

The Effect of Ownership Structure on Intellectual Capital Efficiency in Manufacturing Companies Listed on the Indonesia Stock Exchange

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Abstract

Keywords:

Indonesia Stock Exchange;
intellectual capital efficiency;
manufacturing companies;
ownership structure; strategic
resources.

This study aims to examine the effect of ownership structure on intellectual capital efficiency in manufacturing companies listed on the Indonesia Stock Exchange (IDX) during the 2022–2024 period. The population consisted of all manufacturing companies listed on the IDX throughout the observation period. The sample was selected using a purposive sampling technique based on predetermined criteria, resulting in 161 companies with 483 firm-year observations. Secondary data were obtained from the companies' annual reports and analyzed using panel data regression with the Fixed Effect Model (FEM). Intellectual capital efficiency was measured using the Modified Value Added Intellectual Coefficient (MVAIC), while ownership structure was proxied by managerial ownership, institutional ownership, foreign ownership, government ownership, and public ownership. The results indicate that managerial ownership, institutional ownership, foreign ownership, and public ownership have no significant effect on intellectual capital efficiency. In contrast, government ownership has a significant negative effect on intellectual capital efficiency. These findings suggest that ownership structure is not the primary determinant of intellectual capital efficiency. Instead, the efficient management and utilization of strategic resources play a more important role in enhancing intellectual capital efficiency. This study contributes empirical evidence on the relationship between ownership structure and intellectual capital efficiency in Indonesian manufacturing companies and provides practical implications for corporate management to focus on strengthening strategic resource management rather than relying solely on ownership structure to improve intellectual capital efficiency.

INTRODUCTION

The manufacturing sector plays a strategic role in Indonesia's economy, as it is one of the key sectors driving investment and industrial development. According to data from the Ministry of Industry, total realized investment in Indonesia's manufacturing sector reached IDR 721.3 trillion in 2024, accounting for 42.1% of total national investment (Kontan, 2024). Foreign direct investment (FDI) accounted for IDR 527 trillion, while domestic investment (DI) amounted to IDR 194.3 trillion, representing a significant increase from IDR 596.3 trillion recorded in 2023. The dominance of foreign investment reflects growing confidence among global investors in the long-term growth potential of Indonesia's manufacturing industry. According to GoodStats (2024), approximately 68.3% of foreign companies cited the country's large domestic market as the primary consideration in their investment decisions. As a result, the ownership structure of manufacturing companies in Indonesia tends to be dominated by foreign investors. This ownership pattern reflects increasingly complex corporate governance dynamics, as differences in ownership structures may influence corporate policies regarding capital allocation, risk management, innovation, and operational efficiency.

To address these complexities, companies need to manage their resources strategically and effectively to maintain their competitiveness. In addition to utilizing physical capital, this type of resource management concentrates on intangible assets that maximize the company's internal

potential, such as innovation, technology, and human resource competencies, all of which are crucial for generating added value and bolstering the company's position in the market (Yonata & Susanto, 2023; Sadiq et al., 2023; Chandra, 2021; Fitri et al., 2024). Overall, these intangible assets reflect the accumulation of knowledge that constitutes the company's primary strength. The concept commonly used to assess and measure the value of this knowledge is referred to as intellectual capital (Meilani et al., 2021).

Three primary components make up the concept of intellectual capital are relational capital, structural capital, and human capital (Chandra, 2021; Nicma & Tumirin 2024). The ability of a business to use knowledge and information as strategic resources to promote the development of a long-term competitive advantage is referred to as intellectual capital. (Sadiq et al., 2023; Meilani et al., 2021). Moreover, Furthermore, intellectual capital is essential in promoting company innovation in the face of global competition. (Chandra, 2021; Anugrahani, 2021; Krisiyadi et al., 2024). A company's productivity and overall performance largely depend on its ability to manage intellectual capital efficiently, as effective management can enhance organizational effectiveness and performance (Santoso & Handoko, 2024; Sadiq et al. 2023).

The efficiency of intellectual capital is affected by a range of internal and external elements, such as profitability. (Yonata & Susanto, 2023), ESG implementation (Santoso & Handoko, 2024), and industry type (Supradnya, 2016). However, among these factors, ownership structure is considered one of the key factors influencing The efficacy of managing intellectual capital, positioning it as the central theme of this research. This is because ownership structure is one of the corporate governance mechanisms that influences the effectiveness of corporate resource management (Nicma & Tumirin, 2024). Furthermore, ownership structure helps ensure that companies are managed effectively in terms of output, organizational success, and overall performance (Sadiq et al., 2023). In this study, ownership structure is classified into five types: managerial, institutional, foreign, government, and public ownership.

