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The Effect of Fixed Asset Intensity and Asset Growth on Financial Performance with Intellectual Capital as a Moderation Variable in Companies in the Basic Materials Sector Listed on the Indonesia Stock Exchange in 2021–2025

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Keywords: *Fixed Asset Intensity, Asset Growth, Financial Performance, Intellectual Capital, Moderated Regression Analysis (MRA).*

Abstract

This study aims to analyze the influence of fixed asset intensity and asset growth on financial performance with Intellectual Capital as a moderation variable in companies in the Basic Materials sector listed on the Indonesia Stock Exchange for the period 2021–2025. This study uses a quantitative approach with the type of associative research. The research sample was determined using the purposive sampling technique so that as many as 70 samples were obtained. The data used is secondary data from the company's annual financial statements and analyzed using multiple linear regression analysis with Moderated Regression Analysis (MRA) through the SPSS program. The results of the study show that fixed asset intensity and asset growth do not have a significant effect on financial performance. However, Intellectual Capital has been proven to be able to moderate the influence of fixed asset intensity on financial performance and moderate the influence of asset growth on financial performance. In addition, the results of the simultaneous test showed that the regression model without the moderation variable was not significant, whereas after including the Intellectual Capital moderation variable, the regression model became significant. Thus, Intellectual Capital has an important role in strengthening the relationship between fixed asset intensity and asset growth on the financial performance of companies in the Basic Materials sector.

INTRODUCTION

Financial performance is an important indicator used to assess a company's ability to manage resources effectively and efficiently to generate profits and increase the company's value (Murdiyanto & Kusuma, 2022). Good financial performance reflects the success of management in utilizing its assets to support business continuity and create a competitive advantage (Gunawan & Indriyanto, 2026). In addition, financial performance is also a benchmark in evaluating the company's health level, as it shows the company's ability to fulfill its obligations, maintain operational stability, and provide benefits for shareholders. Information on financial performance is needed by investors, creditors, the government, and other interested parties as a basis for economic decision-making. In companies in the Basic Materials sector listed on the Indonesia Stock Exchange (IDX), financial performance is an important concern because this sector plays a role as a provider of raw materials for various industries so that it is greatly influenced by changes in economic conditions, commodity prices, and market dynamics. Fluctuations in raw material prices, changes in market demand, and global economic conditions can affect the level of profitability of companies in this sector. Therefore, research is needed on the factors that affect financial performance so that companies are able to develop the right strategy to improve their performance (Irfan Bintang Firdausi et al., 2024). The research in the 2021–2025 period is

important because it covers the economic recovery period after the COVID-19 pandemic followed by changes in demand, commodity prices, and production costs. These conditions cause fluctuations in financial performance, where some companies are able to increase profitability, while others face cost pressures and market uncertainty. This phenomenon shows that there are differences in the company's ability to manage resources, so it is important to examine factors that affect financial performance, especially fixed asset intensity, asset growth, and intellectual capital as moderation variables.

