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The Effect of Intellectual Capital on Financial Performance Before and During The COVID-19 Pandemic

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ABSTRACT

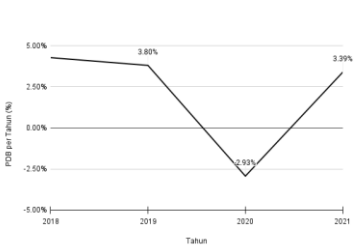
This study aims to examine the effect of intellectual capital on the financial performance of manufacturing companies in the consumer goods sector before and during the Covid-19 period being listed on the Indonesia Stock Exchange (IDX) for the 2018-2021 period. Sampling was carried out using the purposive sampling method, there were 51 companies that met the criteria, and the number of samples in the study before and during the Covid-19 period was 196 data. This study uses multiple linear regression analysis. The results showed that human capital efficiency before and during Covid-19 had a significant positive effect on financial performance, structural capital efficiency before and during Covid-19 had no effect on financial performance, and capital employed efficiency before Covid-19 had a significant effect. significantly negative and during the Covid-19 period had a significant positive effect on the financial performance of manufacturing companies in the consumer goods sector listed on the IDX for the 2018-2021 period.

Keywords: Intellectual Capital, Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), Capital Employed Efficiency (CEE), Financial Performance, Return on Asset (ROA)

1. Introduction

In late 2019, the whole world is faced with the existence of Coronavirus Disease 2019 commonly known as Covid-19. The World Health Organization (WHO), has declared a worldwide public health emergency due to the Covid-19 pandemic. In March 2020, the government set a policy to carry out activities from inside the house, and prohibited activities from gathering in accordance with PP number 21 of 2020 (Database of BPK RI Regulations, 2020). This policy has a huge impact on the Indonesian economy, until in early June 2020, the World Bank highlighted that Indonesia's economic growth is 0 percent or even minus to 3.5 percent (Aldila, 2020). This situation is because, the supply chain road is disrupted, people's purchasing power decreases and there is a lot of unemployment.

The impact of Covid-19 affected all industrial sectors can be seen from the decline in tax revenue in Indonesia by 16.8 percent, including manufacturing companies which are the largest contributors to gross domestic product (GDP) in Indonesia (Ministry of Industry, 2021). Figure 1.1 shows that GDP growth in Indonesia declined quite sharply in 2020 due to the impact of Covid-19. GDP in 2021 has improved but has not been able to return to what it was before being affected by Covid-19 in 2019.



Picture 1. GDP of Manufacturing Companies
Source: Central Bureau of Statistics (Processed Data, 2023)

In 2020, the GDP of manufacturing companies decreased by 6.7% from the previous year according to figure 1.1, this can show the performance of manufacturing companies decreased from the previous year. This significant decline in performance is the reason for researchers to research before and during the COVID-19 pandemic. This decline in performance can affect the investment decisions

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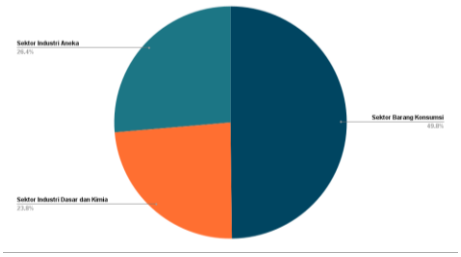
of investors, which can also have a negative influence on the company (Pradipta et al., 2020). This manufacturing company is divided into 3 main sectors, namely the basic and chemical industry sector, the miscellaneous industrial sector, and the consumer goods industry sector. In accordance with figure 1.2, it can be seen that of the 3 manufacturing industry sectors, the largest contributor to GDP is the consumption sector, this is what makes researchers choose this sector.



Picture 2. GDP in the Manufacturing Company Sector 2020 in Billion Rupiah
Source: Bank Indonesia (Processed Data, 2023)
Every effort made by the company to increase profits by utilizing the resources owned to create value is a reflection of the company's success. One of the resources that can be utilized within the company is intellectual capital. Intellectual Capital is an intangible asset consisting of all knowledge, skills, employee intelligence, systems, company regulations, and how the company is related. This situation indicates that when intellectual capital as an intangible resource is managed effectively and efficiently, it will have a great influence and can be said to be a reflection of success (Ardiansari et al., 2021). Intellectual capital can also be a competitive advantage that is needed by companies (Winarto, 2020), this is in line with the theory of Resource-based View where the assets owned by the company when managed effectively and efficiently will improve company performance.