Numerous prior investigations have indicated that managerial ownership exerts a substantial positive influence on the efficiency of intellectual capital, including those conducted by Nicma & Tumirin (2024) and Oktavian & Ahmar (2019). Conversely, studies conducted by Meilani et al. (2021), Santoso & Handoko (2024), Haura et al. (2022), Yonata & Susanto (2023), Putra et al. (2021), Noradiva et al. (2016), Hartati et al. (2019), Supradnya (2016) found no significant effect.

Findings on the relationship between institutional ownership and intellectual capital efficiency are also mixed. Studies by Sadiq et al. (2023), Meilani et al. (2021), Santoso & Handoko (2024), Hossain & Rana (2024), Putra et al. (2021), Supradnya (2016) reported a positive effect on intellectual capital efficiency. However, Mujahid & Qazi (2024), Nicma & Tumirin (2024), Hartati et al. (2019), Oktavian & Ahmar (2019) found that institutional ownership has no significant effect on intellectual capital efficiency. In contrast, Nassar et al. (2018) reported a significant negative effect of institutional ownership on intellectual capital efficiency.

Findings on the relationship between foreign ownership and intellectual capital efficiency are also mixed. Studies by Sadiq et al. (2023), Meilani et al. (2021), Hossain & Rana (2024), Putra et al. (2021), Supradnya (2016) reported a positive effect of foreign ownership on intellectual capital efficiency. In contrast, Santoso & Handoko (2024) dan Nassar et al. (2018) reported a significant negative effect. Meanwhile, Nicma & Tumirin (2024), Haura et al. (2022), Tjendani et al. (2018), Yonata & Susanto (2023), Hartati et al. (2019), Oktavian & Ahmar (2019) found no significant effect of foreign ownership on intellectual capital efficiency.

Findings on the relationship between government ownership and intellectual capital efficiency are also mixed. Putra et al. (2021) reported a significant positive effect on intellectual capital efficiency. In contrast, Sadiq et al. (2023), Santoso & Handoko (2024), Nassar et al. (2018) reported a negative effect, whereas Meilani et al. (2021), Mujahid & Qazi (2024), Tjendani et al. (2018) found no significant effect. Evidence on public (individual) ownership is also limited. Sadiq et al. (2023) found that public ownership has no significant effect on intellectual capital efficiency.

However, Mujahid & Qazi (2024) and Hossain & Rana (2024) and Hossain and Rana (2024) reported a positive effect of public ownership on intellectual capital efficiency.

These findings are supported by Resource-Based Theory (RBT), which posits that a company's competitive advantage depends on its ability to manage and utilize valuable internal resources that are difficult to imitate (Barney, 1991). According to Resource-Based Theory, companies can achieve superior performance by effectively managing and optimizing their strategic assets, both physical and non-physical. This theory emphasizes the importance of utilizing intangible assets, including intellectual capital, as essential assets that offer a long-term competitive advantage (Anugrahani, 2021).

Given the inconsistencies in previous research findings and the importance of intellectual capital efficiency for companies, further research is needed to deepen understanding of the factors influencing intellectual capital efficiency, particularly ownership structure. A review of the literature indicates that most previous studies have focused on the non-financial sector in general or, more specifically, on the financial sector (banking), whereas research on the manufacturing sector remains limited. Accordingly, this study focuses on the manufacturing sector because companies in this sector primarily compete through their products, making product quality, production cost efficiency, and product development key factors in maintaining competitiveness. Therefore, the ability to manage intellectual capital effectively is essential for creating added value and improving corporate efficiency.

The purpose of this study is to examine how ownership structure which includes managerial, institutional, foreign, governmental, and public ownership affects the efficiency of intellectual capital in manufacturing companies that are listed on the Indonesia Stock Exchange between 2022 and 2024. In contrast to other research, this study focuses especially on public ownership, which has little empirical support as a potential factor affecting the efficiency of intellectual capital. To make the analysis more thorough and pertinent to the features of Indonesia's manufacturing sector, firm age and size are also included as control variables.

LITERATURE REVIEW

Resource-Based Theory

The Resource-Based View (RBV), first presented by Wernerfelt (1984) and later refined by Barney (1991) and Peteraf & Barney (2003), is the foundation of Resource-Based Theory. This theory posits that a company can achieve competitive advantage if it possesses and effectively manages resources that are valuable, rare, inimitable, and non-substitutable. According to Barney (1991), resources possessing these qualities allow a business to establish a long-term competitive edge.