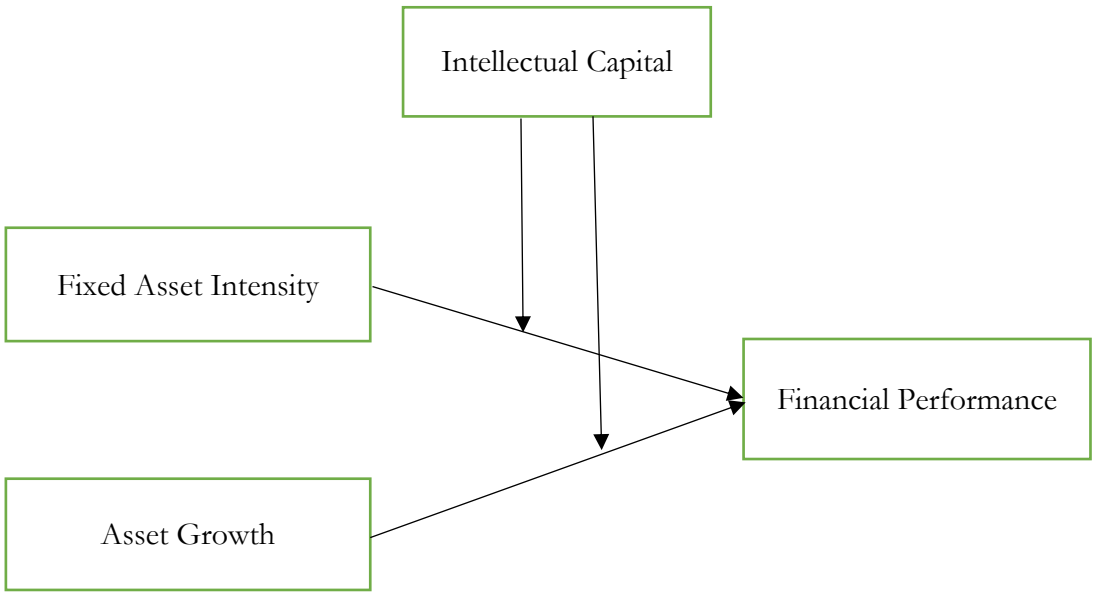
One of the factors that is suspected to affect financial performance is the intensity of fixed assets. Fixed asset intensity indicates the large proportion of a company's investment in fixed assets compared to the total assets owned. The higher the investment in productive assets, the greater the opportunity for the company to increase production capacity and operational efficiency (Nabila & Bambang Widarno, 2025). However, high fixed assets can also increase depreciation and maintenance costs so that they do not necessarily have a positive impact on financial performance. This condition shows that the company must be able to manage fixed assets optimally so that the investments made really provide economic benefits and increase the company's productivity (Caru Gaur, Gracella, 2025). In addition, asset growth is also expected to affect financial performance as it reflects the company's ability to expand its business scale and increase operational capacity. Companies that experience asset growth generally show business expansion and increased operational activities which are expected to be able to generate greater revenue in the future (Selvi Yona Sari, Dicky Ramadhani, 2019). However, asset growth that is not balanced with effective management can reduce the efficiency of the company (Falabiba & Paramita, 2022). Therefore, companies need to ensure that any additional assets can be used optimally in order to be able to contribute to improving financial performance. In addition to these two factors, intellectual capital is also suspected to play a role in improving financial performance through the use of the company's knowledge, skills, and intellectual resources. However, previous research on the influence of fixed asset intensity, asset growth, and intellectual capital on financial performance still shows inconsistent results. The difference in results can be caused by differences in company characteristics, industry sectors, research periods, and measurement methods used. This condition shows that there is a research gap that needs further research in companies in the Basic Materials sector listed on the Indonesia Stock Exchange in 2021–2025.

In the development of a knowledge-based economy, the success of a company is not only determined by tangible assets, but also by the ability to manage intellectual capital. Intellectual capital includes knowledge, human resource competencies, organizational systems, and innovations that are able to create added value for the company (Fahendra Akbar Noor Pratama, 2023). Good intellectual capital management can increase operational efficiency, strengthen the company's competitiveness, and encourage the creation of sustainable innovation. Companies that are able to make optimal use of the knowledge and competence of their human resources will be more adaptable to changes in the business environment and technological developments. Therefore, this study uses intellectual capital as a moderation variable because it is suspected to be able to strengthen or weaken the influence of fixed asset intensity and asset growth on financial performance. Companies with good intellectual capital are expected to be able to optimize asset utilization so as to produce better financial performance (Pattiselanno & Widiyati, 2023). Thus, intellectual capital not only functions as an intangible asset, but also becomes one of the strategic

factors that can increase the effectiveness of company asset management in creating economic value. Based on previous research, no studies have been found that specifically test intellectual capital as a moderation variable in the relationship between fixed asset intensity and asset growth to financial performance. Previous research has placed intellectual capital as an independent variable or uses other moderation variables. This condition is an important research gap to study, because intellectual capital not only has the potential to directly affect financial performance, but can also determine the company's ability to optimize fixed assets and assets that continue to grow. Therefore, this study places intellectual capital as a moderation variable to find out whether the company's ability to manage knowledge, competence, and intellectual resources can strengthen or weaken the influence of fixed asset intensity and asset growth on financial performance in companies in the Basic Materials sector listed on the Indonesia Stock Exchange in 2021–2025.