Measurement of Intellectual capital efficiency in manufacturing companies is indispensable. This situation is because manufacturing companies are labor-intensive companies or rely more on human abilities than machines, with low employee skills that make it difficult for manufacturing companies to improve technology to make efficiency (Subagyo &; Waluyo, 2020). This technological improvement not only requires adequate human capital but also requires large funds, so that by measuring the efficiency of intellectual capital, companies can find out investments that suit the company's needs. In line with the above explanation here is the hypothesis developed:

H_{1a} : HCE had a significant positive effect on the company's financial performance before the COVID-19 pandemic
H_{1b} : HCE has a significant positive effect on the company's financial performance during the COVID-19 pandemic

HCE has a positive influence on financial performance with ROA indicators in accordance with the results of research before the Covid-19 pandemic Subagyo &; Waluyo (2020), Mollah &; Rouf (2023), Olarewaju &; Msomi (2021), Adriel (2021), Soewarno &; Tjahjadi (2020). According to research by Soewarno & Tjahjadi (2020), with more efficient human capital, it will reduce operational costs so that company profits can increase. In line with Subagyo & Waluyo's (2020) research, HCE has a significant positive influence because manufacturing companies require human capital as the company's main capital in operational activities.

During the Covid-19 period according to the research of Xu, et al,. (2022) and Frikatiani et al., (2022) that HCE has a positive influence on financial performance. This positive influence shows that with the increase in company investment in human capital, financial performance as measured by ROA will also increase during the Covid-19 pandemic. During the Covid-19 pandemic, companies cannot operate optimally due to restrictions on activities outside the home, but companies will still need human capital in managing their companies so that even in unexpected circumstances human capital still needs to be improved, according to the results of Tran & Vo's (2020) research, that human capital is the most important component.

H_{2a} : SCE had a significant positive effect on the company's financial performance before the COVID-19 pandemic
H_{2b} : SCE had a significant negative impact on the company's financial performance during the COVID-19 pandemic

In line with the results of research by Olarewaju &; Msomi (2021), Aprilyani et al,. (2020), Soewarno & Tjahjadi (2020) conducted before the pandemic that SCE had a positive effect on the company's financial performance with ROA indicators. According to the results of Olarewaju & Msomi's (2021) research, companies that increase their investment in company systems and structures can improve company performance to the maximum and generate higher profits. In line with the research of Aprilyani et al,. (2020), companies that have good structural capital, will help companies to develop better according to future needs.

During the Covid-19 period in line with Xu et al.'s (2022) research that SCE has a negative influence on the company's financial performance, this result is different from before Covid-19. During the Covid-19 period, the company could not operate optimally due to restrictions on activities outside the home, so the company's system could not be used optimally and could not improve the company's operations. During Covid-19, companies were unable to manage structural capital well to generate profits, but instead increased expenses (Xu et al., 2022).
H_{3a} : CEE had a significant positive effect on the company's financial performance before the Covid-19 pandemic

H_{3b} : CEE has a significant positive effect on the company's financial performance during the Covid-19 pandemic

In accordance with the results of research by Subagyo &; Waluyo (2020), Mollah &; Rouf (2023), Aprilyani et al,. (2020), Adriel, (2021), Soewarno &; Tjahjadi (2020) that CEE had a positive influence on the company's financial performance before the Covid-19 pandemic. According to research by Subagyo &; Waluyo (2020), CEE is the most influential variable than the other two variables in improving the company's financial performance, because with good physical capital, it will facilitate human capital in working in labor-intensive manufacturing companies. In line with the results of Adriel's research, (2021), with good physical capital, companies can create competitive advantages, for example by increasing the company's physical capital which is used to increase company productivity and will increase revenue.

During the Covid-19 period, research by Frikatiani et al., (2022), shows that CEE has a positive influence during the COVID-19 pandemic, so that when companies increase investment in the capital used, the company's financial performance can increase. During the Covid-19 period, the company could not operate optimally due to a ban on carrying out activities outside the home in accordance with PP number 21 of 2020. The company cannot operate if it does not use its tangible assets in its management, so it can be concluded that although this capital cannot be used optimally, but the company still needs its tangible assets in operating and improving the company's financial performance, therefore the capital used has a positive effect on the company's financial performance. A positive influence shows that with the increase in the company's investment in the capital used, the financial performance measured by ROA will also increase.

