# The Analysis of the Effect of Intellectual Capital, Company Growth, Size, Solvency on Profitability and Their Impact on Company Value

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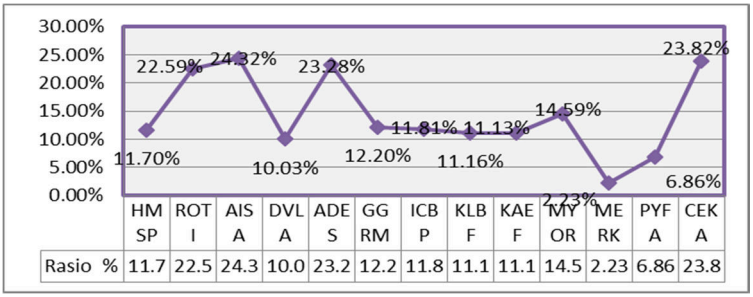
**Abstract.** This research aimed at determining the influence of intellectual capital, company growth, firm size, and solvency on profitability and their impacts on company value. The sample of this research consisted of 13 consumer goods sector companies listed on the Indonesia Stock Exchange for the 2012-2016 period. Sampling was conducted by purposive sampling method. This research used descriptive quantitative method and employed multiple linear regression analysis and hypothesis testing (statistical t-test and determination coefficient test). The results showed that partially the intellectual capital variable had an influence on profitability with sig value of 0.0000<0.05. Company growth had no significant effect on profitability with sig value of 0.3283>0.05. Firm size had a significant influence on profitability with sig value of 0.0313<0.05. Leverage had a significant effect on profitability with sig value of 0.0091<0.05. The results showed that simultaneously variables of intellectual capital, company growth, firm size and solvency had significant influences on profitability with sig value of 0.0000<0.05. Profitability had a significant influence on company value with a sig value of 0.0016<0.05.

## 1. Introduction

Consumer goods companies are non-cyclical companies, which means that this industrial sector is relatively more stable and not easily affected by the season or changes in economic conditions such as inflation. Even though there is inflation, the smoothness of consumer goods industry products will still be guaranteed because this industry is engaged in the basic human field.

One approach used in the assessment and measurement of intangible assets is Intellectual Capital [1]. The company's long-term goal is to optimize the company's value as reflected in its stock market price. An increase in the difference between the stock price and the book value of assets owned by the company indicates the existence of a hidden value.

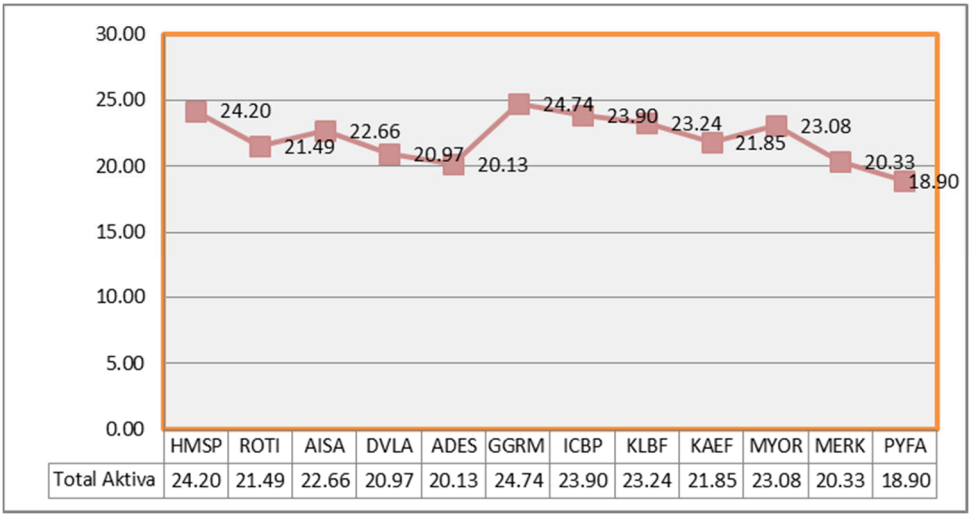
Growth is an important indicator of market acceptance of the company's fund or service products, where revenue generated from sales can be used to measure sales growth rates. Sales growth reflects the investment success manifestation in the past period and can be used to predict future growth.




