The Effect Of Company Size, Industry Type And Research And Development Intensity On Intellectual Capital Disclosure

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ARTICLE INFORMATION	ABSTRACT

This study aims to determine the effect of company size, industry type, and the intensity of research and development on intellectual capital disclosure. This research uses secondary data in conducting analysis. The dependent variables are intellectual capital and independent variables, namely company size, industry type, research and development intensity. The population of this research is companies that are included in Kompas100 index on the IDX in 2018. The sample used in this study is 100 samples. Testing the hypothesis of this study using multiple linear regression test. The results showed that: 1) firm size had an effect on intellectual capital disclosure, 2) the type of industry had no effect on intellectual capital disclosure, 3) the intensity of research and development had no effect on intellectual capital disclosure.

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INTRODUCTION

Business development is growing rapidly, knowledge (*knowledge based business*) is a strategy to keep pace with it. Company development can be seen from the growth in financial and physical capital together with growth in *intellectual capital* . Sawarjuwono and Kadir (2003), the creation of transformation and capitalization of knowledge by applying knowledge management. Technological advances are now based on science by applying *knowledge management* for these companies (Sri Iswati, 2006). In financial reporting, companies generally only focus on the company's finances. But to create useful and transparent company performance reporting, companies need to disclose non-financial reports that are owned by the company. Non-financial reporting is expected to attract investors. Disclosures of *intellectual capital* are part of the company's non-financial disclosures.

Intangible assets are non-monetary assets that are not physically visible (Ulum, 2015). Expenditures of liabilities and resources can increase the resources of non-financial assets that can be categorized as assets. The revolution in information technology, knowledge and the economy is increasingly knowledge-based, and changes in the views of individuals and society are some of the important factors in disclosing intellectual capital. Rima Aprisa (2016), a large company will reveal a wider range of intellectual capital due to stakeholder demands. The higher the demands for disclosure of non-financial assets compared to micro companies. A high science company will disclose a wider *intellectual capital* than a lower science company (Woodcock and Whiting, 2011) . Research and development is used to find new knowledge and insights related to the creation of new products according to consumer needs (Ni Made and Dewa Gede, 2016).

LITERATURE REVIEW

Basic concepts

a. **Intellectual Capital**

Intellectual Capital is a non-financial asset in the form of knowledge and information sources that function to compete and improve company performance. Intellectual capital is disclosed to get a bigger profit margin. According to Stewart, to increase the competitiveness of companies, it requires disclosure of intellectual capital which includes knowledge, innovation and information used to create added value for intangible assets and the ability to compete. In measuring intellectual modsl using the formula:

$$ICD_i = \sum \frac{\frac{Di}{M} \frac{Di}{M}}{} \times 100$$

Information :

ICD$_i$: Intelectual Capital Disclosure
D$_i$: Number of Items to be Discloused
M   : The number of items that should be disclosed

b. Company Size

Total assets at the end of the year are the scale of the company in determining the size of the company. Veronica and Siddharta (2005), in measuring the size of the company, they can see the company's total sales. Company size is a variable that explains a lot of social disclosure made by the company. Large companies dare to go into debt to turn around capital so they must be able to rotate the debt to achieve company goals. Small companies usually consider competitive disadvantage . In this study, company size is measured by the natural logarithm of total assets, which is formulated:

Company size = Log Natural total assets.

c. Industry Type

Companies classified as high IC intensive industry tend to disclose greater intellectual capital compared to low IC intensive industry. The type of industry in this study according to the Global Industry Classification Standard (GICS). The dummy number is used to measure industry types of companies included in the Kompas100 index from August 2018 to January 2019 on the Indonesian stock exchange. Number 1 for companies that are high IC intensive Industry , and number 0 for low IC intensive Industry.

d.   *Research and development* intensity
Investments in *research and development* can be very important for stakeholders regarding the company's long-term value creation strategy and the management of its intellectual capital. *The intensity of research and development* is one type of information regarding intellectual capital. In disclosing the company's intellectual capital, research and development are needed in

terms of company internal, external, and *human capital* . In this study the intensity of research and development was measured by dividing the total R&D expenditure by the total sales formulated:

$$\text{R\&D Intensity} = \frac{\frac{\text{Total Pengeluaran R \& D}}{\text{Total Penjualan}}}{\frac{\text{Total Pengeluaran R \& D}}{\text{Total Penjualan}}}$$

Previous research

Research conducted by Singh, *et al* (2007) shows a positive relationship between the influence of company size and the disclosure of intellectual capital. The research was carried out in Australian gas and oil companies. Research by Sri Layla Wahyu Istanti (2009) shows that the size of the company has a significant effect on the disclosure of the company's intellectual capital.

Research conducted by Woodcock and Whiting (2011) shows that companies classified as *High IC intensive industry* tend to disclose intellectual capital more widely than companies classified as *low IC intensive industry* .

