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The Impact of Intellectual Capital and Managerial Ability on The Financial Performance: An Analysis on Infrastructure, Utilities and Transportation Companies in Indonesia

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ABSTRACT

Intellectual capital is an intangible asset that is strategically owned by a firm in the expansion of a knowledge-based economy. Intangible assets require a favorable disclosure to afford value to the firm financial performance. This research aims to analyze the effect of the added value of intellectual capital, intellectual capital disclosure (ICD), and managerial ability on the firm financial performance. This research uses data from infrastructure companies, utilities, and transportation in Indonesia for the 2017-2020 period. The number of samples used in the research were 30 firms per year, so the total obtained 120 samples of the firm. The data was processed using the Stata 16 version application. The research results showed, that the variables researched such as the added value of intellectual capital (M-VAIC), IC disclosure (Intellectual Capital Disclosure-ICD) and managerial ability (MA) insignificantly affect the financial performance that measured with ROA, ROE, net profit margin-NPM, tobinsQ, and firm return.

Keywords:
Intangible asset, Intellectual capital, Capital disclosure, Managerial ability, Value creation

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1. Introduction

Intellectual capital (IC) plays an important role in the modern approach to value creation. Intellectual capital management has become the core of company operations in the current knowledge era (Fernandez-Vidal et al., 2022; Imran & Atiya, 2020; Nicolás-Agustín et al., 2022; Salehi et al., 2022; Weqar & Haque, 2020). Various studies on companies to achieve competitive advantage (Kasoga, 2020; Kianto et al., 2020; Olarewaju & Msomi, 2021; Wendra et al., 2019; X. Xu & Liu, 2019), knowledge in the form of Research and Development is a source of company innovation (Dabić et al., 2019). To survive and thrive, business companies need strategic assets that cannot be imitated by competitors.

IC as a driver of corporate value that transforms production resources into assets with increasing value (Cui & Jin, 2020; Falson, 2019). IC as the collective brain power of a company (J. Xu & Liu, 2020), which is expressed in the sum of everything that is known by everyone in a company to provide a competitive advantage. According to this definition, IC includes various forms of knowledge (Frondizi et al., 2019; Rossi et al., 2020), important information (Kuś & Pypłacz, 2019;

Terán-Bustamante et al., 2021), intellectual property, and experience. One of the interesting definitions of IC is that IC is corporate knowledge that has the potential to be converted into real benefits. It views the effect of IC on firm performance as a potential, depending on the manager's ability to see this potential(Heubeck & Meckl, 2022a, 2022b).

This was also reinforced by the holding of the United Nation Conference on Human Environment in Stockholm in 1972, related to the issue of sustainability for development (Bocken & Geradts, 2020; Stachová et al., 2019; Ying et al., 2019), especially transportation infrastructure which has become a global issue. The development of transportation infrastructure has become a stimulant for accelerating regional and economic development. The challenge is that it is necessary to assess the feasibility of infrastructure projects by prioritizing sustainability parameters, namely feasibility in the social, economic and environmental as well as technical fields. The company's ability to continue the business in a sustainable manner as measured by the company's performance every year (Ashari et al., 2018; Ewertowski, 2022; Siagian et al., 2020), requires the company's perspective in managing resources and carrying out various innovations to improve company performance. Each company has internal capabilities which refer to the skills to turn inputs into outputs to achieve positive performance. Companies need to take advantage of new sources of innovation, access fresh ideas from employees, customers, investors and partners, which, in turn, will require structural support from corporate organizations.

Improved company performance is defined as accounting-based performance (PeiZhi & Ramzan, 2020; Rahman et al., 2020; Wang et al., 2019) and market-based performance (Aslam et al., 2019; Elnahass et al., 2021). Accounting-based performance is a performance analysis using data based on data in the company's annual financial report. While market-based performance is a performance analysis that has been combined with investor assessments by combining the company's share value in the company's performance analysis. Performance appraisal will provide a comprehensive basis for evaluating the full impact of managerial decision making. Creating innovation and value from external resources needs to maximize company capacity. Internal capability factors that are often cited and become critical determinants are people, technology and knowledge. This innovation capability is considered as a result of the intellectual capital developed and acquired by the organization.