These resources in this study encompass more than just tangible assets but also intangible assets, such as intellectual capital, which encompasses knowledge, capabilities, and organizational relationships of strategic value. The efficient utilization of intangible resources can enhance innovation, productivity, and firm value. Furthermore, ownership structure, as a corporate governance mechanism, plays an important role in promoting the effective management of internal resources, thereby supporting the creation of sustained competitive advantage (Santoso & Handoko, 2024).

Hypothesis Development

The Effect of Managerial Ownership on Intellectual Capital Efficiency

Managerial ownership is defined as the proportion of a company's shares held by management (Yonata & Susanto, 2023). An increase in managerial ownership strengthens managers' incentives to align their personal interests with those of the company, thereby promoting efficient resource management (Nicma & Tumirin, 2024; Supradnya, 2016).

From the perspective of Resource-Based Theory (RBT), companies can improve their performance by effectively utilizing internal resources to achieve greater efficiency. Barney (1991)

argues that a resource is valuable if it enhances the efficiency or effectiveness of a company's strategy. This argument is supported by the findings of Nicma & Tumirin (2024) and Oktavian & Ahmar (2019), who discovered that management ownership improves the efficiency of intellectual capital.

H1: Managerial ownership has a positive effect on intellectual capital efficiency.

The Effect of Institutional Ownership on Intellectual Capital Efficiency

The percentage of a company's shares held by institutions is known as institutional ownership (Nicma & Tumirin, 2024). Institutional investors generally have substantial capital and strong involvement in the company, leading them to monitor management policies and corporate performance more closely (Santoso & Handoko, 2024). According to Resource-Based Theory, companies that are able to identify and utilize strategic resources can achieve sustainable competitive advantage. Peteraf & Barney (2003) state that competitive advantage depends on a company's ability to recognize and utilize resources that are valuable, rare, and difficult to imitate. With strong institutional oversight, companies are encouraged to optimize their intellectual capital efficiently. This argument is consistent with the findings of Sadiq et al. (2023), Meilani et al. (2021), Santoso & Handoko (2024), and Putra et al. (2021), which found that intellectual capital efficiency is positively influenced by institutional ownership.

H2: Institutional ownership has a positive effect on intellectual capital efficiency.

The Effect of Foreign Ownership on Intellectual Capital Efficiency

Foreign ownership indicates the extent to which a company's shares are held by investors or entities from abroad (Yonata & Susanto, 2023). Foreign investors generally bring more advanced knowledge, technology, strategies, and managerial skills, thereby contributing to increased value added and more efficient management of the company's intellectual capital (Santoso & Handoko, 2024). Peteraf & Barney (1991) explain that information and knowledge are among a company's strategic resources that have the potential to create value. Therefore, the involvement of foreign investors can improve the efficiency of intellectual capital management. This argument is consistent with the findings of Sadiq et al. (2023), Meilani et al. (2021), and Putra et al. (2021), who discovered that the efficiency of intellectual capital is positively impacted by foreign ownership.

H3: Foreign ownership has a positive effect on intellectual capital efficiency.

The Effect of Government Ownership on Intellectual Capital Efficiency

The percentage of a company's shares owned by the state or governmental organizations is referred to as government ownership (Putra et al., 2021). Government involvement as a shareholder can enhance oversight functions and support decision-making, thereby supporting the optimal management of a company's intellectual capital to achieve expected results (Santoso & Handoko, 2024). According to Resource-Based Theory, a company can gain competitive advantage through the effective utilization of internal resources (Peteraf & Barney, 2003). Therefore, government oversight and support in corporate governance are expected to optimize the management of intellectual capital, thereby improving its efficiency. This argument is consistent with the findings of Putra et al. (2021), who discovered that the efficiency of intellectual capital is positively and significantly impacted by government ownership.

H4: Government ownership has a positive effect on intellectual capital efficiency.

The Effect of Public Ownership on Intellectual Capital Efficiency

Public shareholders are individuals or entities that legally hold a portion of a company's ownership through the shares they own Hossain & Rana, 2024). A high level of public ownership promotes transparency, accountability, and improved managerial discipline (Hossain & Rana, 2024). Consistent with Resource-Based Theory (RBT), Peteraf & Barney (2003) state that

companies must be able to effectively identify and utilize valuable resources to maintain competitive advantage. The market mechanism associated with public ownership encourages management to optimize the use of intellectual capital. This argument is supported by the findings of Hossain & Rana (2024) and Mujahid & Qazi (2024), who found a positive effect of public ownership on intellectual capital efficiency.