2. Method

Population and Samples

The population used is manufacturing companies with a consumer goods sector listed on the Indonesia Stock Exchange, and 51 companies are taken. This sampling method is by purposive sampling, namely by setting several criteria for research samples. The criteria used for sampling are:

1. Manufacturing companies in the Consumer Goods sector listed on the IDX in 2018-2021
2. Manufacturing companies in the Consumer Goods sector that did not delist and were not suspended by the IDX in 2018-2021
3. Published financial statements for the 2018-2021 period.

The data obtained after applying this criterion with a period of 4 years is 196 data. This research consists of descriptive statistic, coefficient of determination, regresion model, and T test

Independent variable

This study uses independent Intellectual Capital variables which are measured by human capital (HCE), structural capital (SCE), and employed capital (CEE) formulations are as follows:

a) Human Capital (HCE) An approach used to measure the efficiency of human capital within a company (Florence, 2022), with the formula:

$$HCE = \frac{\text{Human Capital}}{\text{Value Added}}$$

Description: Value Added: Revenue - expenses Human Capital: Total salaries and wages of employees

b) Structural Capital (SCE) The approach used to measure the efficiency of structural capital within the company includes the company's systems and databases (Olarewaju &; Msomi, 2021), with the formula:

$$SCE = \frac{\text{Structural Capital}}{\text{Value Added}}$$

Description: Value Added: Revenue - expenses Structural Capital: Value Added - Human Capital

c) Employed Capital (CEE)
The approach used to measure the efficiency of capital used by companies in production and business activities to create value (Nguyen &; Doan, 2020), with the formula:

$$CEE = \frac{\text{Value Added}}{\text{Capital Employed}}$$

Description: Value Added: Revenue - expenses Capital Employed: Total Equity

Dependent Variable

The dependent variable of this study is financial performance and use ROA with formulations are as follows:

a) Return on Aset

The profitability ratio used to be able to see the efficiency of the company in using its assets to generate company profits (Fitriana, 2022), with the formula:

$$ROA = \frac{\text{Net Profit}}{\text{Total Aset}}$$

3. Results

Descriptive Statistic

Table 3 Descriptive Statistical Results Before the Covid-19Pandemic

Variabel	Obs	*Mean*	Std. Dev	Min	Max
HCE	96	-0,47902	2,138141	-11,67072	2,54571
SCE	96	1,74824	15,24406	-40,87778	140,745
CEE	96	-0,18142	1,13532	-7,81926	0,87082
ROA	96	0,06133	0,08127	-0,159771	0,301714

Source: STATA results (processed by researchers, 2023)

Table 4 Descriptive Statistical Results During the Covid-19Pandemic

Variabel	Obs	*Mean*	Std. Dev	Min	Max
HCE	100	-1,67301	6,708924	-45,875	2,18394
SCE	100	0,20906	8,920409	-74,20167	27,35114
CEE	100	-0,22835	1,416375	-10,17325	1,33637
ROA	100	0,056984	0,1014849	0,1993	0,347880

Source: STATA results (processed by researchers, 2023)

Based on table 3, it is known that the minimum value of Human Capital Efficiency before the Covid-19 period is -11.67072 and the maximum value is 2.54571. The mean is -0.47902 and the standard deviation is 2.12814. The minimum value of Structural Capital Efficiency before the Covid-19 period is -40.87778 and the maximum value is 140.745. The mean is 1.748246 and the standard deviation is 15.24406. The minimum value of Capital Employed Efficiency before the Covid-19 period is -7.81926 and the maximum value is 0.87082. The mean is -0.18142 and the standard deviation is 1.13532.

Based on table 4, it is known that the minimum value of Human Capital Efficiency during the Covid-19 period is -45.875 and the maximum value is 2.18394. The mean is -1.67301 and the standard deviation is 6.70893. The minimum value of Structural Capital Efficiency during Covid-19 is -74.20167 and the maximum value is 27.35114. The mean is 0.20906 and the standard deviation is 8.92041. the minimum value of Capital Employed Efficiency during Covid-19 is -10.17325 and the maximum value is 1.33634. The mean is -0.22835 and the standard deviation is 1.416375.