| | HMSP | ROTI | AISA | DVLA | ADES | GGRM | ICBP | KLBF | KAEF | MYOR | MERK | PYFA | CEKA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rasio % | 11.7 | 22.5 | 24.3 | 10.0 | 23.2 | 12.2 | 11.8 | 11.1 | 11.1 | 14.5 | 2.23 | 6.86 | 23.8 |

Source: Primary Survey Data

In the graph above, it can be seen that during 2012-2016, the growth of manufacturing of consumer goods sector companies experienced an average fluctuating growth. The highest percentage of company growth was achieved by PT Tiga Pilar Sejahtera Food Tbk, which reached 24.32%, while the lowest achievement occurred at PT Merck Indonesia Tbk, which managed to reach 2.23%.



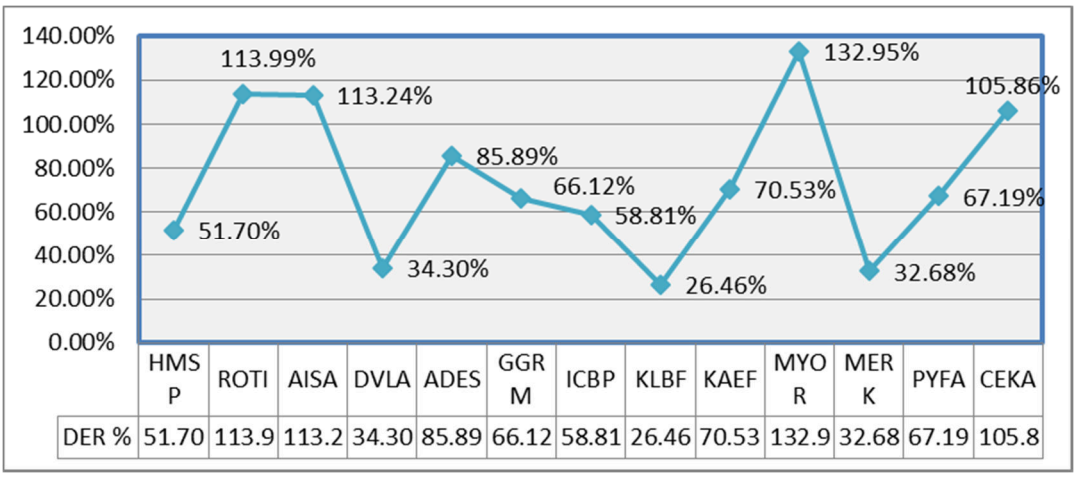

| | HMSP | ROTI | AISA | DVLA | ADES | GGRM | ICBP | KLBF | KAEF | MYOR | MERK | PYFA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Aktiva | 24.20 | 21.49 | 22.66 | 20.97 | 20.13 | 24.74 | 23.90 | 23.24 | 21.85 | 23.08 | 20.33 | 18.90 |

Source: Primary Survey Data

In the graph above, it can be seen that during 2012-2016, the average size of manufacturing of consumer goods sector companies experienced a fluctuating growth. The highest firm size was obtained by PT Gudang Garam Tbk which reached 24.74, while the lowest achievement occurred at PT Pyridam Farma Tbk, which reached 18.90.

Leverage is one of the important factors in influencing profitability because solvency can be used by companies to increase company capital in increasing profits [2]. Solvency is the use of sources of funds by companies that have fixed costs to increase the shareholders' potential profits.

A large debt causes the company's profitability to be low because the company's attention is shifted from increasing productivity to the need to generate cash flows to pay off their debt.