This research is encouraged to improve the efficiency of asset management and strengthen competitiveness. In addition, the Basic Materials sector has relatively large fixed asset utilization characteristics making it relevant to test the relationship between fixed asset intensity, asset growth, intellectual capital, and financial performance. This study aims to examine the influence of fixed asset intensity and asset growth on financial performance and examine the role of intellectual capital in strengthening or weakening these relationships. Academically, this research is expected to add to the literature on factors that affect financial performance. For management, the results of the research can be used as evaluation material in optimizing asset management and intellectual capital, while for investors and creditors it can be additional information in assessing the condition and ability of the company to manage its resources. In addition, this research is expected to be a reference for future researchers in developing similar research.

To make it easier for readers to understand, the author compiles a frame of mind so that readers can understand it more easily and can help with the next research research.



This research is based on Signaling Theory and Resource-Based View (RBV). Signal Theory explains that financial performance can be a signal for stakeholders, especially investors and creditors, in assessing the company's condition and prospects and becomes a basis for decision-making. In this study, financial performance reflects the results of the company's resource management that can provide positive and negative signals to external parties. Meanwhile, the Resource-Based View (Barney, 1991) explains that the company's excellence and performance can be obtained through the management of resources that are valuable, scarce, difficult to imitate, and difficult to replace, including intellectual capital in the form of knowledge, competence, organizational systems, and innovation capabilities. Intellectual capital in this study is positioned as a moderation variable because the company's ability to manage intellectual resources is suspected to strengthen or weaken the influence of fixed asset intensity and asset growth on financial performance. Furthermore, the hypothesis justification is built based on the theory and results of previous research, namely H1: fixed asset intensity affects financial performance, H2: asset growth affects financial performance, and H3: intellectual capital moderates the influence of fixed asset intensity and asset growth on financial performance. Thus, both theories provide a basis that the management of tangible assets and intellectual resources can contribute to financial performance and provide information for stakeholders.

The novelty of this study lies in the use of intellectual capital as a moderation variable in the relationship between fixed asset intensity and asset growth on financial performance in companies in the Basic Materials sector for the 2021–2025 period. Most previous studies only tested the direct influence of the two independent variables on financial performance, while this study developed a model that included intellectual capital as a factor that could affect the strength of the relationship. The use of the latest data in the post-pandemic period is also a differentiator compared to previous research.

This research is based on the discourse or research gap from the results of previous research which still shows different findings regarding the influence of fixed asset intensity and asset growth on financial performance. Some studies have found a positive influence, while others have shown a negative or insignificant influence. These differences in results indicate that there are other factors that can affect the relationship between variables, so this study tested intellectual capital as a moderation variable to provide more comprehensive empirical evidence.

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METHODS

This study uses a quantitative approach with the type of explanatory research, which aims to test the causal relationship between independent variables, dependent variables, and moderation variables through hypothesis testing based on empirical data. The object of the research is a Basic Materials sector company listed on the Indonesia Stock Exchange (IDX) for the period 2021–2025. The research population included all companies in the Basic Materials sector listed on the

IDX in that period, while the sample was determined using purposive sampling techniques based on certain criteria, namely companies that were consistently listed on the Indonesia Stock Exchange during the study period, published complete and audited annual financial statements, had the necessary data to measure all research variables, and did not experience delisting during the observation period. By using these criteria, the research sample is expected to be able to represent the characteristics of the population so that the results of the study can provide a more accurate picture of the relationship between the variables being studied.

The type of data used in this study is secondary data obtained from the annual financial report and the annual report of companies in the Basic Materials sector published through the official website of the Indonesia Stock Exchange and the official website of each company. To obtain the necessary data, here is the formula used in writing this article:

Variable	Operational Definition	Measurement Formula	Source
Fixed Asset Intensity	Fixed asset intensity is a measure that shows how large the ratio of a company's fixed assets to the total assets it owns by the company as a whole.	$\text{IAT} = \frac{Total\ Aset\ Tetap}{Total\ Aset}$	(Mary, 2025)
Asset Growth	Asset growth describes the change or increase in a company's fixed assets from the previous period to the next	$\text{PA} = \frac{Aset\ \ Tetap\ t - Aset\ tetap\ t-1}{Aset\ tetap\ t-1}$	(Ferry Adang, 2026)
Financial Performance	Financial performance is measured by Return on Equity (ROE), which is the ability of net assets (equity) to generate profits.	$\text{ROE} = \frac{Laba\ Bersih}{Total\ Ekuitas}$	(Kusuma et al., 2021)
Intellectual Capital	The efficiency of intellectual capital performance is measured by the Value Added Intellectual Coefficient (VAIC) method	VAIC = COW + STEAM + STVA **Ket :**	(Luthan & Febriyetti, 2020)

	based on the Pulic (1998) model.	• **VAIC** = measures the efficiency of a company's intellectual capital. • **VACA** = measures the efficiency of the company's physical capital. • **VAHU** = measuring the company's human capital efficiency. • **STVA** = measures the structural capital efficiency of a company.	