H5: Public ownership has a positive effect on intellectual capital efficiency.

Based on the hypothesis development, the conceptual framework of this study is presented in Figure 1.

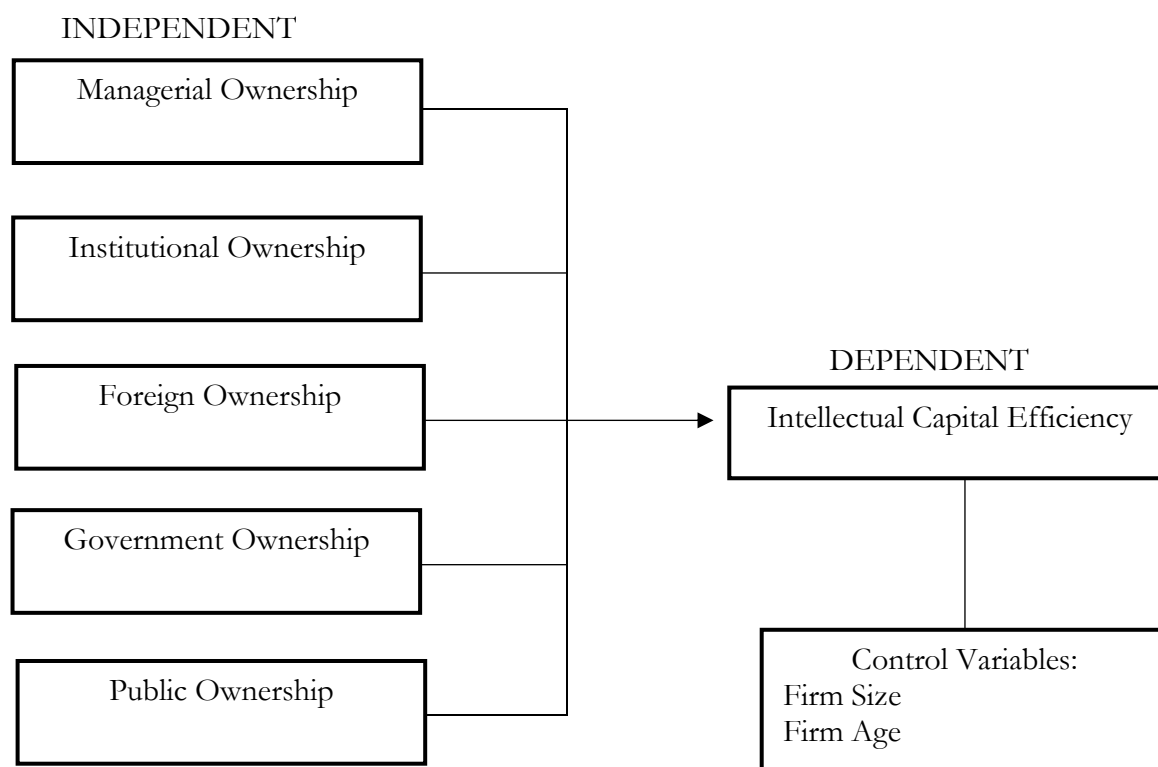


Figure 1. Conceptual Framework of the Study
Source: Data processed by the authors (2026)

METHODS

This study uses an associative research design and a quantitative methodology. All manufacturing companies listed between 2022 and 2024 on the Indonesia Stock Exchange (IDX) make up the population. Purposive sampling was used to choose the sample based on a number of factors, including companies that published full annual reports, were consistently listed on the IDX during the study period, and supplied the information needed to assess ownership structure and intellectual capital efficiency, as measured by the Modified Value Added Intellectual Coefficient (MVAIC). 161 manufacturing firms satisfied the criterion to be included in the research sample based on these criteria. This study examined 483 observations over a three-year period, from 2022 to 2024. This study uses secondary data obtained from companies' financial statements and annual reports. All data were collected from the official website of the Indonesia Stock Exchange (IDX) and the official websites of the respective companies. The data processing and analysis were subsequently conducted using Stata statistical software.

The operational definitions and measurements of each variable are presented in Table 2.