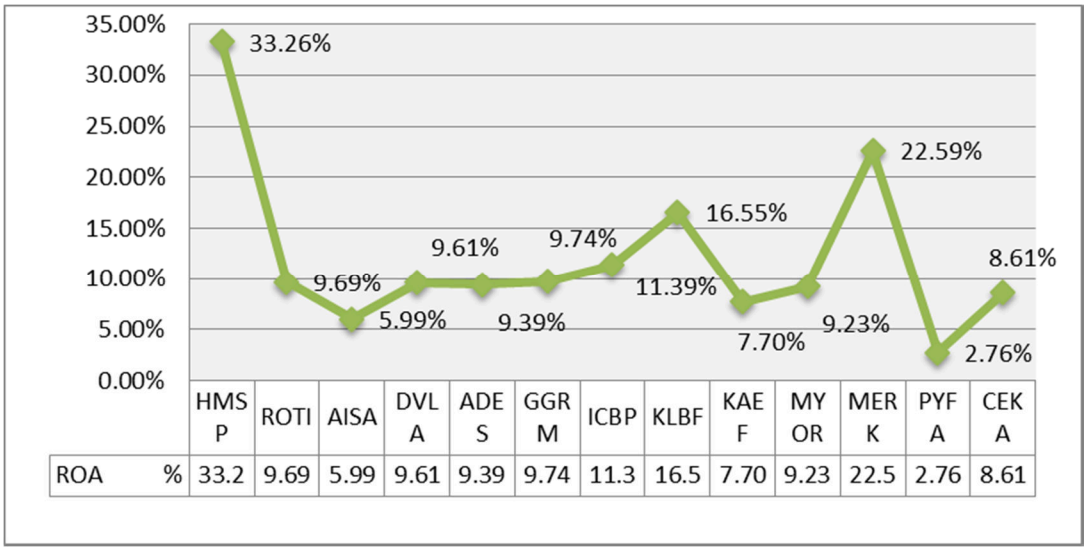



| | HMSP | ROTI | AISA | DVLA | ADES | GGRM | ICBP | KLBF | KAEF | MYOR | MERK | PYFA | CEKA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DER % | 51.70 | 113.9 | 113.2 | 34.30 | 85.89 | 66.12 | 58.81 | 26.46 | 70.53 | 132.9 | 32.68 | 67.19 | 105.8 |

Source: Primary Survey Data

In the graph above, it can be seen that throughout 2012-2016, leverage (DER) in the manufacturing of consumer goods sector companies experienced a fluctuating growth on average. The highest percentage of leverage (DER) was achieved by PT Mayora Indah Tbk, which reached

132.95%, while the lowest achievement occurred at PT Kalbe Farma Tbk, which managed to reach 26.46%.




| | HMSP | ROTI | AISA | DVLA | ADES | GGRM | ICBP | KLBF | KAEF | MYOR | MERK | PYFA | CEKA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROA % | 33.2 | 9.69 | 5.99 | 9.61 | 9.39 | 9.74 | 11.3 | 16.5 | 7.70 | 9.23 | 22.5 | 2.76 | 8.61 |

Source: Primary Survey Data

In the graph above, it can be seen that throughout 2012-2016, profitability (ROA) in the manufacturing of consumer goods sector experienced a fluctuating growth on average. The highest percentage of profitability (ROA) was achieved by PT HM Sampoerna Tbk, which reached 33.26%, while the lowest achievement occurred at PT. Pyridam Farma Tbk, which reached 2.76%.

In line with the problems formulated, the purpose of this research is to find out, analyze, and study:

1. The partial influence of Value Added Intellectual Coefficient (VAIC) to return on assets in consumer goods sector companies in the Indonesia Stock Exchange.
2. The partial influence of sales growth to return on assets in consumer goods sector companies in the Indonesia Stock Exchange.
3. The partial influence of firm size to return on assets in consumer goods sector companies in the Indonesia Stock Exchange.
4. The partial influence of solvency (debt to equity ratio) to return on assets in consumer goods sector companies in the Indonesia Stock Exchange.
5. The influence of VAIC, sales growth, firm size, and debt to equity ratio simultaneously on return on assets in consumer goods sector companies in the Indonesia Stock Exchange.
6. The partial influence of Return on Assets on Price to Book Value in consumer goods sector companies in the Indonesia Stock Exchange.