Fixed asset intensity is a measure that shows how large the proportion of fixed assets is compared to the total assets a company owns. Fixed asset intensity is calculated by comparing total fixed assets with the total assets of the company.

Asset growth describes the change in a company's total assets from the previous period to the next. Asset growth indicates the development of the company's resources and the company's ability to expand.

Financial performance in this study was measured using Return on Equity (ROE). ROE was chosen because it was able to describe the company's ability to generate profits based on capital derived from shareholders. The use of ROE is relevant because this study not only looks at the company's ability to use all assets, but also assesses how effectively the company manages its resources to generate profits for shareholders. ROE is chosen over Return on Assets (ROA) because ROA focuses more on the ability of all assets to generate profits, while ROE shows the rate of return generated on equity. Meanwhile, Net Profit Margin (NPM) focuses more on the company's ability to generate profits from sales, so it does not reflect the effectiveness of the use of shareholder capital. Therefore, ROE is assessed in accordance with the research objectives in measuring the company's financial performance.

Intellectual capital is measured using the Value Added Intellectual Coefficient (VAIC) method developed by Pulic. VAIC is used to measure a company's efficiency in creating added value through the utilization of used capital, human capital, and structural capital. VAIC consists

of three components, namely Value Added Capital Employed (VACA), Value Added Human Capital (VAHU), and Structural Capital Value Added (STVA).

The criteria for accepting the hypothesis in this study were determined based on the results of a statistical test with a significance level of 5% ($\alpha = 0.05$). Hypothesis 1 (H1) and Hypothesis 2 (H2) are accepted if the significance value (Sig.) is < 0.05 and the direction of the regression coefficient is in accordance with the direction of the proposed hypothesis. Meanwhile, Hypothesis 3 (H3) and Hypothesis 4 (H4) as moderation hypotheses are accepted if the interaction variable between independent variables and intellectual capital has a Sig. value of < 0.05, which indicates that intellectual capital significantly strengthens or weakens the influence of independent variables on financial performance. On the other hand, if the Sig. value > 0.05, then the hypothesis is declared unacceptable.

Based on the variables that have been determined in the study, the next analysis is carried out using a regression model to determine the influence of Fixed Asset Intensity and Asset Growth on Financial Performance and test the role of Intellectual Capital as a moderation variable. The regression model used in this study consists of two models, namely the model before the moderation variable and the model after the moderation variable is included. The regression model used is as follows:

Model 1: Before Moderation

$$ROE=\alpha+\beta1IAT+\beta2PA+\varepsilon$$

Model 2: With Moderation Variables

$$ROE=\alpha+\beta1IAT+\beta2PA+\beta3IC+\beta4(IAT\times IC)+\beta5(PA\times IC)+\varepsilon$$

The data analysis technique was carried out using the Statistical Package for the Social Sciences (SPSS) program. The analysis stage begins with descriptive statistical analysis to provide an overview of the characteristics of the research data, then continues with the classic assumption test, namely the normality test, to ensure that the data meets the requirements of regression analysis. Furthermore, multiple linear regression analysis was carried out to test the influence of fixed asset intensity and asset growth on financial performance, as well as hypothesis testing through simultaneous tests (F test), and partial tests (t tests). The test is carried out at a significance level of 5% ($\alpha = 0.05$) so that the results of the analysis can be used to determine the acceptance or rejection of the research hypothesis.

The moderation variable test was carried out using Moderated Regression Analysis (MRA) through SPSS by establishing the interaction variable between fixed asset intensity and intellectual capital as well as between asset growth and intellectual capital. This analysis aims to find out whether intellectual capital is able to moderate the influence of fixed asset intensity and asset growth on the company's financial performance. The moderation variable is declared to have a role if the interaction coefficient shows a significance value of less than 0.05. The results of the test are then interpreted to explain the relationship between variables and provide empirical evidence on the role of intellectual capital in improving the effectiveness of corporate asset management on the achievement of financial performance in companies in the Basic Materials sector listed on the Indonesia Stock Exchange during the period 2021–2025.

