THE EFFECT OF DEBT TO EQUITY RATIO, INVENTORY TURNOVER, AND TOTAL ASSETS TURNOVER ON RETURN ON ASSET

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ABSTRACT
This study has purpose to analyze and examine financial ratios in chemical and industrial sub-sector companies listed on the Indonesia Stock Exchange in 2018-2020. The population in this study are chemical and industrial sub-sector companies listed on the Indonesia Stock Exchange in 2018-2020. Sampling using purposive sampling. The results showed that the Inventory Turnover (IT), Total Asset Turnover (TATO) and Debt to Equity Ratio (DER) variables simultaneously had an effect on Return on Assets (ROA).

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Total Asset Turnover,
Debt to Equity Ratio,
Return on Asset.

INTRODUCTION
Today, along with the progress of the era in the era of globalization as it is today, competition between companies to develop corporate strategies is getting higher and fiercer. Companies will compete to get large profits or profits to attract investors to invest in their companies. Profits or profits that have been achieved by a company will be presented in the form of financial statements that will later be published. The use of published financial statements is one source of information that can be used to analyze and make decisions for managers and investors.

The process of success of a company can be achieved by making the right plan, namely by having capital resources and human resources that can work well together. Because both will greatly affect the operating activities of the company's performance in obtaining profits.

One of the analyzes to assess the financial performance of a company is to make good financial planning and control by doing financial ratio analysis. Financial ratios are a form of accounting information used to reveal the financial condition of a company and provide an overview of the company's achievements in a certain period. To analyze financial statements usually by using financial ratios such as liquidity ratios, solvency, profitability and others. In this study the ratios that will be used by researchers are the ROA ratio, Debt to Equity Ratio (DER), Inventory Turnover, and TATO.

Return on Assets is a ratio that shows the results (return) of a company's assets. In other words, companies that have a high Return On Assets are good because the higher the ROA value, the total assets that exist can generate greater profits. Conversely, if the total assets used by the company do not provide a profit, the company will experience a loss.

The debt to equity ratio is the ratio used to value debt. This ratio can be found by comparing
all debt, including current debt with all equity. This ratio is useful for knowing the amount of funds provided by the borrower (creditor) to the owner of the company. In other words, this ratio serves to find out every rupiah of own capital that is used as a debt guarantee (Kasmir, 2019).

Inventory Turnover or inventory turnover is a ratio used to measure how many times the funds invested in this inventory rotate in one period. Inventory turnover can also be interpreted that inventory turnover is a ratio that shows how many times the number of inventory items is replaced in one year. The smaller this ratio the worse the impact on the company and vice versa (Kasmir, 2019). Inventory Turnover is a ratio used to measure how many times the funds invested in this inventory rotate in one period. Inventory turnover can also be interpreted that inventory turnover is a ratio that shows how many times the number of inventory items is replaced in one year. The smaller this ratio the worse the impact on the company and vice versa (Kasmir, 2019).

Total Assets Turn Over is the ratio used to measure the turnover of all assets owned by the company and measure how much sales are obtained from each rupiah of assets. The higher this ratio is good for the company and vice versa if this ratio decreases it is bad for the company's assets (Kasmir, 2019).

Financial ratios can be useful as a guide for investors to provide information on past and future financial position and performance (Novianti et al., 2015). Given the magnitude of the influence of financial ratios to determine the good or bad financial performance of a company, the authors are interested in taking the title: "The Effect of Debt to Equity Ratio (DER), Inventory Turnover, and Total Asset Turn Over (TATO) on Return On Assets (ROA) (Study on Chemical Subsector Listed on Indonesia Stock Exchange 2018-2020).