Intellectual capital (IC) is generally a set of knowledge that can be converted into corporate value. Intellectual capital is a dynamically connected set of external (brand, reputation, and so on) and internal (skills, competencies, etc.) intangible assets that enable companies to change tangible, financial, and human resources into a value creation system. Meanwhile (Rajabalizadeh & Oradi, 2022) reveals that IC plays an important role in increasing the efficiency of capital and labor markets and increasing organizational performance and wealth. Based on this concept, IC is expressed through people, organizational structure, intellectual assets and intellectual property, and considers intellectual capital as an asset (Vo & Tran, 2021). Intellectual capital is not shown on traditional balance sheets as a monetary or physical asset, so intellectual capital is not easily identified, captured and reported in financial reports. Academic studies often divide intellectual capital into two to four dimensions of intangible assets.

Based on research results, over the past 20 years, there has been a significant increase in corporate disclosure studies (Albertini et al., 2021; Fontana et al., 2019). This is a normal consequence of the need for stakeholders to obtain more information regarding company assets, especially intangible assets. When the IC reporting system is well integrated, investors (individuals) can make better decisions about investments (Rajabalizadeh & Oradi, 2022). Disclosure of IC can be in the form of research and development (R&D), human resources, employee training, relations with external parties, information systems, company performance, databases, employee capabilities and other intangible assets. One of the instruments used to inform the IC owned by a company is through an annual report. Good IC disclosure can improve company performance (Hatane et al., 2023). IC is divided into the following three categories: human capital (HC), structural capital (SC) and relational capital (RC) (Mardini & Lahyani, 2022). All IC categories can be disclosed in a well-integrated manner, companies will gain a competitive advantage amidst today's global competition. The three IC components can be integrated into a report that documents several non-financial aspects that are important for corporate responsibility and sustainability.

Several studies compared the levels of disclosure of human capital (HCD), disclosure of structural capital (SCD) and disclosure of relational capital (RCD) and found mixed results. Research by (Rajabalizadeh & Oradi, 2022) in Greece, revealed the most information related to RC. Meanwhile research from found that RC was the most common disclosure, followed by HC and SC.

Another study found that SC-related information received the most disclosure, followed by RC and HC (Mardini & Lahyani, 2022).

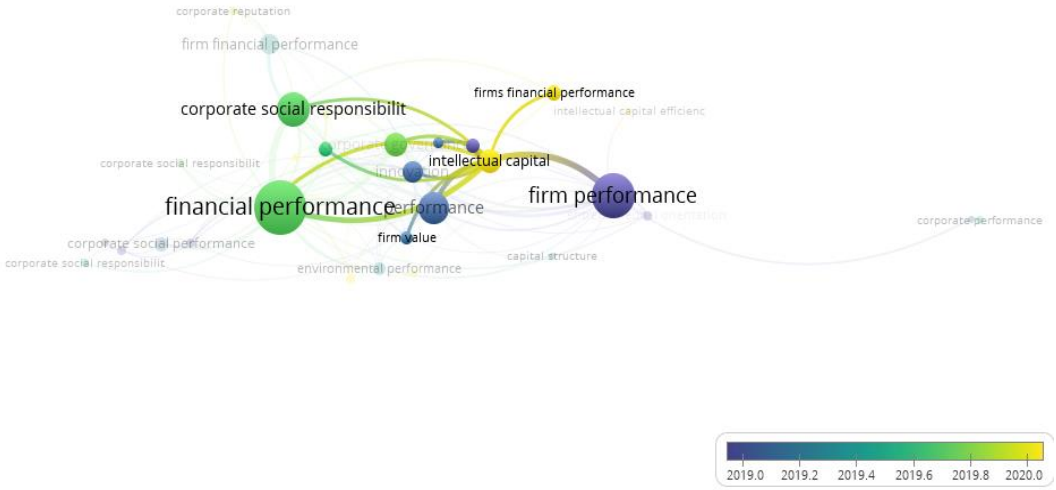
Based on stakeholder theory, disclosure of intellectual capital can reduce information asymmetry and promote stakeholder rights. Larger companies have more stakeholders so they will receive more requests to disclose information to meet their respective interests. Besides that, the complexity of large companies causes a gap between managers (agents) and stakeholders (principals), increasing agency costs. To reduce agency costs, companies will disclose more information (Chowdhury et al., 2019; Fontana et al., 2019). When companies disclose IC information, the ability of stakeholders to evaluate the company's capacity in terms of long-term value creation will increase. The ability of top managers in IC disclosure illustrates managerial ability (Managerial Ability-MA) in increasing the efficiency and relative capacity of managers to convert resources into revenue for the company (Rajabalizadeh & Oradi, 2022).

