

There were 12 manufacturing companies in the chemical industry subsector listed on the Indonesia Stock Exchange in 2018 – 2020. The sample selection process is carried out according to the criteria. Companies that present incomplete reports related to research variables are 1 company. Produced a sample of 11 companies. The total annual sample data is 44 samples, and the total sample data for 3 years is 132 samples, the sample is carried out structural model estimation then the sample performs classical assumption testing using the Fixed Effects Model against the Common Effects Model with Chow Test, to ensure further model selection, then the Test is used Hausman continued with multicollinearity test, autocollation test, heteroskedasticity test, normality test, model feasibility test (R²), to partial test (t).

Below are the test results for this observational model, based on initial Eviews data processing using test feeds to test the Fixed Effects Model & Common Effects Model model:

Table 2. *Chow Test*

Redundant Fixed Effects Tests
Equation: FEM
Test cross-section fixed effects

Effects Test	Statistic	D.F.	Prob.
Cross-section F	1.410997	(10,19)	0.2485
Cross-section Chi-square	18.328051	10	0.0497

Source: Eviews processed results

Based on the EViews test, it can be explained that the Probability result for the Chi-square Cross-section is 0.0497, which means that the Fixed Effects Model is better than the Common Effects Model. To ensure further model selection, the Hausman test was used for testing the Fixed Effects Model against the Random Effects Model to find out a better model to use in the study. Here are the Hausman test results for EViews:

Table 3. *Hausman Test*

Correlated Random Effects - Hausman Test
Equation: REM
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	11.283618	3	0.0103

Source: Eviews processed results

From his EViews test data in the Hausman test table, we can explain that the cross section probability score is 0.0103. This means that the Fixed Effects Model is better than the Random Effects Model. Therefore, the selection of the model was not continued with the Lagrange Multiplier test because the Fixed Effects Model was considered better for use in research based on the results of the EViews test.

After the tested sample meets the criteria for selecting the model, traditional hypothesis testing is carried out. Here are the results of testing classical assumptions together using a fixed effect model based on the treatment of Eviews data.

The multicollinearity test aims to see whether a regression model has a high or perfect correlation between free (independent) variables. If it is found that there is a high correlation relationship between free variables, it can be stated that there are multicorlinear symptoms in the study. Here are the results of the multicollinearity test for this observation.:

Table 4. Multicholnearity Test

	BUT	ROA	THIS
BUT	1.000000	0.274510	0.274241
ROA	0.274510	1.000000	0.799997
THIS	0.274241	0.799997	1.000000

Source: Eviews processed results

Acceptable correlation values for multicholnearity tests are 70% or 80% (0.7 or 0.8). Together with these results, the multicholnearity test is satisfactory.

An autocorrelation test is a correlation that occurs between the residual of an observation and other observations in a regression model. Autocorrelation can be determined by the Breusch-Godfrey test. It is a test used in regression mode to check whether there is a serial correlation or autocorrelation between the variables observed in the model used. Here are the autocorrelation test results for this observation:

Table 5. Autocorrelation Test

Table Autocloration test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	10.13552	Prob. F(2,27)	0.0534
Obs*R-squared	14.15125	Prob. Chi-Square(2)	0.0954

Source: Eviews processed results

An autocorrelation test is a test used to check whether there is a serial correlation in a regression model or to check whether there is an autocorrelation between the variables observed in the model used. An autocorrelation test is a correlation that occurs between the residual of an observation and other observations in a regression model. Autocorrelation can be determined by the Breusch-Godfrey test with a probability value of $<0>0.05$. There aren't signs of autocorrelation. From the results of the autocorrelation test above, it can be concluded that the probability of $0.0954 > 0.05$, and there aren't signs of autocorrelation in the research model.

The heteroskedasticity test is used to determine whether there are deviations from traditional assumptions. Heteroskedasticity is the unequal variance of the residual of all observations in the regression model. A prerequisite that the regression model must meet is that there isn't indication of heteroskedasticity. Here are the heteroskedasticity test results for this observation:

Table 6.Heteroskedasticity Test

Heteroskedasticity Test: White

F-statistic	2.251214	Prob. F(8,24)	0.0594
Obs*R-squared	14.14722	Prob. Chi-Square(8)	0.0780
Scaled explained SS	9.439130	Prob. Chi-Square(8)	0.3066

Source: Eviews processed results

A prerequisite that the regression model must meet is that there is no indication of heteroskedasticity. If the probability value is $<0>0.05$ then there is no indication of heteroskedasticity in the survey model. From the results of the general heteroskedasticity test with the White, Prob method. Since the chi-squared Obs*R-square is $0.0780 > 0.05$, we can conclude that there isn't evidence of heteroskedasticity in the survey model. The normality test should check whether the normalized residual values in the regression model are normal distributed.