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Literature Review

Return On Assets (ROA)

Return on Assets is a ratio to measure a company's ability to generate net income to the total investment invested in the company, so that it can be calculated when the investment returns. This ratio is also often referred to as Return On Investment which is a measure of the effectiveness of management in managing its investments. The formula used to measure Return On Assets is as follows:

\[
\text{Return On Assets} = \frac{\text{Net Income}}{\text{Total Assets}} \times 100\% 
\]

Debt To Equity Ratio (DER)

Debt to Equity Ratio is the ratio used to assess debt to equity. This ratio is useful for knowing the proportion of funds provided by the owner of the company. In other words, this ratio serves to determine the rupiah of own capital that is used as debt collateral (Kasmir, 2019). The formula for measuring the Debt to Equity Ratio is:

\[
\text{Debt to Equity Ratio} = \frac{\text{Total Debt}}{\text{Total Equity}} \times 100\% 
\]

Inventory Turnover (IT)

Inventory turnover is a ratio used to measure the number of times the funds invested in this inventory rotate in one period. This ratio is known as the inventory turnover ratio, which means that inventory turnover is a ratio that shows how many times the number of inventory items is replaced in one year. The smaller this ratio, the worse it is and vice versa (Kasmir, 2019). The formula for finding Inventory Turnover is:

\[
\text{Inventory Turnover} = \frac{\text{Sales}}{\text{Inventory Cost}} 
\]

Total Assets Turn Over (TATO)

Total Assets Turn Over is a ratio used to measure the turnover of all assets owned by the company and measure how much sales are obtained from each rupiah of assets (Kasmir, 2019). The higher the TATO value, the better because it means the company is able to maximize its assets to generate higher sales. The formula used to find Total Assets Turn Over is:

\[
\text{Total Assets Turn Over} = \frac{\text{Net Sales}}{\text{Total Assets}} 
\]
Hypothesis Development

The Effect of Debt To Equity Ratio (DER) on Return On Assets (ROA)

Debt to Equity Ratio is a measure used in analyzing financial statements to show the guarantees available to creditors. The higher the Debt to Equity Ratio, the lower the Return On Assets obtained by the company. This is because the increase in the Debt to Equity Ratio causes the company's debt level to be higher so that the interest expense will be greater which results in decreased profits (Kasmir, 2019).

A high Debt to Equity Ratio indicates that funding with debt is increasing, and it has an impact on the difficulty of the company to obtain additional loans because it is feared that the company will not be able to pay off its debt assets. Likewise, if the DER is low, it shows that the smaller the company is financed by debt. In line with research conducted by (Putra & Badjra, 2015), which states that DER has a negative and significant effect on ROA.

H1: Debt to Equity Ratio has a negative and significant effect on Return On Assets.

Effect of Inventory Turnover (IT) on Return On Assets (ROA)

Inventory turnover is a ratio used to measure the number of times the funds invested in this inventory rotate in one period. This ratio is known as the inventory turnover ratio, which means that inventory turnover is a ratio that shows how many times the number of inventory items is replaced in one year (Kasmir, 2019). In the inventory turnover ratio, it will be known the comparison between sales and the average inventory inventory, so that it can be seen how many times the inventory rotates in one period and the greater the turnover, the better because sales run efficiently and can increase profits. Research conducted by Widiyanti & Bakar, (2014) which states that Inventory Turnover has a positive and significant effect on Return On Assets as well as research conducted by Rahmawati, (2012) and Damayanti & Sitohang, (2019) which shows that Inventory Turnover shows positive results.

H2: Inventory Turnover has a positive and significant effect on Return On Assets.

Effect of Total Assets Turn Over (TATO) on Return On Assets (ROA)

Total Assets Turn Over is a ratio used to measure the turnover of all assets owned by the company and measure how much sales are obtained from each rupiah of assets (Kasmir, 2019). The greater the Total Assets Turnover indicates the company is efficient in using all company assets to generate net sales. The faster the turnover of a company's assets to support its net sales activities, it will affect the company's profit. In line with research conducted by Alpi & Gunawan, (2018), Irman & Purwati, (2020), dan Barus & Leliani, (2017) who stated that TATO has a positive and significant effect on ROA.

H3: Total Assets Turnover has a positive and significant effect on Return On Assets.

The effect of Debt to Equity Ratio (DER), Inventory Turnover (IT), and Total Assets Turn Over (TATO) have an effect on Return On Assets (ROA)

The company's internal conditions will affect the high and low profits contained in the company. If the condition of the company's financial ratios is in good condition, this will be in a favorable condition for the company's profit. so in this study the authors assume that there is a stimulant effect between Debt to Equity Ratio (DER), Inventory Turnover (IT), and Total Assets Turn Over (TATO) on Return On Assets (ROA).

H4: Debt to Equity Ratio (DER), Inventory Turnover (IT), and Total Assets Turn Over (TATO) affect Return On Assets (ROA).

