

## The Influence of Asset Intensity, Employee Intensity, and Intellectual Capital on the Competitiveness of Manufacturing Industries: Cost Stickiness as a Mediating Variable

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### ABSTRACT

*The low competitiveness of the Indonesian manufacturing industry is a current phenomenon causing a decline in Indonesia's manufacturing industry competitiveness ranking below that of Singapore, Malaysia, and Thailand. This indicates that Indonesia needs to enhance four factors: national economic performance, policy efficiency, business efficiency, and infrastructure. The purpose of this research is to examine the influence of factors affecting competitiveness. The data analysis technique used in this research is multiple linear regression analysis. The population in this study is companies listed on the Indonesian stock exchange. Data collection used purposive sampling method, with a total sample size of 212, with a sampling quota of 109 companies that have both sales increases and decreases annually. In this study, there are independent variables such as Asset Intensity, Employee Intensity, and Intellectual Capital, dependent variable Competitiveness, and mediating variable Cost Stickiness. The results of the research show that the variables of employee intensity and intellectual capital have an influence in this study, whereas asset intensity does not have an influence in this study. Additionally, Cost Stickiness has not been able to mediate the influence on Asset Intensity, Employee Intensity, and Intellectual Capital.*

### KEYWORDS

*Asset Intensity, Employee Intensity, Intellectual Capital, Sticky Cost, Competitiveness*



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### INTRODUCTION

Economic development is one of the key pillars supporting a country in fulfilling its functions. Economic development issues are of special concern

**How to cite:** Yeni Kusmiyati, Wiwik Utami. (2024). The Influence of Asset Intensity, Employee Intensity, and Intellectual Capital on the Competitiveness of Manufacturing Industries: Cost Stickiness as a Mediating Variable. *Journal Eduvest*. 4 (3): 835-854  
**E-ISSN:** 2775-3727  
**Published by:** <https://greenpublisher.id/>

worldwide, especially in developing countries, as they involve maintaining stable and quality output growth over time to support the welfare of society. Essentially, economic development focuses on a social, economic, and institutional process to achieve better living standards (Todaro, Michael P & Smith, 2011).

The Central Statistics Agency (BPS) has reported that the growth of the manufacturing industry has slowed down compared to the period in 2018. In 2019, the growth of the Indonesian manufacturing industry reached 4.27 percent. However, in 2019, the growth of the manufacturing industry in Indonesia decreased to 3.80 percent, a decrease of 0.47 percent from the previous year, 2018. It even experienced pressure down to minus 2.93 percent in 2020. However, the growth of the manufacturing sector became lively again in 2021, increasing to 3.39 percent. This increase is still far below compared to 2018 and 2019 (BPS, 2022).

In 2022, Indonesia experienced a decrease in its competitiveness ranking. According to the Institute for Management Development (IMD) World Competitive Yearbook 2022 report, Indonesia's competitiveness fell from 37th place in 2021 to 44th place. Compared to some new industrial countries in the ASEAN region, Indonesia's industrial competitiveness ranking is also below that of Singapore, Malaysia, and Thailand, although Indonesia still ranks above the Philippines by a slim margin.

The report issued by the Institute for Management Development (IMD) explains that the low competitiveness of the Indonesian industry can be caused by several factors, namely: First, national economic performance reflected in international trade, investment, employment, and prices that have not yet improved. Second, the low efficiency of governmental institutions in making policies related to national financial management, fiscal policies, and regulations for a conducive business climate. Third, the low efficiency of businesses in promoting production growth reflected in productivity levels, labor markets, and access to resources. Fourth, infrastructure limitations, both physical infrastructure, technology, basic infrastructure related to the needs of education and health (Isventina, Nunung Nuryartono, 2015).

Based on the above phenomena, it can be concluded that the low competitiveness of the Indonesian manufacturing industry is a current phenomenon causing a decline in Indonesia's manufacturing industry competitiveness compared to that of Singapore, Malaysia, and Thailand. This indicates that Indonesia needs to improve four factors: national economic performance, policy efficiency, business efficiency, and infrastructure. There are several factors that affect Competitiveness Levels including: Asset Intensity, Employee Intensity, and Intellectual Capital.