Managerial ability is defined as the ability to run the company efficiently and effectively to achieve company goals. A manager will need less ability when he has good resources, easily accessible in the right way. Investors measure the ability of managers who have competitiveness, namely managers who are able to produce company efficiency. Total firm efficiency is influenced by managers, who are able to varying degrees, predict future demand and understand industry and firm trends, because (for example) managers in larger firms can negotiate higher terms. good. Total efficiency between firms and managers, as well as verifying that the components associated with managers are associated with various characteristics, including managerial pay and price reactions to management's departure from the firm. MA as an important managerial characteristic comes largely from managers' knowledge of markets, company plans and technology (Rajabalizadeh & Oradi, 2022). Proficient managers are better at understanding technology and market dynamics, forecasting product markets accurately, investing in high-profit projects, and managing employees compared to their peers. Highly skilled managers can obtain more accurate information about investment opportunities, enabling them to make investments based on available information. When using monetary-based models, most researchers agree that measuring intellectual capital is related to measuring human capital, structural capital and the efficiency of capital used (Chowdhury et al., 2019; Soewarno & Tjahjadi, 2020). Experts have proven that intellectual capital plays an important role in improving company performance. By managing intellectual capital well, the management of a company will be able to improve financial performance (Soewarno & Tjahjadi, 2020).

The measurement of IC has been identified by several models since the 1950s, which consist of human capital, structural capital and employed capital. However, in the late 1990s, (Pulic, 1998) developed the VAIC model. The VAIC model is a model for calculating the coefficients by taking into account various components of intellectual capital which reveal the value of the company and measure the intellectual potential of the company. Various studies evaluating IC are still under debate. As revealed by (Gupta & Raman, 2020) states that IC is an infrastructure asset, human-centred assets, intellectual property assets, and market assets, while several other researchers reveal IC is broken down into internal capital, external capital and human capital (Sveby, 1997). IC categorization has a significant impact on company performance.

Pulic (1998) created a methodology, which is widely used, to measure efficiency related to elements of intellectual capital and financial capital, with reference to the concept of added value. This measurement has become known as the added value of the intellectual coefficient (VAIC). The main objective of Pulic's model is to create performance measures for knowledge-based organizations. He sees that knowledge investment has become one of the most important investments to create a competitive advantage for companies. Then research developed on measuring the Intellectual Value-Added coefficient (VAIC™) which was put forward in the study (Gupta & Raman, 2021). This measurement is one of the most significant contributions to assess IC based on added value. This model calculates the efficiency of Intellectual Capital Efficiency (ICE). ICE consists of Human Capital Efficiency (HCE) and Structural Capital Efficiency (SCE).

The efficiency of R&D investment determines the innovative capacity of a company to become innovation capital. R&D investment is the main source of innovation as the ability to build on previous knowledge and generate new knowledge and protective capital as legally protected rights regarding the ownership of certain intellectual assets, such as patents, copyrights, trademarks and trade secrets (Soewarno & Tjahjadi, 2020).



Gambar 1. Visualisasi penelitian kinerja keuangan perusahaan dan IC

In various studies on improving company performance, IC is a concept that is still widely researched. Based on a collection of literature collected from 2019 to 2022, using the Harzing's Publish or Perish application with a Scopus search, using the keywords: firm performance, corporate financial performance, intellectual capital, financial firm performance, financial performance sustainability, 1,000 articles were obtained. Using the VOS viewer application, it can be seen that the discussion of intellectual capital to create a company's financial performance has not been studied much, and there are still many opportunities to discuss this concept.