METHODOLOGY

This study is inferential because it examines the relationship between the independent variable and the dependent variable, and the analysis used is quantitative because the research data uses numbers and the analysis uses statistics.

The author conducts research on manufacturing companies with chemical sub-sectors listed on the Indonesia Stock Exchange for the 2018-2020 period, which will be investigated through intermediary media by browsing the official website www.idx.co.id. This study uses a population of 12 manufacturing companies with chemical sub-sectors listed on the Indonesia Stock Exchange for the 2018-2020 period. The sampling technique in this study is based on purposive sampling.
namely the sampling technique with certain considerations or criteria. The criteria for selecting the sample are as follows:

2. Companies that issue complete and audited financial statements.
3. Chemical companies that do not experience losses in the financial statements during the observation period.
4. Have complete data relating to the variables in this study.

The samples obtained were 9 manufacturing companies in the chemical sub-sector as follows: PT Aneka Gas Industri Tbk, PT Barito Pacific Tbk, PT Budi Strach & Sweetener Tbk, PT Chandra Asri Petro Chemical Tbk, PT Ekadharma International Tbk, PT Intan Wijaya International Tbk, PT Indo Acitama Tbk, PT Madusari Murni Tbk, PT Unggul Indah Cahaya Tbk.

The source of this research was taken through the Indonesia Stock Exchange website, namely www.idx.co.id. This research is secondary data obtained by researchers from available sources. This data collection method was obtained from the annual financial statements of chemical sub-sector companies listed on the Indonesia Stock Exchange for the 2018-2020 period. The data analysis method used in this study includes classical assumption testing. The classical assumption test aims to determine the feasibility of using the regression model in this study. The classical assumption test consists of normality tests. In the discussion of normality issues, the One Sample Kolmogorov-Smirnov test will be used using a significance level of 0.05. The data is declared normal if the significance is greater than 0.05 or 5% (Wiyono, 2020). multicollinearity test, heteroscedasticity test. This test was conducted to determine the effect of the independent variable on the dependent variable individually Novianti et al., (2015) using SPSS software version 21 (Statistical product and service solutions).

RESULTS AND DISCUSSION

A. Descriptive Analysis

<table>
<thead>
<tr>
<th>Table 4.3</th>
<th>Descriptive statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>N Minimum Maximum Mean Std. Deviation</td>
<td></td>
</tr>
<tr>
<td>DER 27 .14 6.40 1.8739 1.75496</td>
<td></td>
</tr>
<tr>
<td>IT 27 .25 4.13 1.1983 1.11833</td>
<td></td>
</tr>
<tr>
<td>TATTOO 27 .30 6.21 .9663 1.09885</td>
<td></td>
</tr>
<tr>
<td>ROA 27 .15 8.87 1.4351 1.89287</td>
<td></td>
</tr>
<tr>
<td>Valid N (listwise) 27</td>
<td></td>
</tr>
</tbody>
</table>

Of the 9 chemical sub-sector manufacturing companies listed on the IDX for the 2018-2020 period. Completely the results of descriptive statistics research with a sample of 27 can be seen in table 4.3.

B. Classic assumption test

- Normality test

<table>
<thead>
<tr>
<th>Table 4.4</th>
<th>Normality Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-Sample Kolmogorov-Smirnov Test</td>
<td></td>
</tr>
<tr>
<td>Unstandardized</td>
<td></td>
</tr>
<tr>
<td>Residual</td>
<td></td>
</tr>
<tr>
<td>asymp. Sig. (2-tailed) .710</td>
<td></td>
</tr>
</tbody>
</table>

Based on the table above, it can be seen that the normality test shows a significance level greater than (α = 0.05) which is 0.710 > 0.05, which means the data is normally distributed.
Based on the graph above, the distribution of data or points around the diagonal line and following the direction of the diagonal line, it can be shown that the research data is declared to be normally distributed.

- **Multicollinearity Test**

<table>
<thead>
<tr>
<th>Table 4.5 Multicollinearity Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tolerance</td>
</tr>
<tr>
<td>0.856</td>
</tr>
<tr>
<td>0.879</td>
</tr>
<tr>
<td>0.973</td>
</tr>
</tbody>
</table>

In the table above with the independent variables DER, IT, TATO and the dependent variable ROA, it has a tolerance value of > 0.1 and VIF < 10. This proves that in this study there is no multicollinearity.