In this study, Sticky Cost is used as a mediating variable. Sticky cost was first discovered by Malcolm in 1991. Some costs tend to have characteristics that are not proportional to changes in activity. So costs tend to be rigid and sticky due to excessively high fixed cost activities, even if activities decrease, hence the name "sticky cost." Anderson et al. (2003) state that sticky costs can occur due to intentional manager intervention and decisions. This proves that sticky costs occur when managers hold onto tied resources when sales decline. When sales increase,

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managers must add tied resources to meet demand. However, when sales decline, managers do not release these tied resources and decide to hold onto them. According to Azmi & Januryanti (2021), sticky costs occur due to uncertainty about future demand, which can be a threat to the company. To address this, managers can reduce resources or maintain resources.

Previous research has proven the relationship between Asset Intensity and Sticky Cost. Indriana et al., (2021) state that Asset Intensity has a positive and significant effect on Sticky Cost. In line with the study carried out by Tiono & Fanani (2017), which indicates that Asset Intensity has an impact on Sticky Cost. The results of research conducted by Candra (2017) state that Asset Intensity does not affect Sticky Cost. Previous research on the effect of Employee Intensity on Sticky Cost from previous research conducted by Zulfiati et al., (2020) states that Employee Intensity has a positive and significant effect on Sticky Cost. This aligns with the findings of Soegiharto & Rachmawati (2022), but contradicts the results of Afiffah et al., (2018), who concluded that Employee Intensity has no impact on Sticky Cost. Similarly, the relationship between Intellectual Capital and Sticky Cost conducted by Soegiharto & Rachmawati (2022) states that Intellectual Capital has a positive effect on Sticky Cost. The results of research are in line with those conducted by ali mohammadi (2016) which states that Intellectual Capital affects Sticky Cost. In contrast to research conducted by Wira Ramashar, et.al (2019) which states that Intellectual Capital does not affect Sticky Cost. The relationship between Sticky Cost and competitiveness conducted by Fitri et al., (2020) states that business strategies implemented by companies will impact the increase in sticky cost levels. By knowing the company's business strategies, management can make decisions related to resource management appropriately.

Previous research has also proven the relationship between Asset Intensity and competitiveness, namely in research conducted by Septa et al., (2020) which states that a company can develop competitive advantages through the optimization of its valuable assets, such as unique resources, knowledge, and various other useful assets, creating potential for the company. This competitive advantage potential can build financial divisions to be more efficient, allowing the company to add assets more specifically (Romadhani et al., 2022). Meanwhile, according to research conducted by Lestari & Indarto (2019), Fixed asset intensity does not affect the company's value. The relationship between Employee Intensity and competitiveness is found in research conducted by Anjarsari (2021) which states that employee commitment is the most dominant positive factor influencing sustainable competitive advantage. In the study by Soegiharto & Rachmawati (2022), it is asserted that employees or human capital represent a fundamental competency and organizational capability. Meanwhile, according to Pichetkun (2012), this ratio explains companies that generate sales revenue then want to expand market share by adding experts who have the qualities needed by the company. The need for experts will add to the costs incurred by the company. The relationship between Intellectual capital and competitiveness is found in Stakeholder Theory pioneered by Penrose (1959), where companies will have a competitive advantage if they can manage resources well. The resources owned by the company, especially Intellectual capital, will greatly affect the company's future performance (Libyanita, 2016).

This study examines the financial statements of manufacturing firms listed on the Indonesia Stock Exchange (IDX) as the research object. The reason the authors chose these companies is that manufacturing companies have significant competitiveness at present. However, despite continuous sales growth, it does not translate into enhancing the company's competitiveness. This is due to the presence of several factors that can influence the company's competitiveness. An innovation in this study is the use of Sticky Cost as a mediating variable, where evidence of sticky cost behavior indications in manufacturing companies in Indonesia shows that cost changes do not always follow changes in activity. Based on the background, the problems addressed in this study are formulated as follows:

1. Does Asset Intensity affect Sticky Cost?
2. Does Employee Intensity affect Sticky Cost?
3. Does Intellectual Capital affect Sticky Cost?
4. Does Sticky Cost affect competitiveness?
5. Does Asset Intensity directly affect competitiveness?
6. Does Employee Intensity directly affect competitiveness?
7. Does Intellectual Capital directly affect competitiveness?
8. Does sticky cost mediate the influence of Asset Intensity on competitiveness?
9. Does sticky cost mediate the influence of Employee Intensity on competitiveness?
10. Does sticky cost mediate the influence of Intellectual Capital on competitiveness?