Table 2. Research Instruments

Variable	Description	Measurement	Reference
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Modified Value Added Intellectual Coefficient (MVAIC)	Intellectual Capital Efficiency	HCE + SCE + RCE + CEE	(Hossain & Rana, 2024; Meilani et al., 2021; Santoso & Handoko, 2024)
Managerial Ownership (MO)	Managerial Ownership	Shares Held by Management / Total Outstanding Shares	(Meilani et al., 2021; Santoso & Handoko, 2024; Haura et al., 2022; Putra et al., 2021)
Institutional Ownership (IO)	Institutional Ownership	Shares Held by Institutional Investors / Total Outstanding Shares	(Hossain & Rana, 2024; Sadiq et al., 2023; Meilani et al., 2021; Santoso & Handoko, 2024)
Foreign Ownership (FO)	Foreign Ownership	Shares Held by Foreign Investors / Total Outstanding Shares	(Hossain & Rana, 2024; Sadiq et al., 2023; Meilani et al., 2021)
Government Ownership (GO)	Government Ownership	Shares Held by Government / Total Outstanding Shares	(Sadiq et al., 2023; Meilani et al., 2021; Santoso & Handoko, 2024; Putra et.al., 2021)
Public Ownership (PO)	Public Ownership	Shares Held by Public / Total Outstanding Shares	(Hossain & Rana, 2024; Nassar et al., 2018)
Firm Size (FS)	Firm Size	Natural Logarithm of Total Assets (Ln Total Assets)	(Sadiq et al., 2023; Santoso & Handoko, 2024; Nicma & Tumirin, 2024)
Firm Age (FA)	Firm Age	Observation Year – Establishment Year	(Sadiq et al., 2023; Putra et.al., 2021; Nassar et al., 2018)

The regression model used in this study is formulated as follows:

$$ICE_{i,t} = \alpha + \beta_1 MO_{i,t} + \beta_2 IO_{i,t} + \beta_3 FO_{i,t} + \beta_4 GO_{i,t} + \beta_5 PO_{i,t} + \beta_6 FS_{i,t} + \beta_7 FA_{i,t} + \epsilon_{i,t}$$

Description:

ICE : Intellectual Capital Efficiency
MO : Managerial Ownership
IO : Institutional Ownership
FO : Foreign Ownership
GO : Government Ownership
PO : Public Ownership
FS : Firm Size
FA : Firm Age
 α : Constant
 $\beta_1, \beta_2, \dots, \beta_7$: Regression coefficients of each variable
 ϵ : Error term
i : Company
t : Time period

RESULTS AND DISCUSSION

Descriptive Statistics

The descriptive statistics for the variables employed in this investigation are shown in Table 3.

Table 3. Descriptive Statistics

Variable	Obs	Mean	Std. dev.	Min	Max
ICE	483	3.59	3.10	-6.73	29.75
MO	483	9.96	20.07	0.00	92.51
IO	483	70.74	29.05	0.00	99.95
FO	483	24.01	30.58	0.00	99.78
GO	483	2.95	14.21	0.00	88.01
PO	483	18.34	18.86	0.00	98.95
FA	483	40.72	18.76	2.00	111.00
FS	483	28.35	1.82	20.20	39.06

Source: Data processed by the authors (2026)

The descriptive statistics in Table 3 show that intellectual capital efficiency (ICE) has a mean value of 3.59 and a standard deviation of 3.10. The relatively large standard deviation indicates considerable variation in intellectual capital efficiency among manufacturing companies, suggesting differences in their ability to utilize intellectual capital to create added value. The highest ICE value was recorded by PT Wijaya Karya Beton Tbk in 2022, with a value of 29.75, indicating a relatively high level of intellectual capital efficiency.

Managerial ownership (MO) has a mean value of 9.96 and a standard deviation of 20.07, indicating substantial variation in managerial ownership across companies. This variation is reflected in the presence of companies with no managerial ownership, while PT J Resources Asia Pasifik Tbk recorded a relatively high managerial ownership proportion of 92.51 in 2022.

Institutional ownership (IO) has a mean value of 70.74 and a standard deviation of 29.05, indicating that institutional ownership constitutes a substantial proportion of the ownership structure of the companies in the sample. Nevertheless, some companies have no institutional ownership, while PT Fajar Surya Wisesa Tbk recorded a very high institutional ownership proportion of 99.95 in 2023.

Foreign ownership (FO) has a mean value of 24.01 and a standard deviation of 30.58, indicating substantial variation in foreign investor participation across companies. Some companies have no foreign ownership, whereas PT Citra Tubindo Tbk recorded a very high foreign ownership proportion of 99.78 in 2022.

Government ownership (GO) has a mean value of 2.95 and a standard deviation of 14.21, indicating considerable variation in government ownership across companies. Some companies have no government ownership, whereas PT Indofarma Tbk recorded the highest government ownership proportion in the sample, at 88.01.