Based on this phenomenon, current study is interested conducting research related to the performance of companies in the infrastructure, utility and transportation industries in Indonesia. This industry is an industry that is the focus of the Indonesian government in triggering the acceleration of regional development and the Indonesian economy as a whole. It is hoped that this research will contribute practically to increasing the knowledge needed in industries that require continuous innovation. The conceptual research framework can be formulated as shown in Figure 2

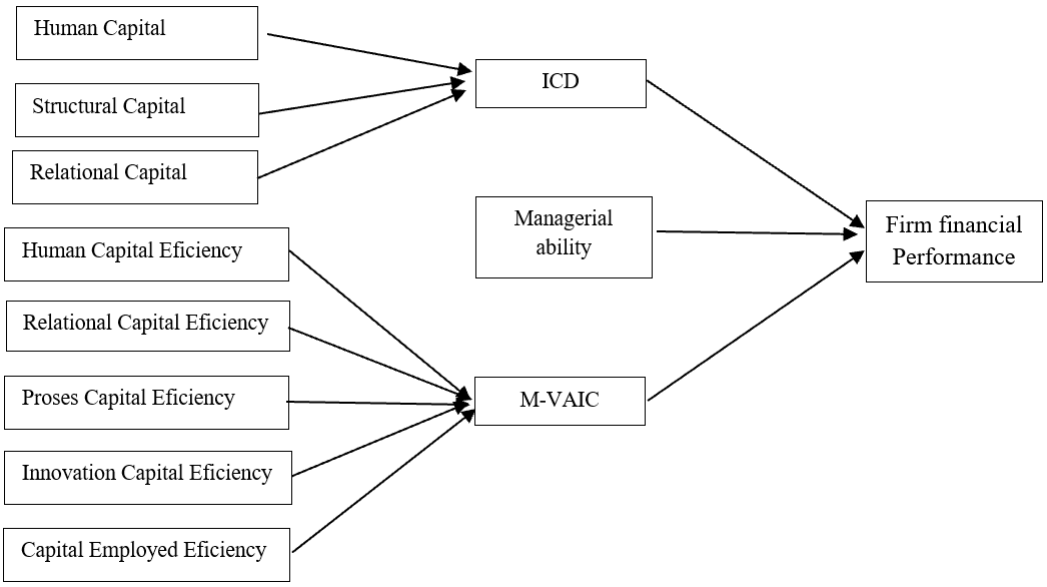


Figure 2. Conceptual Framework

2. Methods

This study aims to produce a model to determine the financial performance of companies that are influenced by the concept of intellectual capital and managerial ability in the infrastructure, utility and transportation industries in Indonesia. This type of research uses a quantitative approach. A quantitative approach is based on the philosophy of positivism which is used to research certain populations and samples, data collection uses instruments and data analysis is statistical (Syihab et al., 2022). This study uses Indonesian research objects with time series data from 2017 to 2020 using panel data. This research includes 2020, even though there is a pandemic, because this research looks at intellectual capital policies and the ability of managers to maintain company performance.

The samples used are all companies belonging to the infrastructure, utilities and transportation industries, which are classified in the energy sector (7 companies), toll roads, airports, harbors and other products (6 companies), telecommunications (6 companies), transportation (42 companies) and non building construction (13 companies) so that the total sample to be used is 74 companies. Companies that will be included in the sample are companies that have sufficient data to process. The data collection method used in this research is the documentation method. The documentation method is looking for data about things or variables in the form of notes, books, data and so on.

Tabel 1. List of Research Samples

Sampling criteria	Number of companies
Companies belonging to the infrastructure, utilities and transportation sectors	74
Companies listing after 2017	(12)
Incomplete company data to process	(32)
Final sample	30

Source: Processed for this paper (2022)

Operational Definition and Variable Measurement

The operational definition of a variable is the drawing of boundaries that better explain the more substantive specific characteristics of a concept. The operational definition used in this study is

1. Dependent Variables are variables that are affected or become a result because of the independent (free) variables. The dependent variable used in this study is the company's financial performance as measured by accounting-based financial performance (ROA, ROE, NPM ratios) and market-based ratios as measured by stock returns.
2. Independent variables or independent variables are variables that affect something that is the cause of the change or the emergence of the dependent (bound) variable. The independent variables used in this study are:
   a. Disclosure of Intellectual Capital is measured using 71 disclosure items according to (Hatane, Tarigan, et al., 2021) consisting of 30 items in HC, 22 items in SC and 19 items in RC.
   b. Measure the value of Intellectual Capital by following the steps according to calculating the VAICE coefficient (Zéghal & Maaloul, 2010) where VA = OUT – IN. The measurement of the added value coefficient of Intellectual Capital refers to 5 types of components, namely Human Capital Efficiency, Relational Capital Efficiency, Process Capital Efficiency, Innovation Capital Eficiency and Capital Employed Efficiency.
   c. Managerial ability shows the ability of managers to create efficiency in company operations.

$$Firm\ Efficiency = \frac{Sales}{CoGS + SG\&A + PPE + OpsLease + R\&D + Goodwill + OtherIntan}$$

3. Control variables. In this study, researchers used company size as a control variable to see the implementation of intellectual capital and managerial abilities on company performance.