## **Literature Review and Hypotheses Development**

### **Theoretical Framework**

According to stakeholder theory, corporations are not just self-serving entities but must also deliver advantages to their stakeholders. Hence, the presence and sustainability of a company heavily depend on the support it garners from its stakeholders (Ghozali dan Chariri, 2007). These stakeholders include the community, employees, government, suppliers, capital markets, and others. In stakeholder theory, as described by Ghozali and Chariri (2007), a company is not just a self-serving entity but is obligated to deliver advantages to various stakeholders such as shareholders, creditors, consumers, suppliers, government, community, analysts, and others. Therefore, the company's survival is significantly impacted by the support extended by its stakeholders to the company

Meanwhile, according to Ulum (2009), stakeholder theory states that all stakeholders have the right to be provided with information about how organizational activities affect them (for example, through pollution, sponsorship, security initiatives, and others), even when they choose to use this information and even when they cannot directly play a constructive role in the organization's survival. In the concept of stakeholder theory, the relevance to this research is when a company faces issues related to the cost of productive activities. A company is required to minimize costs and utilize resources effectively and efficiently to maximize profits.

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When managers perceive a discrepancy between the costs incurred and the company's activities, stakeholders or interested parties in the company also assist.

#### **Asset Intensity**

In PSAK 16 revision of 2018, assets are all possessions owned by a company or an individual, tangible or intangible, that are valuable or have value that will benefit someone or the company itself. In PSAK 16 (2018: paragraph 6), fixed assets are tangible assets that: a. Owned for utilization in producing or delivering goods or services for leasing to others, or for administrative functions and; b. Expected to be used for more than one period.

#### **Employee Intensity**

Employee intensity is a ratio that measures the effectiveness and efficiency of sales in utilizing and developing human resources. This ratio indicates the use of human resources per unit of currency generated from sales revenue. Then in a study conducted by (Soegiharto & Rachmawati, 2022) it is stated that employees or human capital are a core competency and organizational capability. Companies strive to maintain their human resources model to provide competitive advantages. Therefore, companies provide remuneration packages to retain their employees, resulting in Sticky Cost behavior.

#### **Intellectual Capital**

Intellectual Capital refers to assets that consider the growth of intangible assets as a lasting investment and are reluctant to reduce this investment in reaction to a decline in sales volume, thereby leading to sticky costs. Companies that understand the significance of growth and advancement will also regard intellectual capital as a valuable asset that requires preservation, as it can generate revenue and future business sales, as stated by Yang (2019). The company is expected to provide a reciprocal relationship to stakeholders and environment so that the existence of the company could be received as well which is often called corporate social responsibility or referred to as corporate social responsibility and the use of intangible assets like an intellectual capital (Maesaroh & Mulya, 2019). By pointing to the concept of knowledge assets, it becomes easier to explain the IC component where knowledge resources are not only intangible assets, but also the combination of these intangible assets with knowledge assets as the basis of organizational competence (Surjandari & Minanari, 2019).

#### **Sticky Cost**

Sticky Cost is characterized by cost increases that are more responsive to sales growth than to sales declines. Malcom (1991), found that some costs tend not to be easily adjusted (fixed costs). This will cause problems when activities increase and are followed by increased costs, but when activities decrease, cost reductions are not proportional. Fixed costs are expenses that are challenging to modify because they are typically fixed and challenging to reduce even during periods of reduced company activities. It is the nature of these costs that causes them to be called sticky costs.

#### **Competitiveness**

A competitive strategy approach will reveal the business competitiveness. The announcing firms, and its rivals, all firms in the same sub-sector were classified into two groups, strategic substitutes and strategic complements (Eliyani & Utami,

2016). Competitiveness refers to the capacity of a company, industry, region, country, or regions to consistently generate higher income and employment opportunities to face international competition. Kuncoro (2007) defines competitiveness as a concept that involves evaluating the capacity and performance of companies, sub-sectors, or countries in terms of their ability to sell and provide goods and/or services in the market.

#### **Impact of Asset Intensity on Sticky Cost**

When a company experiences a decrease in sales, managers try to reduce/stop the scale of purchases in inventory materials obtained from external parties. However, when this happens, it will affect the company's inputs and will also affect the assets owned by the company because when the company's inputs decrease, it may result in the release of these assets because the assets (machinery) are not being used or a reduction in the working hours of these assets (machinery) (Afiffah et al., 2018).