Public ownership (PO) has a mean value of 18.34 and a standard deviation of 18.87, indicating variation in public ownership across companies. Some companies have no public ownership, whereas PT Campina Ice Cream Industry Tbk recorded a very high public ownership proportion of 98.94 in one of the observation periods.

The control variable firm age (FA) has a mean value of 40.72 and a standard deviation of 18.76, indicating variation in the age of the companies in the sample. Meanwhile, firm size (FS) has a mean value of 28.35 and a standard deviation of 1.82, indicating that firm size is relatively less variable across the sample.

Correlation Analysis

Table 4 presents the correlation matrix describing the relationships among the variables examined in this study.

Table 4. Correlation Matrix

	ICE	MO	IO	FO	GO	PO	FA	FS
ICE	1.0000							
MO	0.0471	1.0000						
IO	-0.0017	-0.7322	1.0000					
FO	-0.0093	-0.2216	0.3513	1.0000				
GO	0.1488	-0.1025	0.0970	-0.0917	1.0000			
PO	-0.0167	0.1052	-0.6996	-0.2755	-0.0946	1.0000		
FA	-0.0218	-0.2332	0.2371	0.1949	0.2304	-0.1318	1.0000	
FS	0.3248	-0.1043	0.1369	0.1548	0.1696	-0.1308	0.2289	1.0000

Source: Data processed by the authors (2026)

The correlation matrix in Table 4 shows that managerial ownership (MO) and government ownership (GO) have positive correlations with intellectual capital efficiency (ICE), with correlation coefficients of 0.047 and 0.149, respectively. In contrast, institutional ownership (IO), foreign ownership (FO), public ownership (PO), and firm age (FA) show negative correlations with ICE, although the relationships are very weak. Firm size (FS) has a positive correlation with ICE of 0.3248, indicating a positive association between firm size and intellectual capital efficiency. The correlations among the independent variables and control variables are generally below 0.80, indicating no serious indication of multicollinearity based on the correlation matrix.

Regression Model Selection

The Fixed Effects Model (FEM) was used for the panel data regression analysis based on the model selection tests. Table 5 displays the outcomes of the model selection tests.

Table 5. Regression Model Selection

Test	Statistic	Prob.	Conclusion
Chow Test	9.62	0.0000	Fixed Effect Model
Lagrange Multiplier (LM) Test	252.45	0.0000	Random Effect Model
Hausman Test	24.01	0.0011	Fixed Effect Model

Source: Data processed by the authors (2026)

Classical Assumption Tests

In panel data regression, comprehensive classical assumption testing is not always required, and the tests may be adjusted to the characteristics of the model used (Basuki & Prawoto, 2017). According to Wooldridge (2016) and Basuki & Prawoto (2017), data with more than 30 observations can be categorized as a large sample. In addition, Hair et al. (2014) state that deviations from the normality assumption may be disregarded in studies involving large samples. With 483 observations, the classical assumption tests in this study therefore focused on multicollinearity, autocorrelation, and heteroskedasticity.

Multicollinearity Test

Table 6 displays the multicollinearity test results using the Variance Inflation Factor (VIF).

Table 6. Multicollinearity Test

Variable	VIF	1/VIF
IO	6.24	0.160357
FA	5.08	0.196942
PO	4.59	0.217682
MO	3.58	0.279574

FA	1.93	0.517211
GO	1.17	0.855900
FS	1.10	0.911404
Mean VIF	3.38	

Source: Data processed by the authors (2026)

Multicollinearity was assessed using the Variance Inflation Factor (VIF), with a VIF value below 10 indicating the absence of multicollinearity. The results show that all variables have VIF values below the specified threshold. Therefore, the regression model does not indicate multicollinearity.

Autocorrelation Test

The results of the autocorrelation test using the Wooldridge test are presented in Table 7.

Table 7 Autocorrelation Test

Statistic	Value
F (1,160)	26.854
Prob > F	0.0000
Conclusion	Autocorrelation is present

Source: Data processed by the authors (2026)

The autocorrelation test was conducted using the Wooldridge test. The results show that $F(1, 160) = 26.85$ with $p = .000$. As a result, H_0 is rejected, demonstrating that the regression model contains autocorrelation.

Heteroskedasticity Test

The results of the heteroskedasticity test using the Modified Wald test are presented in Table 8.

Table 8. Heteroskedasticity Test

Test	Statistic	Probability	Conclusion
Modified Wald Test	$\chi^2 = 10,373,067.05$	0.0000	Heteroskedasticity is present

Source: Data processed by the authors (2026)

The heteroskedasticity test was conducted using the Modified Wald test for the Fixed Effects Model. As shown in Table 8, the χ^2 statistic is 10,373,067.05 with $p = .000$. The probability value below 0.05 indicates that H_0 is rejected, suggesting the presence of heteroskedasticity in the model.