Research conducted by Ousama, et al (2012) on the factors that influence intellectual capital in companies listed on the Malaysian stock exchange, namely the use of *research and development* variables .

Research conducted by Ni Made Ari Astuti and Dewa Gede Wirama (2016), shows that company size and type of industry have a significant effect on intellectual capital disclosure. Annisa Iddiani Utomo and Anis Chariri's (2015) research shows that company size and industry type have a significant positive effect on the level of disclosure of intellectual capital by companies.
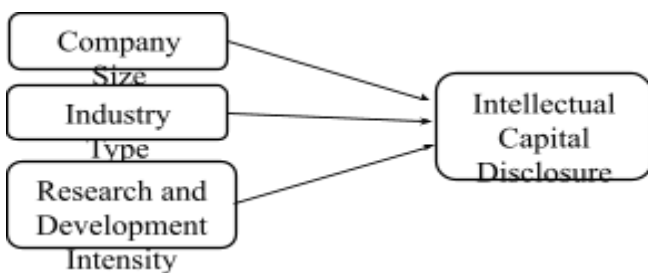
Framework of Mind

Figure 1.1 Framework of Mind

Hypothesis

1. The effect of company size on intellectual capital disclosure.
   Research conducted by Sumardi Adiman (2017), Eka Nurmala Sari *et al* (2018), and Ming Chen (2019) shows that company size affects intellectual capital disclosure. Companies that have large assets tend to disclose intellectual capital in depth to inform company performance.

   H_1 : firm size has an effect on intellectual capital disclosure

2. Effect of industry type on disclosure intellectual capital
   Research conducted by Rima Aprisa (2016), Yoga Arif Saputro (2017) and Ni Made *et al* shows that the type of industry affects the disclosure of a company's intellectual capital. Companies that are included in high IC intensive industry tend to disclose more about intellectual capital than companies classified as *low IC intensive industry* .
   H_2 : type of industry influence on the intellectual capital disclosures

3. The influence of *research and development* intensity on intellectual capital disclosure
   Research conducted by Ousama, et al (2012) on the factors that affect intellectual capital in companies listed on the Malaysian stock exchange, namely the use of *research and development* variables . Research conducted by Aisyah and Sudarno (2014 shows that *research and development* has a significant effect on the extent of intellectual capital disclosure.
   H_3 : the intensity of *research and development* affects intellectual capital disclosure.

RESEARCH METHODOLOGY

This research is a quantitative research where the data used is secondary data taken from the IDX using data that can be accessed through the IDX website, namely http://www.idx.co.id/. The research instrument is in the form of company financial statements that are included in the 100 compass index in 2018. The population in this study are all companies listed on the Indonesia

Stock Exchange (IDX) in 2018. The sample in this study is 100 companies included in the compass index 100 in August 2018. until January 2019, which were selected through purposive sampling technique. The data analysis technique used in this study is multiple linear regression analysis which was previously tested using the classical assumption test. This analysis is used to determine the effect of company size (X1), type of industry (X 2), intensity of *research and development* (X3) on intellectual capital disclosure (Y). Multiple linear regression model:

ICD = α + β1SIZE + β2IND + β3R&D + e

Information :

ICD = Intellectual capital disclosure index
α = Constant
β = Regression coefficient
SIZE = Company Size
IND = Industry Type
R&D = Research and development Intensity
e = Eror

RESULTS AND DICUSSION

Descriptive statistics

Descriptive statistical analysis is useful for providing a general description of the data that has been collected and becomes material for research. This analysis is described in terms of maximum value, minimum value, average, standard deviation, median, and frequency. The dependent variable described in this variable is the disclosure of intellectual capital by companies listed on the Kompas100 index for the period August 2018 - January 2019 Indonesian stock exchange. While the independent variables in this study include; company size, industry type, and *research and development* (R&D) intensity . The sample description based on descriptive statistical analysis is described in table 4.1 below:

Table 4.1 Descriptive Statistics

Variabel	Maks	Min	Mean	Std. Deviasi	Frekuensi
SIZE	16,01	11,88	13,42	7,07	
I	1,00	0,00	0,49	0,50	1 = 49 %
					0 = 51%
R & D	3,12	0,04	0,45	0,56	
ICD	68,51	24,07	50,94	38,89	

Source: researcher data, 2020

The size of the company in this study can be seen from the total assets owned by the company. From the table of descriptive statistical analysis, it can be seen that from the overall data collected company size, the highest company size is 16.01 and the lowest company size is 11.88. The standard deviation is 7.07 and the mean company size is 13.42.