Based on the above concept, asset intensity represents a description of the company's asset investment, which is usually used to measure how productive a company is in using its sales proceeds to invest in its assets. A high ratio of assets to sales operations reflects a large asset intensity, and a low ratio of assets to sales operations reflects a small asset intensity.

#### **Impact of Employee Intensity on Sticky Cost**

Previous research conducted by Zulfiati et al. (2020) and Soegiharto & Rachmawati (2022) stated that Employee Intensity has a positive impact on Cost Stickiness. This is because on average companies experience the use of Sticky Cost, the company's employees are smaller than the revenue and sales of the business received, but the existence of labor laws in force such as Law No. 13 of 2003, company policies and responsibilities related to employment, also as considerations for the adjustment of large employee costs become obstacles to reducing the number and cost of employees, causing the intensity of employees in companies to increase and they must pay employee benefits (employee salaries and benefits costs). which ultimately increases the cost of sticky behavior.

#### **Impact of Intellectual Capital on Sticky Cost**

Intellectual capital, also known as intangible assets, refers to knowledge-based resources that enhance company performance and competitiveness while adding value in comparison to other firms. Intellectual capital can be seen as knowledge in forming intellectual wealth and experience that can be used to create company wealth. Intellectual capital is not only goodwill or patents as often reported in the balance sheet. Employee competence, customer relationships, innovation creation, computer and administrative systems, to the ability to master technology are also part of intellectual capital (Noor, 2021).

Previous research conducted by Soegiharto & Rachmawati (2022) stated that Intellectual Capital has a positive effect on Sticky Cost. This is because intangible assets are seen as a long-term investment that contributes to long-term investments and is reluctant to reduce this investment in response to a decrease in sales volume resulting in sticky costs.

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### **Impact of Sticky Cost on Competitiveness**

In the book written by M.E. Porter (1993), in his book states that competitiveness involves striving to deliver greater customer value compared to rivals through the efficient execution of specific activities, superior quality/services, or a combination of both. So company activities affect the level of competitiveness of the company just like sticky costs that occur when company activities decrease but are not followed by a decrease in company costs.

Business strategies implemented by companies will impact the increase in sticky cost levels. By knowing the company's business strategies, management can make decisions related to resource management appropriately. This proves that sticky costs occur when managers make decisions to reduce resources or maintain resources. Sticky costs occur because of uncertainty about future demand, which can be a threat to the company.

### **Impact of Asset Intensity on Competitiveness**

The relationship between Asset Intensity and competitiveness is that in a study conducted by Septa et al. (2020) it stated that a company can develop competitive advantages through the optimization of its valuable assets, such as unique resources, knowledge, and various other useful assets creating potential for the company. Competitive advantage can be utilized by companies to obtain a good stock market value. Increasing the company's value makes the use of competitive advantage more scalable, and this can maintain the company's existence in a particular industry. The potential for competitive advantage can build financial divisions more efficiently, so the company can add assets more specifically (Romadhani et al., 2022).

### **Impact of Employee Intensity on Competitiveness**

The relationship between Employee Intensity and competitiveness is that in research conducted by Anjarsari (2021) stated that employee work commitment is the most dominant positive factor influencing sustainable competitive advantages. Then in research conducted by (Soegiharto & Rachmawati, 2022) it is stated that employees or human capital are a core competency and organizational capability. Companies strive to maintain their human resources model to provide competitive advantages. Therefore, companies provide remuneration packages to retain their employees, resulting in Sticky Cost behavior.

### **Impact of Intellectual Capital on Competitiveness**

The relationship between Intellectual capital and competitiveness is that in running its business, a company must be able to create different advantages from its competitors. In Stakeholder Theory pioneered by Penrose (1959), the company will have a competitive advantage if it can manage resources properly. Resources owned by companies, especially Intellectual capital, will greatly affect the company's future performance (Libyanita, 2016).

## **RESEARCH METHOD**

This type of research utilizes a quantitative research method. According to Sekaran, U., & Bougie (2017), quantitative data is data in numerical form generally obtained through structured questions. The quantitative research used is causal quantitative research intended to test whether one variable causes another variable

to change or not. In this study, there are 3 (three) independent variables, namely: Asset Intensity, Employee Intensity, and Intellectual Capital, 1 (one) dependent variable, namely: Competitiveness, and 1 (one) mediating variable, namely: Cost Stickiness. This research uses secondary data, utilizing financial reports from companies listed on the Indonesia Stock Exchange. Data sources were obtained from the official websites of companies with a research period of 4 (four) years, from 2018 to 2021.