RESULTS AND DISCUSSION

Based on the results of data processing obtained from 70 research samples, several stages of statistical analysis were carried out using regression tests to determine the feasibility of the data and the influence of intervariables in the research. The analysis stages include normality tests, t-tests (partial), and F-tests (simultaneous). The normality test is carried out to ensure that the data used has met the basic assumption of regression, which is normally distributed. Furthermore, the t-test was used to determine the influence of each independent variable on the dependent variable partially, including the influence of the interaction variable as a form of moderation. Meanwhile, the F test was used to find out whether all independent variables together had an effect on the dependent variables as well as to test the feasibility of the regression model used in the study.

Table 1
Descriptive statistical test

Descriptive Statistics

	N	Range	Minimum	Maximum	Red		Std. Deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
IAT	350	133.00	1.00	134.00	40.7371	1.28402	24.02183	577.048
PA	350	964.00	-86.00	878.00	14.8286	4.80275	89.85123	8073.243
CD	350	19707647849.00	-9915046068.00	97926017.00	16163704.89457	19885882.88046	372030797.03907	138406914206.94241000.000
IC	350	11112504616.00	-1165866405.00	99466382.00	34152164.79629	14250229.21309	266597382.07586	710741644934.9357600.000

Valid N (listwise)	350							

Descriptive statistical tests are used to provide an overview of the data characteristics of each research variable. This analysis can be seen through minimum, maximum, mean, and standard deviation. Minimum and maximum values indicate the range of data, mean indicates the average value of each variable, while standard deviation indicates the extent to which the data is spread or variation against its average value. In this study, descriptive statistics are used to describe the intensity of fixed assets, asset growth, intellectual capital, and financial performance in companies in the Basic Materials sector listed on the Indonesia Stock Exchange in 2021–2025.

Table 2
Correlation Test

		IAT	PA	CD	IC
IAT	Pearson Correlation	1	.086	.147	.087
	Sig. (2-tailed)		.008	.006	.045
	N	350	350	350	350
PA	Pearson Correlation	.086	1	.066	.046
	Sig. (2-tailed)	.008		.015	.039
	N	350	350	350	350
CD	Pearson Correlation	.147	.066	1	.001
	Sig. (2-tailed)	.006	.015		.028
	N	350	350	350	350
IC	Pearson Correlation	.087	.046	.001	1
	Sig. (2-tailed)	.045	.039	.028	
	N	350	350	350	350

Based on Table 2, the results of the Pearson correlation test show that all research variables have a significant relationship at a significance level of 5%. IAT has a positive and significant relationship with PA with a correlation coefficient value of 0.086 and a significance value of 0.008, and has a positive and significant relationship with KK with a correlation value of 0.147 and significance of 0.006. In addition, IAT also had a positive and significant relationship with IC with

a correlation value of 0.087 and significance of 0.045. PA had a positive and significant relationship with KK with a correlation value of 0.066 and significance of 0.015, and had a positive and significant relationship with IC with a correlation value of 0.046 and significance of 0.039. Meanwhile, the relationship between KK and IC has a correlation value of 0.001 with a significance of 0.028, so it is declared significant. Thus, all relationships between variables in this study were declared significant because of the significance value of < 0.05, although the level of closeness of the relationship was classified as very weak based on the value of the correlation coefficient.

Table 3
Normality Test

Variable	Normality test results	Remarks
X1	0,204	NORMAL
X2	0,137	NORMAL
Y	0,120	NORMAL
Z	0,867	NORMAL

Based on the results of the normality test in Table ..., it is known that all research variables have a significance value greater than 0.05. The X1 variable obtained a significance value of 0.204, the X2 variable 0.137, the Y variable 0.120, and the Z variable 0.867. These results show that all variables have a normal data distribution because they meet the normality test criteria, namely the significance value greater than 0.05. Thus, the research data has fulfilled one of the classic assumptions in regression analysis so that it is feasible to use in hypothesis testing through regression analysis. The fulfillment of the normality assumption shows that the data used is able to provide better estimation results and can be used for further analysis.