Industry types are grouped into two, namely *high IC intensive industry* and *low IC intensive industry* . The score is 0 for *low IC intensive industry* and 1 for *high IC intensive industry* . In this study, the results of the analysis of companies included in the compass index of August 2018 - January 2019 show companies with *high IC intensive industry* by 49% and *low IC intensive industry* by 51%.

Research and development intensity shows how much research and development costs to support sales. The highest level of *research and development* intensity was 3.12, while the lowest value was 0.04. The standard deviation value of 0.56 is greater than the calculated average value of 0.45. Shows that there is a variation in the sample value due to a fairly wide deviation of data.

Overall, the score index for voluntary intellectual capital disclosure (ICD) by companies has the highest value of 68.51 and the lowest score of 24.07. While the standard deviation value is 38.89, and the average value is 50.94. This shows that the average disclosure of intellectual capital (ICD) in companies that are included in the Kompas100 index is still minimal.

Normality Test

Normality testing is carried out to determine whether in the regression modal, the residual variables have a normal distribution. The method used in the normality test is to look at the Kolmogorov-Smirnov (KS) value. Following are the results of the normality test:

Table 4.2 Normality test result

Model	Asyimp.sig (2-tailed	Information
1	0,626	Normally Distributed

Source: researcher data, 2020

based on the results of the normality test using the Kolmogorov-Smirnov (KS) test in table 4.2 It can be seen that the Asyimp.sig (2tailed) has a value of 0.626 where the value is more than 0.05. This shows that the variables are normally distributed, strengthening the results of the PP Plot graph.

Multicollinearity Test

The multicollinearity test aims to determine whether there is a correlation between the independent variables (independent), if there is a correlation between these variables it can be said that the regression model is not good. According to Ghozali (2013) multicollinearity can be seen from the *tolerance* and *inflation factor* (VIF) values . The results of the multicollinearity test are presented in the following table.

Tabel 4.3 Multicollinearity Test Results

Variable	tolerance	VIF	Keterangan
Size	0,957	1,044	Multicollinearity does not occur
I	0,946	1,057	Multicollinearity does not occur
R & D	0,984	1,016	Multicollinearity does not occur

Source: researcher data, 2020

Based on table 4.3, the multicollinearity test results can be concluded that the tolerance value for the company size variable is 0.957, the industrial type variable is 0.946, and the research and development intensity variable is 0.984. Meanwhile, the VIF value for the company size variable was 1.044, the industry type variable was 1.057, and the research and development intensity value was 1.016. The tolerance value for all variables is more than 0.1 (> 0.1) and the VIF value for all variables is less than 10 (<10), it can be concluded that the results of this test show that the analyzed data does not occur multicollinearity.

Autocorrelation Test

Autocorrelation testing aims to test whether in the linear regression model there is a correlation between the disturbing error in period t and the confounding error in period t-1 (Ghozali, 2013). The test model uses the Durbin-Watson (DW-test). The criteria for testing with the DW-test is if the DW is located between Du and 4-Du. The results of the analysis show in the following table:

Tabel 4.4 Autocorrelation Test Results

| Model	Durbin-watson	Terms	Information
1	1,993	dU<dW<4-dU	There is no autocorrelation

Source: researcher data, 2020

Based on table 4. It can be seen that the DW value is 1.993 for the dU and dL values can be seen from the DW table at a significance of 0.05 where n (amount of data) = 100 and k (number of independent variables) = 3, the dL value is 1.613 and the dU value is 1,736. The value 4 - dU is 2.007. DW values are in the dU <DW <4 - dU area so it can be concluded that the regression model is free from autocorrelation problems and is feasible to use. The results of the analysis show that the DW value must be between 1.736 (dU) and 2.007 (4 - dU), so as not to experience autocorrelation problems. The DW value is 1.993 between the dU and 4 - dU values, so there is no autocorrelation and is feasible to use.

Heteroskedasticity test
Heterocodasticity testing aims to test whether there is an inequality of *variance* in the regression capital, if heteroscedasticity occurs, the regression model can be said to be good. According to Ghozali (2013), heteroscedasticity testing can be seen from the presence or absence of a scaterrplot chart pattern between SPRESID (residual) and ZPRED (dependent variable). The following are the results of the heteroscedasticity test:

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Gambar 4.1 Graph of Heteroscedasticity Test Results
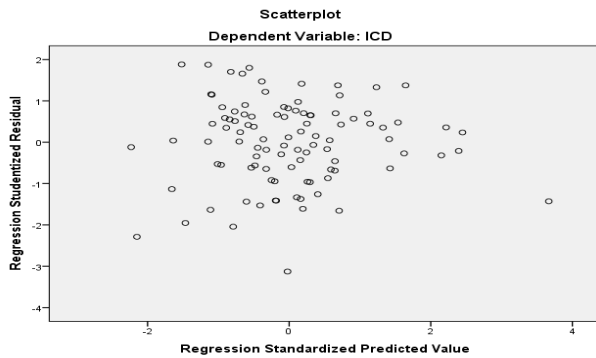
Source: researcher data, 2020

Based on Figure 4.1, the scatterplot graph of the dependent variable is disclosure of intellectual capital. The graph can be seen that the data points are spread above and below or around the number 0, the data distribution does not form a wavy wavy pattern, then narrows and widened again. It can be concluded that heeroscedasticity does not occur in the regression model, so the regression model is suitable to be used to predict the dependent variable based on the input of the independent variable.