The normal test can be carried out using the normal probability plot graph analysis approach. With this approach, the residual is normally distributed when the line (point) representing the actual data follows or approaches the diagonal. Below are the normality test results for this observation.

eCo-Buss

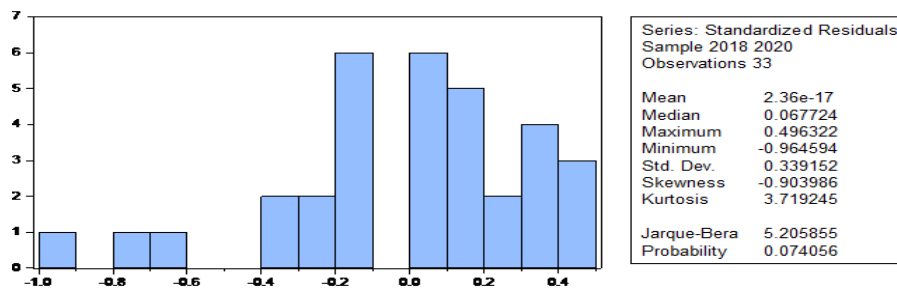


Figure 2. Normality Test

Normality test results show jarque probability values are $0.074 > 0.05$. This means that the residuals in the survey data are normal distributed.

A model feasibility test is an R2 test that looks at the ability of free variables to describe bound variables. The value of R2 ranges from 0 to 99, and the closer the value of R Square by 1, the more practical the model used. Below are the results of the smallest squares panel test using a fixed effect model study model for this observation:

Table 7. *Smallest Squared Panel*

Dependent Variable: Z_SCORE

Method: Panel Least Squares

Date: 03/22/22 Time: 15:00

Sample: 2018 2020

Periods included: 3

Cross-sections included: 11

Total panel (balanced) observations: 33

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.118062	1.333170	3.839017	0.0011
BUT	-7.757622	2.481549	3.126121	0.0056
ROA	8.949758	30.64676	0.292029	0.7734
THIS	-8.765385	30.61920	-0.286271	0.7778

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.944436	Mean dependent var	1.739394
Adjusted R-squared	0.906418	S.D. dependent var	1.438788
S.E. of regression	0.440142	Akaike info criterion	1.492975
Sum squared resid	3.680767	Schwarz criterion	2.127857
Log likelihood	-10.63409	Hannan-Quinn criter.	1.706594
F-statistic	24.84210	Durbin-Watson stat	2.335055
Prob(F-statistic)	0.000000		

Source: Eviews processed results

Based on the results on the table of the smallest squared panel, the R-squared value for this observation is 0.9444. This means that the probability of an independent variable in this model explaining the dependent variable for this observation is 94.44%. this observation.

Based on the results on the table of the smallest squared panels, this observation has a multiple linear regression equation described as:

$$Y = 5.1180 - 7.7576 + 8.9498 - 8.7654$$

Regression of the smallest squared panel, the findings of which can be interpreted as follows.

- The value of the constant factor is 5.1180. This means that GDP increases by 5.1180 if the variables DAR, ROA and TATO are considered constant.
- The value of the DAR coefficient is -7.7576. This means that an increase of 1 unit in DAR reduces GDP by -7.7576, assuming other variables are considered constant.
- The ROA factor value is 8.9498. That is, an increase in ROA by 1 unit reduces GDP by 8.9498, including the assumption that other variables remain.
- The value of the TATO coefficient is -8.7654. It is based on the assumption that an increase of 1 unit on TATO means a decrease in GDP of -8.7654, while other variables remain constant.

A partial test (t-test) is a test performed to see if a free variable affects a bound variable by comparing the value of Thitung with Ttabel. The test criteria for the t-test are:

- The Thitung > Ttabel value means that the variable affects the bound variable.
- The calculated value < T of the table means that the independent variables together affect the dependent variables.

Based on the results in the table, this observation has a calculated value of < ttabel (1.978) which means that the independent variables in this observation model partially have no effect on the dependent variables. Whereas the probability value simultaneously has a probability value of $0.0000 < 0.05$, which means that the independent variables in this observation model simultaneously affect the dependent variables. To support this, researchers checked the evidence by conducting an F test.