- **Autocorrelation Test**

<table>
<thead>
<tr>
<th>Table 4.6 Autocorrelation Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Runs Test</td>
</tr>
<tr>
<td>asymp. Sig. (2-tailed)</td>
</tr>
</tbody>
</table>

Based on the results of the autocorrelation test with the Run Test in table 4.6, it shows that the Asymp value. Sig (2-tailed) of 0.118 > 0.05, it can be concluded that the regression model is free from autocorrelation problems or there is no autocorrelation.

- **Heteroscedasticity Test**

<table>
<thead>
<tr>
<th>Table 4.7 Heteroscedasticity Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coefficientsa</td>
</tr>
<tr>
<td>Model</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>(Consta nt)</td>
</tr>
<tr>
<td>DER</td>
</tr>
<tr>
<td>IT</td>
</tr>
<tr>
<td>TATTO</td>
</tr>
</tbody>
</table>

Based on the table above, it can be seen that the results of the calculations show a sig level > 0.05, namely 0.415 for the DER variable, 0.887 for the IT variable and 0.756 for the TATO variable, so this research is free from heteroscedasticity and deserves to be studied.

C. **Hypothesis testing**
### Table 4.8

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>-.584</td>
<td>.465</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>DER</td>
<td>.388</td>
<td>.120</td>
<td>.358</td>
<td>.004</td>
</tr>
<tr>
<td>IT</td>
<td>-.148</td>
<td>.185</td>
<td>-.087</td>
<td>.431</td>
</tr>
<tr>
<td>TATO</td>
<td>1.454</td>
<td>.179</td>
<td>.839</td>
<td>.000</td>
</tr>
</tbody>
</table>

From the table above, the regression equation can be formulated as follows:

\[ \hat{Y}_1 = -584 + 388X1 - 148X2 + 1,454 X3 + e \]

Description: \( \hat{Y}_1 \) = Return On Assets, \( = \) Constants, \( = \) Regression Coefficient, \( X_1 = \) Current Ratio, \( X_2 = \) Debt To Equity Ratio, \( X_3 = \) Net Profit Margin, \( e = \) Error term.

- **Simultaneous Significant Test (F)**

### Table 4.9

<table>
<thead>
<tr>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>24.356</td>
<td>.000b</td>
</tr>
</tbody>
</table>

Based on the results of the F test, the calculated F value was 24.356 > F table \((k ; nk) (3; 27-3) = 3.03\) with a significance level of 0.000 < 0.05, this means that H1 is accepted. The positive calculated F value indicates that DER, IT, and TATO simultaneously have an effect on ROA.

- **Partial Test (t)**

### Table 4.10

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Sig.</th>
</tr>
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<tr>
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<td>TATO</td>
<td>1.454</td>
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<td>.839</td>
<td>.000</td>
</tr>
</tbody>
</table>

Based on the results of the test research for DER, the B value was obtained at 0.388 with a significance level of 0.004 <0.05.

### D. Coefficient of Determination (R2)
Based on this table, the coefficient of determination indicated by R Square is 0.729, which means 72.9% of the ROA variable is influenced by variations in DER, IT and TATO, while the remaining 27.1% is explained by other factors not examined in this model.

**DISCUSSION**

The Effect of Debt to Equity Ratio on Return On Assets

Based on the results of the test research for DER, it was obtained a B value of 388 with a significance level of 0.004 < 0.05. So it can be concluded that "Debt to Equity Ratio (DER) has a positive and significant effect on Return On Assets (ROA) in chemical sub-sector companies listed on the IDX for the period 2018-2020". So H1 is rejected.

The results of this study are in line with Research by Sanjaya & Sipahutar (2019), M.Thoyib et al., (2018) and Oktasari (2020). Iskarisma (2017) that the Debt to Equity Ratio has a positive and significant effect on Return On Assets. If Economic Profitability is greater than loan interest, then the use of high foreign capital (high DER) will lead to high ROE/RMS, so investors are interested in investing and can increase ROA. If a company uses debt for expansion, the company will get multiple profits, increased capacity, increased sales and this of course can increase revenue/profit.