In this study, the researcher used secondary data in the form of financial reports obtained through the official websites of companies and the Indonesia Stock Exchange. The population in this study consists of manufacturing companies listed on the Indonesia Stock Exchange for the period 2018-2021, totaling 172 companies. The sampling technique used in this study is purposive sampling, where the sampling technique selects data sources based on specific considerations with the aim of obtaining a representative sample according to predetermined criteria.

<b>Information</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>
Population	172	172	172	172
Incomplete data or using foreign currency	(63)	(63)	(63)	(63)
There are no ups and downs in sales	(66)	(44)	(41)	(73)
Total Sample	43	65	68	36
<b>Total sample used</b>	<b>212 Sample</b>			

**Table 1 Sample Selection Criteria**

***Asset Intensity***

In a study by Kalbuana et al. (2020), *Asset Intensity* refers to the fixed asset intensity ratio, which quantifies the proportion of fixed assets to a company's total assets, indicating the extent of fixed assets in relation to the total asset base. The formula for calculating the fixed asset intensity ratio according to Kalbuana et al., (2020) is as follows:

$$\text{Fixed Asset Intensity Ratio} = \frac{\text{Aset Tetap}}{\text{Total Aset}}$$

***Employee Intensity***

*Employee Intensity* is a ratio that measures the effectiveness and efficiency of sales in the utilization and development of human resources. This ratio shows the use of human resources for each rupiah generated from sales revenue.

*Employee Intensity (EI)* is measured based on a formula from research conducted by Afiffah et al., (2018), namely :

$$\text{Employee Intensity (EI)} = \frac{\text{Jumlah Karyawan}}{\text{Penjualan Bersih}}$$

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**Intellectual Capital**

Intellectual capital (MI) is measured by the *value added intellectual coefficient* (VAIC) and *intellectual capital index* (ICI) approaches. The VAIC approach is based on a formula from research conducted by Santoso and Rachmawati (2021), namely:

$$\mathbf{Vaic} = \mathbf{Vaca} + \mathbf{Vahu} + \mathbf{Stva}..... (7)$$

Information:

VAIC = Value added intellectual coefficient

VACA = Value added capital employed

VAHU = Value added human capital

STVA = Structural capital value added

VA = Output – Input

Information:

VA = Value added

Output = Firm revenue and sales

Input = Expenses (except salaries, wages, training expenses, and education expenses)

VACA = VA / CA

Information:

CA = Capital employed (net assets – intangible assets)

VAHU = VA / HC

Information:

HC = Human capital (salaries, wages, training expenses, and education expenses)

STVA = SC / VA

Information:

SC = Structural capital (VA – HC)

**Sticky Cost**

Costs can be said to be sticky if the amount of cost increase when the volume of company activities increases is higher than when sales volume decreases (Anderson, M. C., Banker, R. D., & Janakiraman, 2003). According to research conducted by Weiss (2010), sticky Cost is measured based on the following equation::

$$\mathbf{STICKY}_{i,\tau} = \log\left(\frac{\Delta\mathbf{COST}}{\Delta\mathbf{SALES}}\right)_{i,\tau} - \log\left(\frac{\Delta\mathbf{COST}}{\Delta\mathbf{SALES}}\right)_{i,\tau+}$$

Information:

$\Delta\mathbf{COST}$ : Total Beban Usaha

$\Delta\mathbf{SALES}$ :  $Sales_{i,\tau} - Sales_{i,\tau-1}$

$Sales_{i,\tau}$ : Net sales of the company i in the period  $\tau$

$Sales_{i,\tau-1}$ : Net sales of the company i in the period  $\tau - 1$

**Competitiveness**

According to M. E. Porter (1985), competitive advantage is the ability of companies to get periodic returns on investment above the industry average.

Competitive advantage is used as a company's strategy in innovating differently from its competitors and winning market share.