Company size is measured by the natural logarithm of total assets.

It has been argued that the variable firm size tends to have a positive correlation with firm performance. Large companies tend to have better opportunities than small companies in terms of accessing external funds at low cost and increasing company value, due to the size of the company itself.

The data analysis technique uses the econometric analysis method that will be used in this study is the panel data regression model which is a combination of time series data and cross section data. There are several advantages to using panel data. First, panel data which is a combination of two data, namely time series and cross section, is able to provide more data so that it will produce a greater degree of freedom. Second, combining information from time series and cross section data can overcome problems that arise when there are omitted-variable problems.

Before interpreting the regression results from the model to be used, a classical assumption is first tested. This is done to find out whether the model can be considered relevant or not. Tests carried out included tests on heteroscedasticity, autocorrelation, and muticolinarity symptoms. In addition, statistical tests were also carried out which included individual parameter significance tests (t statistical test), simultaneous significance (F statistical test), and coefficient of determination test (R2).

The data that has been collected was analyzed using a statistical analysis tool, namely multiple linear regression analysis (multiple regression analysis). The hypothesis in this study uses the regression equation, namely:

$$Financial\ Performance_{i,t} = \alpha + \beta_1 ICD_{i,t} + \beta_2 MA_{i,t} + \beta_3 VAIC_{i,t} + \beta_4 SIZE_{i,t} + \varepsilon$$

Hypothesis testing includes the coefficient of determination, F value, t value. Data processing uses the application Stata for Windows version 16. The regression model is declared to fulfill the goodness of fit if the R-square value is relatively high and the Fcount value is statistically significant at the 5 percent level (sig <0.05).

3. Results

Table 2. Descriptive Data

Variable	Obs	Mean	Std.Dev	Min	Max
rt	120	.993129	.5332788	-.6489583	3.378378
profitmargin	120	.1098096	.4548722	-1.71	3.687536
roe	120	.0172292	1.308347	-13.836	1.944769
roa	120	.0663019	.1446098	-.453	.5884746
managerial~y	120	.8432728	2.963143	9.72e-08	31.02525
mvaic	120	418.1947	3926.476	.735293	42915.46
icd	120	.2617371	.0707316	.1267606	.4507042

The aim of the study is to examine managerial ability, intellectual capital disclosure and intellectual capital efficiency variables as measured by M-VAIC on financial performance as measured by three measurements, namely ROA, ROE and stock returns. Table 2, shows the descriptive data of the results. Before testing the hypothesis, the research model must be ascertained in advance, the model used in the study, namely the fixed effect or random effect. The research model must meet the classical assumption test. The first thing to do is multicollinearity testing, which is a test to ascertain whether or not there is intercorrelation or collinearity in the regression model between independent variables. For this reason, it is necessary to look at the correlation between the independent variables first. Correlation results between independent variables.

Table 3. Hausman test

	Coefficients			
	(b) fixed	(B) random	(b-B) Difference	Sqrt (diag (V_{b-V}_B)) S.E.
managerial~*y*	.0022409	.0022599	-.000019	.0004766
mvaic	6.78e-08	6.94e-08	-1.65e-09	3.27e-07
icd	-.0037902	.2381039	-.2418941	.0988144

The results of the hausman test show a probability result of 0.0496, smaller than 0.05, this means that the current model is included in the fixed effect model. So, the model is valid to be used for the rest of the regression test.

Hypothesis 1, testing the effect of managerial ability (MA), intellectual capital disclosure (ICD) and Intellectual capital efficiency measured by M-VAIC on financial performance measured by ROA. The results will be presented in table 6.