The Influence of Inventory Turnover on Return On Assets

Based on the results of the t-test research for IT, the B value is -0.148 with a significance level of 0.431 > 0.05, it can be concluded that "Inventory Turnover has a negative and insignificant effect on Return On Assets in chemical sub-sector companies listed on the IDX for the 2018-2020 period. So H2 is rejected.

The results of this study are inversely proportional to the research conducted by Widiyanti & Bakar (2014) which states that Inventory Turnover has a positive and significant effect on Return On Assets. If a company has a low inventory turnover in its company, it can be concluded that the company is not able to manage its assets efficiently, then the company cannot increase the ROA of the company. Because the low inventory turnover in the company reflects an investment with a low rate of return as well.

The negative effect of inventory turnover on ROA is because the average inventory turnover in chemical companies is quite low. Which shows that the more time the company needs to spend inventory, the more costs the company has to pay for maintenance costs. With the more costs that must be incurred by the company, the company's profit will decrease. Inventory turnover shows the smooth running of a company in generating sales from inventory. A high turnover ratio indicates the company also incurs a lot of costs to carry out activities so that it does not affect ROA.

The Effect of Total Assets Turnover on Return On Assets

Based on the results of the t-test research for TATO, the B value is 1.454 with a significance level of 0.000 < 0.05 so it can be concluded that "Total Assets Turnover has a positive and significant effect on Return On Assets in chemical sub-sector companies listed on the IDX for the 2018-2020 period. Until H3 is accepted.

The results of this study are in line with research conducted by Alpi & Gunawan (2018) which states that TATO has a positive and significant effect on ROA. The higher the TATO value, the better because it means the company is able to maximize its assets to generate higher sales. In addition, high sales will have an impact on the company's cash sufficiency and the higher net profit value as well. So it can be concluded that TATO can affect ROA.

Effect of Debt to Equity Ratio (DER), Inventory Turnover (IT) and Total Asset Turnover (TATO) on Return On Assets (ROA)

The calculated F value is 24.356 with a significance level of 0.00 < 0.05, it can be...
concluded that the variables Debt to Equity Ratio (DER), Inventory Turnover (IT) and Total Asset Turnover (TATO) simultaneously affect Return On Assets (ROA) in chemical sub-sector companies, listed on the IDX for the 2018-2020 period.

CONCLUSIONS
a. Based on the results of the test research for DER, it was obtained a B value of 388 with a significance level of 0.004 < 0.05. So it can be concluded that "Debt to Equity Ratio (DER) has a positive and significant effect on Return On Assets (ROA) in chemical sub-sector companies listed on the IDX for the period 2018-2020". So H1 is rejected.
b. Based on the results of the t-test research for IT, the B value is -0.148 with a significance level of 0.431 > 0.05, it can be concluded that "Inventory Turnover has a negative and insignificant effect on Return On Assets in chemical sub-sector companies listed on the IDX for the 2018-2020 period. " Until H2 Rejected.
c. Based on the results of the t-test research for TATO, the B value is 1,454 with a significance level of 0.000 < 0.05 so it can be concluded that "Total Assets Turnover has a positive and significant effect on Return On Assets in chemical sub-sector companies listed on the IDX for the 2018-2020 period. " Until H3 is accepted.
d. The calculated F value is 24,356 with a significance level of 0.00 < 0.05, it can be concluded that the variables Debt to Equity Ratio (DER), Inventory Turnover (IT) and Total Asset Turnover (TATO) simultaneously affect Return On Assets (ROA) in chemical sub-sector companies, listed on the IDX for the 2018-2020 period.

SUGGESTION
Suggestions that the author can give in connection with the results of the research that has been done are as follows:
1. For the Company.
   As a material for consideration in making future policies aimed at providing information to stakeholders and potential investors.
2. For Investors
   Must make decisions not only to rely on internal financial data from companies such as profitability Debt to Equity Ratio (DER), Inventory Turnover (IT) and Total Asset Turnover (TATO), but also need to pay attention to external factors such as (inflation, politics, conditions, changes in currency exchange rates, economic policies and others) that can affect Return On Assets (ROA).

LIMITATIONS
This research is only limited to chemical sub-sector companies listed on the Stock Exchange and internal variables, for further researchers can add external variables such as inflation, changes in currency exchange rates.

REFERENCE