The autocorrelation and heteroskedasticity tests indicate violations of the relevant assumptions. Therefore, robust standard errors were used to obtain consistent standard error estimates and more reliable significance tests.

Main Model: Fixed Effects Model with Robust Standard Errors

Table 9 displays the panel data regression results using the Fixed Effects Model (FEM) with robust standard errors.

Table 9. Regression Results

Variabel	ICE
MO	0.0206
IO	0.0333
FO	-0.0205
GO	-7.6519***

PO	0.0236
FA	-0.1948**
FS	0.1431
R-squared (Within)	0.0636
Prob > F	0.0000
Observasi	483

Source: Data processed by the authors (2026)

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Robust standard error used.

Table 9's regression findings demonstrate that the model as a whole is statistically significant, with Prob. > F = 0.000. The independent variables in the model account for 6.36% of the variation in intellectual capital efficiency, with other factors outside the research model accounting for the remaining 93.64%, according to the inside R-squared value of 0.0636.

Firm age (FA) has a negative and statistically significant impact on intellectual capital efficiency at the 5% significance level, but government ownership (GO) has a negative and statistically significant influence at the 1% significance level. However, there are no statistically significant effects on intellectual capital efficiency from managerial ownership (MO), institutional ownership (IO), foreign ownership (FO), public ownership (PO), or firm size (FS).

Thus, H1, H2, H3, and H5 are rejected because the corresponding relationships are not statistically significant. H4 is also rejected because government ownership (GO) has a statistically significant negative effect on intellectual capital efficiency, whereas the hypothesis predicts a positive effect.

DISCUSSION

The Effect of Managerial Ownership on Intellectual Capital Efficiency

The hypothesis testing results show that managerial ownership has no effect on intellectual capital efficiency. Therefore, the first hypothesis is rejected. This finding indicates that share ownership by management has not been able to improve intellectual capital efficiency in manufacturing companies. Thus, managerial ownership has not become a factor that can encourage companies to optimize the management of intellectual capital. This finding indicates that management share ownership is not sufficient to align managerial interests with the company's objectives in improving resource management efficiency. From the perspective of Resource-Based Theory (Barney, 1991), competitive advantage can be achieved when a company is able to manage and utilize strategic resources optimally to create value. Therefore, managerial share ownership does not automatically improve intellectual capital efficiency if it is not accompanied by the company's ability to develop, integrate, and utilize knowledge-based resources effectively.

This finding is consistent with Meilani et al. (2021), Santoso & Handoko (2024), Haura et al. (2022), Yonata & Susanto (2023), Putra et al. (2021), Noradiva et al. (2016), Hartati et al. (2019), Supradnya (2016), who also discovered that the effectiveness of intellectual capital is unaffected by managerial ownership. This finding implies that the efficiency of intellectual capital is more strongly associated with how well businesses manage their strategic assets than with the percentage of shares held by management.

The Effect of Institutional Ownership on Intellectual Capital Efficiency

The hypothesis testing results show that institutional ownership has no effect on intellectual capital efficiency. Therefore, the second hypothesis is rejected. This finding indicates that a high proportion of shares held by institutional investors has not been able to improve the efficiency of intellectual capital management in manufacturing companies. Thus, the presence of institutional investors has not become a factor that can encourage companies to optimize the management of intellectual capital.

This result suggests that institutional investors monitoring role has not been able to promote more effective intellectual capital management. According to Resource-Based Theory, a company's capacity to efficiently manage and employ strategic resources determines its competitive advantage (Barney, 1991). Therefore, a higher proportion of institutional ownership does not automatically improve intellectual capital efficiency when the monitoring conducted by institutional investors has not been reflected in policies that support the optimal development and utilization of intellectual capital. This finding is consistent with Mujahid & Qazi (2024), Nicma & Tumirin (2024), Hartati et al. (2019), Oktavian & Ahmar (2019), who also found that institutional ownership has no effect on intellectual capital efficiency.

The Effect of Foreign Ownership on Intellectual Capital Efficiency

The hypothesis testing results show that foreign ownership has no effect on intellectual capital efficiency. Therefore, the third hypothesis is rejected. This finding implies that a high proportion of shares held by foreign investors has not improved the efficacy of intellectual capital management in manufacturing companies. As a result, companies are no longer motivated to optimize their intellectual capital management by the presence of foreign investors.