## 2. Literature review

According to [3], management is the achievement of organizational goals that have been predetermined by using the help of others. Meanwhile, according to Stoner in [4], management is the process of planning, organizing, directing, and supervising the efforts of organization members and the use of other organizational resources to achieve organizational goals that have been set. Thus, those definitions conclude that management is a situation consisting of the process indicated by the line leading to the process of planning, organizing, leading, and controlling. These four processes have their respective functions to achieve an organizational goal.

Management as a science that seeks to systematically understand why and how humans work together to achieve goals and make this system of cooperation more beneficial to humanity [5]. According to Gulick management has fulfilled the requirements to be called the field of science,

because it has been studied for a long time and has been arranged systematically into a series of theories.

Definition of growth ratio according to [6] is "a ratio that measures the company's ability to maintain its position in the industry and in general economic development. This growth ratio is seen from various aspects of sales, earnings after tax (EAT), earnings per share, dividends per share, and market prices for shares."

According to [7], the definition of leverage ratio is "a ratio that measures how much the company is financed with debt. The use of debt that is too high will endanger the company because it will be included in the extreme leverage category, where the company is trapped in a high debt level and it is difficult to release the debt burden. Therefore, the company should have to balance how much debt is worth taking and where the sources can be used to pay off debts."

## 3. Methods

In this research, the population was the financial report of 40 consumer goods industry companies listed on the Indonesia Stock Exchange that provide periodic financial statements for the period of 2012-2016.

Based on these criteria, 13 consumer goods industry companies listed on the Indonesia Stock Exchange (IDX) during the period 2012-2016 were chosen as the sample. Therefore, the number of analysis units was 65 (13 x 5). The following companies are included in the research sample:

| No. | Companies | Code |
|---|---|---|
| 1 | PT Tiga Pilar Sejahtera Food Tbk. | AISA |
| 2 | PT Wilmar Cahaya Indonesia Tbk. | CEKA |
| 3 | PT Indofood CBP Sukses Makmur Tbk. | ICBP |
| 4 | PT Mayora Indah Tbk. | MYOR |
| 5 | PT Nippon Indosari Corpindo Tbk. | ROTI |
| 6 | PT Gudang Garam Tbk. | GGRM |
| 7 | PT Hanjaya Mandala Sampoerna Tbk. | HMSP |
| 8 | PT Darya-Varia Laboratoria Tbk. | DVLA |
| 9 | PT Kimia Farma (Persero) Tbk. | KAEF |
| 10 | PT Kalbe Farma Tbk. | KLBF |
| 11 | PT Merck Tbk. | MERK |
| 12 | PT Pyridam Farma Tbk. | PYFA |
| 13 | PT Akasha Wira International Tbk. | ADES |

### *3.1 Data analysis*

According to [8], there are several approaches that can be used to estimate regression models using panel data, which are:

#### *3.1.1 Common effect model approach.*

The common effect approach can be conducted by combining time series and cross section data without looking at the differences between time and individual, assuming the data between companies is the same within a certain time period. This approach uses the OLS (Ordinary Least Square) method as an estimator of the panel data model. The regression model is:

$$Y = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + e_{it}$$

#### *3.1.2 Fixed effect model approach.*

The fixed effect approach assumes that there are differences in intercepts between companies, but the intercept is said to be the same across time (time invariant) and the regression coefficient

(slope) is said to be constant between companies and between times. This approach is conducted by using a dummy variable to see differences in intercepts. The regression equation model is as follows:

$$Y = \beta_0+\beta_1 X_{1it}+\beta_2X_{2it}+\beta_3X_{3it}+\beta_4X_{4it}+\beta_5D_{1i}+\beta_6D_{2i}+\beta_7D_{3i}+e_{it}$$