Table 4
T test

Variable	t table	t count
X1	1,997	1,887
X2		1,489
X1Z		2,051
X2Z		2,903

Based on the results of the t-test in Table ..., it is known that the t-value of the table with a sample of 70 respondents is 1.997. The variable X1 obtained a calculated t-value of 1.887, smaller than the table's t-value of 1.997. The results showed that H_0 was accepted and H_1 was rejected, so that the variable X1 had no significant effect on the variable Y. Furthermore, the variable X2 obtained a calculated t value of 1.489 which was also smaller than the t table of 1.997. Therefore, H_0 is accepted and H_1 is rejected, which means that the variable X2 also has no significant effect on the variable Y.

Meanwhile, the test results of the interaction variable X1Z showed a calculated t value of 2.051 which was greater than the t table of 1.997. Thus, H_0 is rejected and H_1 is accepted, so it

can be concluded that the moderation variable Z is able to significantly moderate the relationship between the X1 variable and the Y variable. Similarly, the interaction variable X2Z obtained a calculated t-value of 2.903, greater than the table's t-value of 1.997. These results show that H_0 is rejected and H_1 is accepted, so that the moderation variable Z is also proven to be able to moderate the influence of the X2 variable on the Y variable. Thus, even though the X1 and X2 variables do not directly have a significant effect on Y, the existence of the Z moderation variable is able to strengthen the relationship between the independent variable and the dependent variable.

Table 5
Test F

Variable	F Table	F count
X1, X2 → Y	3,13	2,954
X1Z, X2Z → Y		4,449

Based on the results of the F test in Table ..., it is known that the F value of the table is 3.13. In the first regression model that tested the influence of variables X1 and X2 on variable Y, a calculated F-value of 2.954 was obtained, which is smaller than the f-value of the table of 3.13. These results show that H_0 is accepted and H_1 is rejected, so that simultaneously the variables X1 and X2 do not have a significant effect on the Y variable.

In contrast to the regression model which involves the interaction variables X1Z and X2Z, the calculated F value of 4.449 is obtained which is greater than the table F value of 3.13. These results show that H_0 is rejected and H_1 is accepted, so that regression models involving moderation variables are declared significant. Thus, it can be concluded that the existence of the moderation variable Z is able to increase the model's ability to explain the relationship between independent variables and dependent variables. This indicates that the moderation variable has an important role in strengthening the influence of the X1 and X2 variables on the Y variable, so that the regression model with the moderation variable is better than the regression model without the moderation variable.

Table 6
Hypothesis Test

	M1 (Not Moderated)	M2 (Moderated)
Financial Performance	• The Effect of Fixed Asset Intensity (IAT) on Financial Performance (KK). Based on the results of the t-test, the IAT obtained a t count of 1.887, while a table t of 1.997. Because t counts < t table (1,887 < 1,997), the	• Interaction of IAT with Intellectual Capital (IAT×IC) on KK Based on the results of the t-test, the interaction variable of IAT×IC obtained t calculation of 2.051, while t table was

	IAT has no significant effect on KK. Thus, H1 was rejected. • The Effect of Asset Growth (PA) on Financial Performance (KK) Based on the results of the t-test, the PA obtained a calculated t of 1.489, while the table t was 1.997. Because 1,489 < 1,997, PA does not have a significant effect on KK. • The simultaneous effect of IAT and PA on KK. Based on the results of the F test, the F calculation was obtained at 2.954, while the F table was 3.131. Because F counts < F table (2.954 < 3.131), IAT and PA simultaneously have no significant effect on KK. This means that Model 1 before moderation has not shown significant influence together.	1.997. Because 2,051 > 1,997, the IAT×IC interaction variable had a significant effect on KK. • Interaction of PA with Intellectual Capital (PA×IC) on KK Based on the results of the t-test, the PA×IC interaction variable obtained t calculation of 2.903, while the t table was 1.997. Because 2.903 > 1.997, the PA×IC interaction variable had a significant effect on KK. • Simultaneous influence after moderation Based on the results of the F test, Model 2 obtained an F calculation of 4.449, while the F of the table was 3.131. Because 4.449 > 3.131, the model that has included the moderation variable has a significant effect simultaneously on the KK. This means that after Intellectual Capital and interaction variables are included in the model, the model's ability to explain Financial Performance becomes better than Model 1.