One measure of whether a firm has a successful strategy or not is the number of standard deviations of its sales that deviate from industry sales, as the following equation shows (M. E. Porter, 2008):

$$\text{Competitiveness} = \frac{\text{Sales}_i - \text{Mean Sales Industry}}{\text{Deviasi Sales Industry}}$$

Where:

Sales<sub>i</sub> = Sales of company i at t,

Mean Sales = Average industry sales in year t

Sales Deviation = Standard deviation of sales of all companies in the same industry

## RESULT AND DISCUSSION

### Descriptive Test

	X1	X2	X3	Y2
Mean	0.396652	0.002088	2.076689	-0.011970
Median	0.354106	0.000778	2.230858	-0.254470
Maximum	0.802167	0.092000	23.71578	8.534763
Minimum	0.000951	0.000090	-14.84303	-0.315342
Std. Dev.	0.198992	0.007099	3.294835	0.974640
Skewness	0.285962	10.29128	-0.205152	6.407744
Kurtosis	2.049579	124.8069	16.65670	49.00839
Observations	212	212	212	212

Asset Intensity (X1) in the above descriptive statistics table for manufacturing companies has a minimum value of 0.000951 or 0.00% at PT. Buana Artha Anugerah Tbk, which means the company does not rely on the proportion of investment in biological assets. Meanwhile, the maximum value is 0.802167 at PT Astra Otoparts Tbk, indicating the use of 0.80% of the company's investment proportion in biological assets. The average value is 0.396652, indicating that on average, the level of asset intensity for companies is relatively small, still below 1%. The standard deviation is 0.198992. The Asset Intensity variable has a standard deviation smaller than the mean, indicating that the asset intensity variable is homogeneous or less diverse in data.

Employee Intensity (X2) in the above descriptive statistics table for manufacturing companies has a minimum value of 0.000090 or 0.00% at PT Wilmar Cahaya Indonesia Tbk, indicating that the company does not measure the effectiveness and efficiency of sales in utilizing and developing human resources. Meanwhile, the maximum value is 0.092000 at PT Eterindo Wahanatama Tbk, indicating the use of 0.10% to measure the effectiveness and efficiency of sales in utilizing and

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developing human resources. The average value is 0.002088, indicating that on average, the level of employee intensity for companies is still relatively small, below 1%. The standard deviation is 0.007099. The Employee Intensity variable has a standard deviation larger than the mean, indicating that the Employee Intensity variable is heterogeneous or becoming more diverse and varied in data.

Intellectual Capital (X3) in the above descriptive statistics table for manufacturing companies has a minimum value of -14.84303 or -14.84% at PT Primarindo Asia Infrastructure Tbk, indicating that the company cannot improve human resources, company capabilities, create economic success, good company value, and good financial performance to maintain competitive position. Meanwhile, the maximum value is 23.71578 at PT Eterindo Wahanatama Tbk, indicating the use of 23.72% to improve human resources, company capabilities, create economic success, good company value, and good financial performance to maintain competitive position. The average value is 2.076689, indicating that on average, the level of intellectual capital for companies is still relatively small. The standard deviation is 3.294835. The Intellectual Capital variable has a standard deviation larger than the mean, indicating that the Intellectual Capital variable is heterogeneous or becoming more diverse and varied in data.

Competitiveness (Y2) in the above descriptive statistics table for manufacturing companies has a minimum value of -0.315342 or -0.31% at PT Eterindo Wahanatama Tbk, indicating the company does not have the ability to survive in the market. Meanwhile, the maximum value is 8.534765 at PT Astra International Tbk, indicating a 8.53% ability to survive in the market, with an average value of -0.011970. This indicates that on average, companies lack competitiveness. The standard deviation is 0.974640. The Competitiveness variable has a standard deviation larger than the mean, indicating that the Competitiveness variable is heterogeneous or the data is highly varied.

### Panel Data Regression Model Analysis

In panel data analysis using 3 models, namely Chow Test, *Hausman Test*, *Lagrange Multiplier* (LM). After testing the suitability of the model, a random effect is obtained as the selected model as follows:

**Table 3 Sticky Cost Regression Model Selection Results**

No	Test	P value	Result	Conclusion
1	Chow Test	0,0113	Selected Fixed Effect (FE)	
2	Hausman Test	0,1155	Selected Random Effect (RE)	RE
3	LM Test	0,0000	Selected Random Effect (RE)	

Source : Data processed with Eviews 11, 2023

**Table 4 Competitive Regression Model Selection Results**

No	Test	P value	Result	Conclusion
1	Chow Test	0,0000	Selected Fixed Effect (FE)	
2	Hausman Test	0,1765	Selected Random Effect (RE)	RE

3 LM Test 0,0000 Selected Random Effect (RE)

Source : Data processed with Eviews 11, 2023

Based on the summary of the results of the regression model selection test using the Chow test, LM Test and Hausman Test, it can be concluded that the best model selected is the *Random Effect* model. According to research conducted by Afrianita & Kamaludin (2022) states that if a *common effect* or *fixed effect* model is used, then the next step is to test classical assumptions. However, if the model used falls on the *random effect*, there is no need to test classical assumptions. In addition, in a study conducted by Awaludin et al., (2023) also stated that using a *random effect model* can ignore violations of classical assumption tests. So in this study there is no need to test heteroscedasticity because the best model used is the *random effect model*.