Coefficient of Determination

The Coefficient of Determination is used to determine the influence of the independent variable on the dependent variable in this study. Here are the results of the Coefficient of Determination:

Table 1 Coefficient of determination before Covid-19

Keterangan	Koefisien Determinasi R^2
Return on Asset	0,2910

Table 2 Coefficient of determination during Covid-19

Keterangan	Koefisien Determinasi R^2
Return on Asset	0,1374

Sumber: Hasil olah STATA (diolah peneliti, 2023)

Based on table 1, it shows the value of the coefficient of determination (R2) before Covid-19 of 0.2910 or 29.1%. This means that the dependent variables before Covid-19 used in this study, namely human capital efficiency, structural capital efficiency, capital employed efficiency, can explain the dependent variable, namely Return on Assets of 29.1%, while 30.9% of the dependent variable is explained by independent variables that were not studied in this study.

Based on table 2, it shows the value of the coefficient of determination (R2) during Covid-19 of 0.1374 or 13.7%. This means that the dependent variables during the Covid-19 period used in this study, namely human capital efficiency, structural capital efficiency, capital employed efficiency, can explain the dependent variable, namely Return on Assets of 13.7%, while 86.3% of the dependent variable is explained by independent variables that were not studied in this study. This result shows that during the Covid-19 period, the influence of other independent variables on Return on Assets increased.

Regression Model

This multiple linear regression method is used for research that uses more than 1 independent or dependent variable (Ridwan &; Noviyanti, 2022). Regression models used in the study are as follows:

ROABeforeCovid-19 = α + β_1 HCE + β_2 SCE + β_3 CEE + e
ROADuringCovid-19 = α + β_1 HCE + β_2 SCE + β_3 CEE + e

Based on the results of the data processing carried out, multiple regression equations were obtained for before and during Covid-19 as follows:
ROABeforeCovid-19 = 0,070992 + 0,036816HCE - 0,0000803SCE - 0,0447216 CEE + e

ROADuringCovid-19= 0,0032503 + 0,0012869HCE + 0,0188059SCE + 0,0664476CEE + e

T-Test

Table 5 Regression Models Before Covid-19

	Coef	t hitung	t tabel	P>|t|	Keterangan
HCE	0,036817	6,09	1,66159	0,000	Signifikan
SCE	-0,0000803	-0,17	1,66159	0,862	Tidak Signifikan
CEE	-0,0447216	-3,93	1,66159	0,000	Signifikan
_cons	0,070992	0,85	1,66159	0,000	

Source: STATA results (processed by researchers, 2023)

Table 6 Regression Model During Covid-19

	Coef	t hitung	t tabel	P>|t|	Keterangan
HCE	0,0012869	2,15	1,66088	0,034	Signifikan
SCE	0,0188059	1,21	1,66088	0,229	Tidak Signifikan
CEE	0,0664476	2,63	1,66088	0,010	Signifikan
_cons	0,0032503	6,82	1,66088	0,000	

Source: STATA results (processed by researchers, 2023)

Table 5 shows the calculated t value and t table of the human capital efficiency variable before Covid-19 against ROA of 6.09 > 1.66159 where the t-count result is greater than the t-table. The result of the regression coefficient is 0.036817, and the significance value obtained is 0.000 < 0.05 so that it shows that this variable has a significant influence, Hypothesis 1a is accepted. The results of this study are in accordance with the theory of Resources-Based theory, where intangible assets can create competitive advantage and improve business performance if managed effectively. But on the contrary, these resources can jeopardize the survival of the company if not managed effectively. This result is in line with several previous studies that showed similar results, namely research conducted by Subagyo &; Waluyo (2020), Mollah &; Rouf (2023), Olarewaju &; Msomi (2021), Adriel (2021), Soewarno & Tjahjadi (2020).

Table 6 shows the calculated t value and t table of the human capital efficiency variable during the Covid-19 period against ROA of 2.15 > 1.66088 where the t-count result is greater than the t-table. The result of the regression coefficient is 0.0032503, and the significance value obtained is 0.034 < 0.05 thus showing that this variable has a significant influence, Hypothesis 1b is accepted. The results of this study are in accordance with the theory of Resources-Based theory, where intangible assets can create competitive advantages and improve business performance if managed effectively even in unexpected circumstances, namely Covid-19. But on the contrary, these resources can jeopardize the survival of the company if not managed effectively. These results are in line with the results of Xu, et al,'s research. (2022) and Frikatiani et al., (2022).