Table 6. Hypothesis testing 1

roa	Coef.	Std. Err.	t	P > | t |	[95% Conf.	Interval]
managerial~*y*	.0022409	.0031309	0.72	0.476	-.003982	.0084638
mvaic	6.78e-08	2.33e-06	0.03	0.977	-4.57e-06	4.70e-06
icd	-.0037902	.2073731	-0.02	0.985	-.4159667	.4083863
_cons	.0653759	.0547605	1.19	0.236	-.0434666	.1742184
Sigma_u	.12529493					
Sigma_e	.08677595					
rho	.67583182					

variable	fe
managerial~*y*	.00224089
mvaic	6.779e-08
icd	-.00379019
_cons	.06537589
n	
r2	.00588339
r2_a	-.35976869

Based on the results of data processing in table 6, the results show that the probability values of the three variables of MA, M-VAIC and ICD is above 0.05. This results in the effect of the variables MA, M-VAIC and ICD on ROA does not show significant results individually. This value variation only contributes in predictions to the ROA variation, only 0.0058 (0.58%).

Hypothesis 2, testing the effect of managerial ability (MA), intellectual capital disclosure (ICD) and Intellectual capital efficiency as measured by M-VAIC on financial performance as measured by ROE.

Table 7. Hypothesis testing 2

roe	Coef.	Std. Err.	t	P > | t |	[95% Conf.	Interval]
managerial~*y*	-.0015076	.0479364	-0.03	0.975	-.0967864	.0937712
mvaic	4.44e-06	.0000357	0.12	0.901	-.0000665	.0000754
icd	5.876613	3.17508	1.85	0.068	-.4342029	12.18743
_cons	-1.521484	.838436	-1.81	0.073	-3.187966	.144998
Sigma_u	.68472892					
Sigma_e	1.3286225					
rho	.20986325					

variable	fe
managerial~*y*	.00224089
mvaic	6.779e-08
icd	-.00379019
_cons	.06537589
n	
r2	.00588339
r2_a	-.35976869

Based on the results of data processing in table 7, it can be seen that the probability values of the three variables MA, M-VAIC and ICD are above 0.05. This indicates that the effect of MA, M-VAIC and ICD variables on ROE does not provide individually significant results. This value variation only contributes in predictions to the ROE variation, only 0.038 (3.80%).

Hypothesis 3, testing the effect of managerial ability (MA), intellectual capital disclosure (ICD) and Intellectual capital efficiency measured by M-VAIC on financial performance measured by profit margin.

Table 8. Hypothesis testing 3

profitmargin	Coef.	Std. Err.	t	P > | t |	[95% Conf.	Interval]
manageriability	-.0004702	.0161216	-0.03	0.977	-.0325136	.0315732
mvaic	1.66e-07	.000012	0.01	0.989	-.0000237	.000024
icd	1.009254	1.067818	0.95	0.347	-1.11315	3.131658
_cons	-.1540223	.2819762	-0.55	0.586	-.7144805	.406436
Sigma_u	.23007667					
Sigma_e	.44683191					
rho	.2095666					

variable	fe
managerial~*y*	-.00047022
mvaic	1.656e-07
icd	1.0092539
_cons	-.15402229
n	
r2	.01020772
r2_a	-.35385381

Based on the results of data processing in table 8, the probability values of the three variables MA, M-VAIC and ICD are above 0.05. This indicates that the effect of the variables MA, M-VAIC and ICD on profit margin, does not provide significant results individually. This value variation only contributes in predictions to the ROE variation, only 0.010 (1%).

Hypothesis 4, testing the effect of managerial ability (MA), intellectual capital disclosure (ICD) and Intellectual capital efficiency as measured by M-VAIC on financial performance as measured by stock return.

Table 9. Hypothesis testing 4

rt	Coef.	Std. Err.	t	P > | t |	[95% Conf.	Interval]
manageriala~*y*	-.0029065	.0193575	-0.15	0.881	-.0413816	.0355686
mvaic	-.0000147	.0000144	-1.02	0.310	-.0000434	.0000139
icd	.0359154	1.282148	0.03	0.978	-2.512493	2.584324
_cons	.09852	.3385738	0.29	0.772	-.5744322	.7714722
Sigma_u	.27088558					
Sigma_e	.53651901					
rho	.20313557					

variable	fe
managerial~y	-.0029065
mvaic	-.00001472
icd	.03591541
_cons	.09851999
n	
r2	.01215949
r2_a	-.35118414

Based on the results of data processing in table 9, it is seen at the probability value, where the three variables MA, M-VAIC and ICD values are above 0.05. This indicate that the effect of the variables MA, M-VAIC and ICD on profit margin, not giving significant results individually. This variation in value only contributes to the prediction of the variation in stock return, only 0.012 (1.2%).