*3.1.3 Random effect model approach.*

Random effect approach can be conducted by using an error variable. This approach will estimate panel data with the assumption that variable interference may be interconnected between time and individual. The disturbance variable is used to overcome the problem of using dummy variables in the fixed effect approach that causes a reduction in degrees of randomness and ultimately reduces the efficiency of the parameters. The equation model is:

$$Y = \beta_0+\beta_1 X_{1it}+\beta_2X_{2it}+\beta_3X_{3it}+\beta_4X_{4it}+\beta_5D_{1i}+vit$$

*3.2 Selection of data panel regression estimation techniques*

a. Chow test
b. Langrange Multiplier (LM) test
c. LM test is a test that is generally used to detect Hausman test problems

*3.3 Operationalization of variables*

The operationalization in this research describes indicators used to measure the research variables, both the dependent variable and independent variables:

| Variables | Definitions | Formulae | | | Scale |
|---|---|---|---|---|---|
| *Intellectual Capital* Source: Public (1999) in Ulum (2009: 50) | *Value Added Intellectual Coefficient* (VAIC) is an indication of the intellectual ability of a company that is considered as BPI (*Business Performance Indicator*) | VAIC | = | VACA + VAHU + STVA | Ratio |
| Company Growth Source: Kasmir (2012: 107) | Sales growth shows the extent to which a company can increase its sales compared to total sales overall | *Sales Growth* | = | $\frac{\text{Sales of Year}_t - \text{Sales of Year}_{t-1}}{\text{Sales of Tear}_{t-1}}$ | Ratio |
| Firm Size Source: Hararap (2013: 23) | Firm size is measured by natural logarithm (Ln) from the average total assets of the company | *Size* | = | Natural logarithm of Total Assets | Ratio |
| Leverage Source: Munawir (2011: 119) | Comparison between total debt and own capital | DER | = | $\frac{\text{Total Amount of debt}}{\text{Total Equity}}$ | Ratio |
| Profitability Source: Kashmir (2016: 115) | Profitability is a ratio that shows the results (return) of the amount | ROA | = | Net Income After | Ratio |

| | | | | | |
|---|---|---|---|---|---|
| | of assets used in the company | | | Tax / Total Assets | |
| Company value | Company value shows how far a company is able to create company value relative to the amount of capital invested | PBV | = | Price per share sheet / Book value per share sheet | Ratio |

## 4. Results and discussion

### *4.1. Results analysis*

From the results of this research, the analysis of the influence of intellectual capital, company growth, firm size, and solvency on profitability and their impacts on company value can be explained as follows:

#### *4.1.1 Intellectual capital.*

Based on the data processing of the $X_1$ variable with 65 data from 13 companies during the five years of the research, the average (mean) of intellectual capital was 3.658516, the median was 3.300136, the minimum value was 1.557229, the maximum value was 7.490424, and the standard deviation was 1.382949.

#### *4.1.2 Sales growth.*

Based on the data processing of the $X_2$ variable with 65 data from 13 companies during the five years of the research, the average (mean) of sales growth was 0.165373, the median was 0.143399, the minimum value was 0.165993, the maximum value was 1.253526, and the standard deviation was 0.196417.

#### *4.1.3 Firm size.*

Based on the data processing of the $X_3$ variable with 65 data from 13 companies during the five years of the research, the average (mean) of firm size was 22.01307, the median was 21.81122, the minimum value was 18.72706, the maximum value was 24.87439, and the standard deviation was 1.720281.

#### *4.1.4 Debt to equity ratio.*

Based on the data processing of the $X_4$ variable with 65 data from 13 companies during the five years of the research, the average (mean) of debt to equity ratio was 0.753885, the median was 0.670847, the minimum value was 0.187239, the maximum value was 1.706294, and the standard deviation was 0.382677.

#### *4.1.5 Return on asset.*

Based on the data processing of the $X_5$ variable with 65 data from 13 companies during the five years of the research, the average (mean) of return of asset was 0.121990, the median was 0.099312, the minimum value was 0.015386, the maximum value was 0.394769, and the standard deviation was 0.084328.