Table 5 shows the calculated t and t values of the structural capital efficiency variable table before Covid-19 against ROA of -0.17 < 1.66159 where the t-count result is smaller than the t-table. The result of the regression coefficient is -.0000803, and the significance value obtained is 0.862 > 0.05 thus indicating that this variable has no effect, Hypothesis 2a is rejected, because SCE has no effect on ROA. The results of this study are not in accordance with the Resources-Based theory, where intangible assets should be able to improve company performance. This result is not in line with the research of Olarewaju &; Msomi (2021), Aprilyani et al,. (2020), Soewarno &; Tjahjadi (2020) but in line with the research of Mollah and Rouf (2023) & Subagyo &; Waluyo (2020).

Table 6 shows the calculated t and t values of the structural capital efficiency variable table during the Covid-19 period against ROA of 1.21 < 1.66088 where the t-count results are smaller than the t-table. The result of the regression coefficient is 0.0012869, and the significance value obtained is 0.229 > 0.05 thus indicating that this variable has no effect, Hypothesis 2b is rejected. The results of this study are not in accordance with the Resources-Based theory, where intangible assets should be able to improve company performance. This result is not in line with the research of Xu et al., (2022) but in line with the research of Frikatiani et al., (2022).

Table 5 shows the calculated t and t values of the capital employed efficiency variable table before Covid-19 against ROA of 3.93 > 1.66159 where the t-count result is greater than the t-table. The result of the regression coefficient is -.0447216, and the significance value obtained is 0.000 < 0.05 thus showing that this variable has a significant influence, Hypothesis 3a is rejected because, CEE has a significant negative influence on ROA. The results of this study are in accordance with the theory of Resources-Based theory, where intangible assets should be able to improve company performance, but when not processed efficiently, this will harm the company. This result is not in line with the research of Subagyo &; Waluyo (2020), Mollah & Rouf (2023), Aprilyani et al,. (2020), Adriel, (2021), Soewarno &; Tjahjadi (2020) but in line with Olarewaju and Msomi's (2021) research.

Table 6 shows the calculated t value and t table of capital employed efficiency during the Covid-19 period against ROA of 2.63 > 1.66088 where the t-count result is greater than the t-table. The result of the regression coefficient is 0.0188059, and the significance value obtained is 0.010 < 0.05 thus indicating that this variable has a significant influence, Hypothesis 3b is accepted. The results of this study are in accordance with the theory of Resources-Based theory, where intangible assets can create competitive advantages and improve business performance if managed effectively even in unexpected circumstances, namely Covid-19. These results are in line with the research of Frikatiani et al., (2022).

5. Discussion & Conclusion

Manufacturing companies in the consumer goods sector before the Covid-19 period, could work normally, that is, their human capital could work optimally in the factory, in accordance with the initial provisions. Increasing human competence within the company is one way companies face the rapid development of trends (Tran &; Vo, 2020). According to Soewarno & Tjahjadi (2020), more effective human resources reduce operating costs, allowing companies to increase profits. According to research by Subagyo & Waluyo (2020), HCE has a significant positive effect because manufacturing companies do need human capital as the company's main capital for their operational activities. However, according to the results of the research, manufacturing companies in the consumer goods sector are considered to have failed in using the company's structural capital because they cannot create added value, and the results of this

analysis imply that manufacturing companies in the consumer goods sector are inefficient.

During the Covid-19 pandemic, restrictions on activities outside the home made businesses unable to operate optimally, including manufacturing companies in the consumer goods sector whose operational activities had to be disrupted. The company's operational activities are disrupted because they cannot work as before the Covid-19 pandemic and carry out work from home activities in accordance with PP number 21 of 2020 (BPK RI Regulation Database, 2020), this will hamper the performance of human capital in the company but businesses still need human capital to run and innovate with their business. This shows that human resources still need to be improved even under unforeseen circumstances. According to the results of a study by Tran & Vo (2020), Human resources are the most important component in the company and according to Subagyo & Waluyo's (2020) research, manufacturing companies are very dependent on their human capital. During Covid-19, the company managed to use this capital more efficiently than ever before. However, according to the results of research by manufacturing companies, the consumer goods sector is considered to have failed in using the company's structural capital because it cannot create added value.

Based on the conclusions above, it is expected for investors to increase intellectual capital as one of the factors considered before making investment decisions. It is expected that the management of manufacturing companies in the consumer goods sector is expected to be able to improve the management of intangible assets, namely intellectual capital within the company so as to improve performance within the company. It is expected that researchers can then use other sectors in manufacturing companies to see the influence of intellectual capital specifically in each sector of manufacturing companies.

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