Regression Analysis

Regression Model
Multiple regression analysis is used to test the influence of independent variables, namely company size, company type, *research and development* intensity . the dependent variable is disclosure of intellectual capital. The results of the multiple regression analysis are as follows:

Tabel 4.5 Regression Model Test Results

Variable	Koefisien regresi	Std. eror
Konstanta ($\beta 1$)	-2,296	1,565
Size ($\beta 2$)	5,445	1,173
I ($\beta 3$)	1,918	1,662
R & D ($\beta 4$)	-2,336	14,503

Source: researcher data, 2020

Based on table 4.6, the results of the regression model test with the results of the regression coefficients on each variable, these values are entered into the regression equation as follows:

ICD = -2,296 + 5,445 (SIZE) + 1,918 (IND) -2,336 (R&D)

Model Feasibility Test (F Test)
The F statistical test shows that the independent variables included in the model have an influence on the dependent variable. This test is conducted to determine the influence of the independent variables simultaneously on the dependent variable. If F count> F table then Ha is accepted and if F count <F table then Ha is rejected. The results of the feasibility test for model F are shown in the following table:

Tabel 4.6 Model Feasibility Test Results (F Test)

Model	F-hitung	F-tabel	Sig	Kriteria	Ket
1	8,722	2,700	0,00	<0,05	Model layak

Source: researcher data, 2020

Based on Table 4.7 shows that the value of F count larger than F table = 8.722> 2.700 and the significance value less than 0.05 is 0,000 so it can be concluded that H $_o$ rejected while H $_a$ accepted. The test results show that the independent variables simultaneously have a significant effect on the dependent variable.

Hypothesis Test (t test)

The t test is used to determine the effect of each independent variable on the dependent variable. Partially test, the independent variable on the dependent variable. If the significance value is smaller <0.05 and the t-value is greater> t-table, the hypothesis is accepted. The significance value (Sig)> 0.05 and the t-count value is smaller <t-table, the hypothesis is rejected.

Table 4.7 Hypothesis Test Results

Var	t-hitung	t-tabel	Sig.	Criteria	Result
Size	4,632	1,984	0,000	<0,05	H_1 accep
I	1,154	1,984	0,251	<0,05	H_1 rejec
R & D	-0,161	1,984	0,872	<0,05	H_1 rejec

Source: researcher data, 2020

The variable company size (*Size*) t count of 4.632 is greater than the t table (4.632> 1.984) and the significance value is less than 0.05, thus statistically the firm size variable affects the intellectual capital disclosure variable or $H_{1\ is}$ accepted. The industrial type variable (IND) analysis results have a t count of 1.154 smaller than t table (1.154 <1.984), and a significance value greater than 0.05, thus statistically the industry type variable has no effect on disclosure of intellectual capital or H_1 in refuse. The *research and development* (R&D) intensity variable has a t-count value of -0.161 which is smaller than the t table (-0.161 <1.984), and a significance value is greater than 0.05, so statistically the *research and development* intensity variable has no effect on intellectual capital disclosure. or $H_{1\ is}$ rejected. Test the coefficient of determination (R^2 Test)

Table 4.8 R ^{2} Test Results
Model summary[b]

Model	R	R Square	Adjusted R Square
1	,497[a]	,247	,223

Source: researcher data, 2020

Correlation analysis (R) of 0.497 shows that the correlation of SIZE (X1), IND (X2), and R&D (X3), on intellectual capital disclosure has a moderate relationship. Analysis of the value of determination (R ^{2}) of 0.247 in this study can be interpreted that the contributions

influence SIZE, IND, R & D against Pengungkapan intellectual capital is 24.7 %, while 77.7% Sisan influenced by other variables not examined in this study.

CONCLUSION

The results of this study conclude that the firm size variable affects intellectual capital disclosure. the firm size variable affects intellectual capital disclosure. This research is in line with previous research including Ming Chen (2019) with the method of multiple linear regression analysis showing that company size has a partial effect on intellectual capital disclosure. Ni Made Ari Astuti and Dewa Gede Wirama's research (2016) used multiple linear regression analysis which showed the same results. A large company size will increase the attention and pressure from stakeholders. Larger companies will budget a lot of money in disclosing a wider range of voluntary information about intellectual capital. Thus, *stakeholder* information needs will be met.

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