#### *4.1.6 Price to book value.*

Based on the data processing of the $X_6$ variable with 65 data from 13 companies during the five years of the research, the average (mean) of price to book value was 4.992523, the median was 4.455808, the minimum value was 0.592054, the maximum value was 22.29148, and the standard

deviation was 4.526345.

*4.2 Results and discussion*

*4.2.1 The influence of intellectual capital on return on asset.*

The results of the regression test obtained the regression coefficient value of 0.326430 with P-value or significance level of 0.0000<0.05 and t-observe of 7.5526>2.0003. Hence, $H_0$ was rejected and $H_1$ was accepted. These results proved that partially, the Intellectual Capital variable had a significant positive influence on Return on Assets.

*4.2.2 The influence of sales growth on return on asset.*

The results of the regression test obtained the regression coefficient value of 0.095558 with P-value or significance level of 0.6862<0.05 and t-observe of 0.406286<2.0003. Hence, $H_0$ was rejected and $H_1$ was accepted. These results proved that partially, the sales growth variable did not have significant influence on Return on Assets

*4.2.3 The influence of firm size on return on asset.*

The results of the regression test obtained the regression coefficient value of -0.387589 with P-value or significance level of 0.0454<0.05 and t-observe of 0-2.050963<2.0003. Hence, $H_0$ was rejected and $H_1$ was accepted. These results proved that partially, the firm size variable had negative significant influence on Return on Assets

*4.2.4 The influence of debt to equity ratio on return on asset.*

The results of the regression test obtained the regression coefficient value of -0.535483 with P-value or significance level of 0.0133<0.05 and t-observe of -2.565781<2.0003. Hence, $H_0$ was rejected and $H_1$ was accepted. These results proved that partially, the debt to equity ratio variable had a negative significant influence on Return on Assets

*4.2.5 The influence of intellectual capital, sales growth, firm size, and debt to equity ratio on return on assets.*

The result of simultaneous hypothesis testing states that Value Added Intellectual Coefficient (VAIC), sales growth, firm size, and debt to equity ratio (DER) variables had significant influences on Return on Assets (ROA) because the value of $F_{observe} > F_{table}$ (32.16>2.53) and the probability value (prob) of 0.0000 was smaller than the significant level of 0.05. Thus, $H_0$ was rejected and $H_1$ was accepted.

*4.2.6 The influence of return on asset on price to book value.*

The results of the regression test obtained the regression coefficient value of 21.411 with P-value or significance level of 0.0007<0.05 and t-observe of 3.6173>2.0003. Hence, $H_0$ was rejected and $H_1$ was accepted. These results proved that partially, the Return on Asset variable had a positive significant influence on Price to Book Value.

## 5. Conclusion

1. The results of this research indicated that the value of the regression coefficient of intellectual capital was positive at 0.326430, meaning that every 1% increase in intellectual capital was predicted to increase return on assets by 0.326430, assuming the value of other variables remains.
2. The results of this research indicated that the regression coefficient value of sales growth was positive at 0.095558, meaning that every 1% increase in sales growth was predicted to increase return on assets by 0.095558, assuming the value of other variables remains.

3. The results of this research indicated that the regression coefficient of firm size was negative at -0.387589, meaning that every 1% increase in firm size was predicted to decrease return on assets by 0.387589, assuming the value of other variables remains.
4. The results of this research indicated that the regression coefficient of debt to equity ratio was negative at -0.535483, meaning that every 1% increase in debt to equity ratio was predicted to reduce return on assets by 0.387589, assuming the value of other variables remains.
5. The results showed that the Value Added Intellectual Coefficient (VAIC), sales growth, firm size and debt to equity ratio variables had a significance level of 0.0000<0.05 and F-observe 32.16>2.53, meaning that they simultaneously had a significant effect on return on assets.
6. The results of this research indicated that the regression coefficient value of the variable return on assets was positive at 21.41102, meaning that every 1% increase in return on assets was predicted to increase the price to book value by 21.41102, assuming the value of other variables remain.

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