Based on the results of the hypothesis test, H1 was rejected because the results of the t-test showed that the Fixed Asset Intensity had a calculated t-value of 1.887, which was smaller than the t-table of 1.997, so that the Fixed Asset Intensity did not have a significant effect on Financial Performance. H2 was also rejected because Asset Growth had a calculated t value of 1.489, which was smaller than the t table of 1.997, so Asset Growth did not have a significant effect on Financial Performance. Furthermore, H3 was declared acceptable because the test results on Model 2 showed that the interaction between Fixed Asset Intensity and Intellectual

Capital had a calculated t-value of 2.051, while the interaction between Asset Growth and Intellectual Capital had a t-calculated value of 2.903, both of which are greater than the t-table of 1.997. Thus, Intellectual Capital has been proven to moderate the influence of Fixed Asset Intensity and Asset Growth on Financial Performance.

DISCUSSION

The results of the study show that the intensity of fixed assets does not have a significant effect on the financial performance of companies in the Basic Materials sector listed on the Indonesia Stock Exchange for the period 2021–2025. This is shown by the results of the t-test, where the calculated t-value of 1.887 is smaller than the table t-value of 1.997. These findings indicate that the large proportion of fixed assets owned by companies is not necessarily able to improve financial performance. In the Basic Materials sector, fixed assets are generally in the form of production machinery, factories, and equipment that require large investments and high maintenance costs. Therefore, the high intensity of fixed assets does not directly result in an increase in the company's profit or efficiency if the asset has not been utilized optimally. Thus, the company's financial performance is not only influenced by the amount of investment in fixed assets, but also by the effectiveness of the management of these assets. These findings are in line with research that states that high fixed asset intensity does not necessarily improve a company's performance if assets are not used efficiently.

Furthermore, asset growth also does not have a significant effect on financial performance. This is evidenced by the calculated t value of 1.489 which is smaller than the t table of 1.997. These results show that the increase in the company's total assets during the research period has not been able to directly improve financial performance. Asset growth often reflects the company's expansion, but the benefits of such expansion take time to generate profits. In addition, an increase in assets can also be followed by an increase in operational costs and investment costs, so that the impact on profitability has not been seen in the short term. Therefore, asset growth is not always the main indicator in improving a company's financial performance.

In contrast to the two main variables, the results of the study show that Intellectual Capital is able to moderate the relationship between fixed asset intensity and financial performance. This is evidenced by the value of t-calculated of the interaction variable X1Z of 2.051 which is greater than the t table of 1.997. These findings show that the management of intellectual resources, such as human resource competencies, organizational systems, and company knowledge, is able to increase the effectiveness of the use of fixed assets so as to contribute to improving financial performance. With good Intellectual Capital, companies can optimize the use of fixed assets through innovation, operational efficiency, and increased productivity. This result is in line with various studies that explain that Intellectual Capital is one of the strategic resources that is able to improve the company's competitive advantage and financial performance.

The results of the study also show that Intellectual Capital is able to moderate the relationship between asset growth and financial performance. This is shown by the t-value of the variable X2Z interaction of 2.903 which is greater than the t table of 1.997. This means that asset growth will have a greater impact on improving financial performance if the company is supported by good Intellectual Capital. The addition of assets accompanied by the company's

ability to manage knowledge, improve employee competence, and develop organizational systems will result in more optimal asset utilization. Thus, Intellectual Capital plays a role as a factor that strengthens the relationship between asset growth and the financial performance of a company. These results support previous research that found that Intellectual Capital contributes positively to improving financial performance and is able to strengthen the influence of internal factors on the achievement of better performance.

Overall, the results of the F test showed that the regression model without the moderation variable had no significant effect on financial performance, while the model that included the Intellectual Capital moderation variable was significant. This shows that Intellectual Capital has an important role in improving the ability of companies in the Basic Materials sector to manage their assets so that they are able to produce better financial performance. In other words, a company's success is not only determined by the size of its assets and the growth of its assets, but also by the company's ability to effectively manage intellectual resources as a sustainable competitive advantage.