This finding implies that foreign investors' knowledge, technology, experience, and managerial skills have not been fully integrated into the company's intellectual capital management. Resource-Based Theory states that a company's competitive advantage is determined by its ability to effectively manage and utilize strategic resources (Barney, 1991). Therefore, the presence of foreign investors does not automatically improve intellectual capital efficiency when the resources possessed by foreign investors have not been transformed into added value through optimal intellectual capital management. This finding is consistent with Nicma & Tumirin (2024), Haura et al. (2022), Tjendani et al. (2018), Yonata & Susanto (2023), Hartati et al. (2019), Oktavian & Ahmar (2019), Oktavian & Ahmar (2019), who also found that foreign ownership has no effect on intellectual capital efficiency.

The Effect of Government Ownership on Intellectual Capital Efficiency

The hypothesis testing results show that government ownership has a negative effect on intellectual capital efficiency, therefore the fourth hypothesis is rejected. This finding suggests that industrial enterprises' intellectual capital efficiency declines as the percentage of government ownership rises. This result implies that more effective management of intellectual capital has not been promoted by the government's involvement as a shareholder.

This finding indicates that government oversight and support as a shareholder have not been fully directed toward managing strategic resources with an orientation toward improving intellectual capital efficiency. From the perspective of Resource-Based Theory, a company's competitive advantage is determined by its ability to effectively manage and utilize strategic resources (Barney, 1991). Therefore, government ownership may have a negative effect on intellectual capital efficiency when the management of strategic resources is not sufficiently focused on creating added value through the optimal development and utilization of intellectual capital. This result is consistent with Sadiq et al. (2023), Santoso & Handoko (2024), Nassar et al. (2018), who also discovered that the efficiency of intellectual capital is negatively impacted by government ownership. These findings indicate that government involvement as a shareholder does not necessarily improve intellectual capital efficiency when the management of strategic resources is not fully oriented toward increasing the company's added value.

The Effect of Public Ownership on Intellectual Capital Efficiency

The hypothesis testing results show that public ownership has no effect on intellectual capital efficiency, therefore the fifth hypothesis is rejected. This finding suggests that increasing the percentage of publicly owned shares has not improved the effectiveness of intellectual capital management in manufacturing firms. Thus, the dispersion of share ownership among the public

has not become a factor that encourages companies to optimize their intellectual capital management.

This finding indicates that the presence of public shareholders has not been able to encourage transparency, accountability, and managerial discipline oriented toward more efficient intellectual capital management. From the perspective of Resource-Based Theory, a company's competitive advantage is determined by its ability to effectively manage and utilize strategic resources (Barney, 1991). Therefore, a higher proportion of public ownership does not automatically improve intellectual capital efficiency when the monitoring mechanism arising from public ownership has not been able to encourage the optimal development and utilization of intellectual capital. This result is consistent with Sadiq et al. (2023), who also found that public ownership has no significant effect on intellectual capital efficiency.

CONCLUSION

This study aims to examine the effect of ownership structure on intellectual capital efficiency in manufacturing companies listed on the Indonesia Stock Exchange during the 2022–2024 period. The results show that managerial ownership, institutional ownership, foreign ownership, and public ownership have no effect on intellectual capital efficiency. Meanwhile, government ownership has a negative effect on intellectual capital efficiency. Thus, ownership structure does not generally show a significant effect on intellectual capital efficiency in manufacturing companies. Intellectual capital efficiency is closely related to the company's ability to effectively manage and utilize its strategic resources, as explained by Resource-Based Theory.

This study's empirical contribution provides more proof of the connection between ownership structure and intellectual capital efficiency in Indonesian manufacturing firms. The results show that ownership structure changes do not always translate into changes in intellectual capital efficiency. This is in line with Resource-Based Theory, which holds that strategic resource management skills have a greater influence on competitive advantage than ownership structure features. Practically, the findings suggest that company management should focus on improving intellectual capital efficiency through the development of human resource competencies, improvement of organizational systems and processes, and optimization of the utilization of corporate knowledge.

This study has a limitation in terms of the observation period, which covers only three years from 2022 to 2024. The ability to record changes in the relationship between ownership structure and intellectual capital efficiency over a longer period of time may be limited by a relatively short observation period. In order to fully capture the dynamics of this association, future study is advised to extend the observation duration. In order to determine whether monitoring mechanisms enhance or diminish the relationship between ownership structure and intellectual capital efficiency, future research may also take into account other pertinent factors, especially corporate governance mechanisms like audit committee effectiveness or audit quality, as moderating variables.

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