4. Discussion

The results of the Hausman test show a probability of 0.0496, less than 0.05, this means that the research model is included in the fixed effect model. So that further regression testing uses this model. If the partial correlation value is more than 0.75 (75%), then there is multicollinearity. If seen from the correlation results between the variables, both MA-M-VAIC, MA-ICD, and M-VAIC-ICD, there is a value below 0.75, meaning that this model is free from multicollinearity. Another test for multicollinearity is using tolerance and VIF values. Ghozali (2011) researched that multicollinearity indications would not appear if the Tolerance Value (TOL) > 0.100, and VIF < 10.00.

It can be seen that the results obtained from data processing are TOL values (1/VIF) > 0.100 for all variables, and VIF values < 10.00. This shows that data processing does not find indications of multicollinearity. The heteroscedasticity test is to test the occurrence of variance inequality in the linear regression model from the residuals of one observation to another. A good regression model is when there is homoscedasticity, or there is no heteroscedasticity.

Autocorrelation test to determine the correlation of variables in the prediction model with changes in time, where it is hoped that there will be no autocorrelation in the regression model. The autocorrelation test on this model using Stata cannot be carried out because the data used is not pure serial data.

Testing hypothesis 1, testing the effect of managerial ability (MA), intellectual capital disclosure (ICD) and intellectual capital efficiency as measured by M-VAIC on financial performance as measured by ROA. Based on the results of data processing, it can be seen that the probability values of the three MA, M-VAIC and ICD variables give ilia above 0.05. This gives the result that the effect of MA, M-VAIC and ICD variables on ROA does not give significant results individually. This value variation only contributes to the prediction of ROA variations, only 0.0058 (0.58%).

Testing hypothesis 2, testing the effect of managerial ability (MA), intellectual capital disclosure (ICD) and intellectual capital efficiency as measured by M-VAIC on financial performance as measured by ROE. Based on the results of data processing, it can be seen that the probability values of the three MA, M-VAIC and ICD variables give values above 0.05. This gives the result that the effect of MA, M-VAIC and ICD variables on ROE does not give significant results individually. This value variation only contributes to the prediction of ROE variations, only 0.038 (3.80%).

Testing hypothesis 3, testing the effect of managerial ability (MA), intellectual capital disclosure (ICD) and intellectual capital efficiency as measured by M-VAIC on financial performance as measured by profit margin. Based on the results of data processing, it can be seen in the probability value, where the three MA, M-VAIC and ICD variables give values above 0.05. This gives the result that the effect of MA, M-VAIC and ICD variables on profit margin, does not give significant results individually. This value variation only contributes to the prediction of ROE variations, only

0.010 (1%). Testing hypothesis 4, testing the effect of managerial ability (MA), intellectual capital disclosure (ICD) and intellectual capital efficiency as measured by M-VAIC on financial performance as measured by stock returns. Based on the results of data processing, it can be seen in the probability value, where the three MA, M-VAIC and ICD variables give values above 0.05. This gives the result that the effect of MA, M-VAIC and ICD variables on profit margins, does not provide significant results individually. This value variation only contributes to the prediction of stock return variations, only 0.012 (1.2%).

5. Conclusion

Intellectual capital is a strategic intangible asset owned by a company in the development of knowledge-based economy. Intangible assets require good disclosure so as to provide value to the company's financial performance. This study aims to analyze the effect of added value of intellectual capital, intellectual capital disclosure and managerial ability on the company's financial performance. This study uses data on infrastructure, utility and transportation companies in Indonesia in the 2017-2020 period. The number of samples used in this research is 30 companies per year, so the total sample is 120 sample companies. Data is processed using Stata application version 16.

Based on the results of data processing using Stata version 16, the results of hypothesis testing (MA, M-VAIC and ICD variables) have a probability value in the model test that is not significant in both the ROA, ROE, net profit margin and stock return models. These results are in line with previous research which states that in industries that do not have a lot of technology, the IC effect and disclosure do not have a significant effect.

6. Acknowledgement

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