CONCLUSION

Based on the results of a study on the Effect of Fixed Asset Intensity and Asset Growth on Financial Performance with Intellectual Capital as a Moderation Variable in Basic Materials Sector Companies Listed on the Indonesia Stock Exchange in 2021–2025, it can be concluded that fixed asset intensity does not have a significant effect on financial performance. This is shown by the calculated t value of 1.887 which is smaller than the t table of 1.997. Similarly, asset growth had no significant effect on financial performance with a calculated t value of 1.489 which was smaller than the t-table of 1.997. These results show that the magnitude of fixed asset intensity and asset growth have not been able to directly improve the company's financial performance.

The results of the study also show that Intellectual Capital is able to moderate the relationship between fixed asset intensity and financial performance, which is evidenced by the value of t-calculated of the interaction variable X1Z of 2.051 greater than the t table of 1.997. In addition, Intellectual Capital is also able to moderate the relationship between asset growth and financial performance, with the value of t-calculated of the X2Z interaction variable of 2.903 which is greater than the t-table of 1.997. This shows that good management of intellectual resources can strengthen the influence of fixed asset intensity and asset growth on improving the company's financial performance.

Based on the results of the simultaneous test (F test), the regression model without moderation variables showed that the intensity of fixed assets and asset growth together did not have a significant effect on financial performance because the calculated F value of 2.954 was smaller than the table F of 3.13. However, after including the Intellectual Capital moderation variable, the regression model became significant with a calculated F value of 4.449 which is greater than the table F of 3.13. Thus, it can be concluded that Intellectual Capital plays a role as a moderation variable that is able to strengthen the relationship between fixed asset intensity and asset growth on financial performance in Basic Materials sector companies listed on the Indonesia Stock Exchange for the 2021–2025 period. The results of this study show that the success of a company in improving financial performance is not only determined by the size of the assets owned or the growth of assets, but also by the company's ability to manage intellectual resources effectively so as to be able to create added value and a sustainable competitive advantage.

This study has several limitations that need to be considered in interpreting the research results. First, the study only used companies in the Basic Materials sector listed on the Indonesia Stock Exchange during the 2021–2025 period, so the results of the study could not necessarily be generalized to companies from other sectors. Second, the study only used fixed asset intensity and

asset growth as independent variables and Intellectual Capital as moderation variables, so there are still other factors that may affect financial performance but have not been included in the research model. Third, the measurement of financial performance in this study only uses Return on Equity (ROE), so it does not describe the company's financial performance from other aspects of profitability such as Return on Assets (ROA) and Net Profit Margin (NPM). Fourth, Intellectual Capital in this study is measured using the Value Added Intellectual Coefficient (VAIC) method, so the measurement results are highly dependent on the financial information available in the company's annual report. In addition, the research uses secondary data so that the researcher cannot directly observe the process of managing fixed assets or the management of intellectual resources carried out by the company.

Based on the results of the research and the limitations that have been described, the suggestions that can be given are as follows:

1. For the Next Researcher

Researchers are further advised to expand the object of the research by using companies from other sectors or comparing several sectors that have different characteristics of fixed asset use. The research period can also be extended to provide a broader picture of changes in the company's financial performance in the long term. In addition, further research can add independent variables as well as other control variables that theoretically have the potential to affect financial performance, such as leverage, company size, liquidity, asset efficiency, and capital structure. Researchers can also use other financial performance indicators such as ROA, NPM, or Tobin's Q and use Intellectual Capital measurement approaches other than VAIC to obtain more comprehensive results.

2. For Investors

Investors are advised not only to consider the size of the company's assets and the growth of the company's assets in making investment decisions, but also to pay attention to the company's ability to manage and utilize the resources it has. The results show that fixed asset intensity and direct asset growth have not had a significant influence on financial performance, while Intellectual Capital is able to moderate the relationship. Therefore, investors need to pay attention to management's ability to manage human resources, knowledge, innovation, organizational systems, and the utilization of company assets as part of considerations in assessing the company's prospects and performance.

3. For Company Management

The management of the company is advised to not only focus on increasing the number of fixed assets and the growth of assets, but also ensuring that the assets owned can be utilized productively and efficiently. Companies need to improve Intellectual Capital management through the development of human resource competencies, improving the quality of work systems and procedures, utilizing technology, and developing innovation. Optimal management of intellectual resources is expected to help companies maximize the benefits of their assets so that they can increase operational efficiency, create added value, and ultimately improve the company's financial performance.

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