A Simultaneous Test (Test F) is a test performed to see whether or not all independent variables simultaneously affect the dependent variable by comparing the value of the Fhitung with the Ftabel.

- If the value of F counts > Ftabel, it means that together the independent variables affect the dependent variables.
- If the value of F counts < Ftabel, it means that together the independent variables have no effect on the dependent variables.

The calculated F-value of Ftabel (2.6754) means that the free variables in this observation model work simultaneously against bound variables.

Research Interpretation

1. Debt To Asset Ratio affects Financial Difficulties

The DAR variable has a calculated value $(-3.126121) < T_{tabel} (1.978)$ which means that the independent variable in this research model partially has no influence on the dependent variable. This research is inversely proportional to the theory of Debt To Asset Ratio and Financial Difficulty, in theory it is explained that the higher the DAR, the higher the probability of financial difficulties. And based on the results of this study states that DAR doesn't affect financial difficulties, because financial difficulties can be influenced by several factors such as equity, cash flow, sales, and the quality of its human resources or H1 is rejected.

2. Financial Difficulties are affected by Return On Asset

The variable ROA has a calculated value of $(0.292029) < T_{\text{tabel}} (1.978)$ which means that the independent variable in this research model partially has no influence on the dependent variable. Based on the results of this study inversely proportional to the theory of Return On Asset and Financial Difficulties, in theory it is explained that the greater the ROA ratio the better because the company is considered capable. And based on the results of this study states that ROA doesn't affect financial difficulties, because financial difficulties can be influenced by several factors such as debt, equity, current ratio, fast ratio or H2 rejected.

3. Total Asset Turn Over affects Financial Difficulties

The TATO variable has a calculated value $(-0.286271) < T_{\text{tabel}} (1.978)$ which means that the independent variable in this study model partially has no influence on the dependent variable. Based on the results of this study inversely proportional to the theory of Total Asset Turn Over and Financial Difficulties, in theory it is explained that total asset turnover (TATO) is inversely proportional to financial difficulties, which means that the higher the TATO, the lower the financial difficulty. And based on the results of this study, it is stated that TATO doesn't affect financial difficulties, because financial difficulties can be influenced by several factors such as debt, profit, equity, and the quality of its human resources or H3 is rejected.

4. Debt To Asset Ratio, Return On Asset, Total Asset Turn Over affects Financial Difficulties

R Square of this study is 0.9444 which means that this model has the feasibility of independent variables in explaining the dependent variables in this study by 94.44%, while the rest is influenced by variables outside this study such as ROE, DER, Cash Ratio or Quick Ratio. Probability Value simultaneously has a Probability value of $0.0000 < 0.05$ which means that independent variables in this research model simultaneously have an effect on dependent variables. Based on the results in the Least Squares Panel table, this study has a calculated F value $(24.8421 > F_{\text{tabel}} (2.6754))$ which means that independent variables in this research model simultaneously have an effect on dependent variables. Based on the results of this study, Debt To Asset Ratio, Return On Asset, Total Asset Turn Over has an influence on Financial Difficulties of 94.44% by 5.56% influenced by several factors beyond variables such as equity, cash flow, current ratio, fast ratio and quality of human resources or H4 received

Conclusion

Based on the results of the analysis and discussion that have been described in the previous section, the researcher concluded that the findings were Testing the influence of independent variables on dependent variables this observation showed that debt to asset ratio, return on assets, & total asset turn over did not have an effect on financial distress partially, but simultaneously the test results of debt to asset ratio, return on assets, & total asset turn over affected financial difficulties.

The debt-to-asset ratio doesn't affect financial difficulties because assets derived from company debt do not result in the company's financial difficulties but are influenced by other factors such as equity derived from debt or purchases from debt if sales decrease, they cannot pay purchases and debt will increase burdening the company which will result in financial difficulties. The Return on assets ratio doesn't affect financial difficulties because the ratio of returning company assets is good when the company's assets can make a profit so that it doesn't result in financial difficulties, but other factors that can affect financial difficulties such as high purchase rates and low sales growth result in company losses that will cause financial difficulties. The asset

turnover ratio doesn't affect financial difficulties because a good asset turnover ratio is able to generate sales of its total assets so as not to cause the company financial difficulties.

Debt to asset ratio, Return on assets, Asset turn over ratio simultaneously affect financial difficulties because assets derived from company debt are low, low returns on company assets or even company assets have losses, asset turnover to generate sales of its total assets is unstable and many other supporting factors

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