**Results of Panel Data Statistical Analysis**

**Test F**

**Tabel 5 Hipotesis Sticky Cost**

R-squared	0.019635	Mean dependent var	0.006267
Adjusted R-squared	0.005495	S.D. dependent var	0.052006
S.E. of regression	0.051849	Sum squared resid	0.559161
F-statistic	1.388625	Durbin-Watson stat	1.939552
Prob(F-statistic)	0.247293		

Source : Data processed with Eviews 11, 2023

Test F is carried out to find out whether the regression model in this study is appropriate or not. The results of the F test as shown in the table show that the value of Prob (*F-Statistics*) is  $0.2472 > 0.05$  which means that simultaneously the variables *Asset Intensity*, *Employee Intensity* and *Intellectual Capital* have no effect on *Sticky Cost*.

**Table 6 Competitiveness Hypothesis**

R-squared	0.141468	Mean dependent var	-0.018696
Adjusted R-squared	0.124878	S.D. dependent var	0.025288
S.E. of regression	0.023630	Sum squared resid	0.115581
F-statistic	8.527340	Durbin-Watson stat	1.874982
Prob(F-statistic)	0.000002		

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Source : Data processed with Eviews 11, 2023

Test F is carried out to find out whether the regression model in this study is appropriate or not. The results of the F test as shown in the table above show that the value of Prob (*F-Statistics*) is  $0.0000 < 0.05$  which means that simultaneously the variables *Asset Intensity*, *Employee Intensity*, *Intellectual Capital* and *sticky cost* affect Competitiveness.

### T Test

The t-test is performed to see if the individual independent variable has a significant impact on the dependent variable, as well as to prove which variable is more dominant.

**Table 7. T Test of Sticky Cost**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	0.000718	0.011913	0.060239	0.9520
X2	-10.28210	4.245182	-2.422064	0.0163
X3	-0.004287	0.002054	-2.087255	0.0381
C	0.028492	0.015485	1.840010	0.0672

Source : Data processed with Eviews 11, 2023

Based on the results of the t test in the table above, the following results are obtained:

1. *Asset Intensity* does not have a positive and significant effect on *Sticky Cost*, with a p value of  $0.9520 > 0.05$ , this means that the high and low *Asset Intensity* is not influenced by much *Sticky Cost*
2. *Employee Intensity* has a negative and significant effect on *Sticky Cost*, shown by p value  $0.0163 < 0.05$  and negative regression coefficient of -10.2821, This shows a negative influence (in the opposite direction) between the variable *Employee Intensity* and *sticky cost*. this means that the higher the *Employee Intensity*, the lower the occurrence of *Sticky Cost*, vice versa the lower the *Employee Intensity* then the higher the occurrence of *Sticky Cost*.
3. *Intellectual Capital* has a negative and significant effect on *sticky costs*, shown by p values of  $0.0381 < 0.05$  and negative regression coefficients of -0.0043, this shows a negative influence (in the opposite direction) between *Intellectual Capital variables* and *sticky costs*. This means that the higher the *Intellectual Capital*, the lower the occurrence of *Sticky Cost*, vice versa, the lower the *Intellectual Capital*, the higher the occurrence of *Sticky Cost*.

**Table 8 T Test of Competitiveness**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Y1	-0.003125	0.048766	-0.064080	0.9490

X1	-0.026274	0.018857	-1.393316	0.1666
X2	-17.79476	7.163495	-2.484089	0.0147
X3	0.009408	0.003274	2.873071	0.0050
C	-0.169583	0.010506	-16.14184	0.0000

Source : Data processed with Eviews 11, 2023

Based on the results of the t test in the table above, the following results are obtained:

1. *Sticky Cost* does not have a negative and significant effect on competitiveness, with p values of  $0.9490 > 0.05$ , this means that the high and low of Sticky Cost cannot be affected by much lack of competitiveness
2. *Asset Intensity* does not have a negative and significant effect on competitiveness, with a p value of  $0.1666 > 0.05$ , this means that the high and low Asset Intensity is not influenced by much lack of competitiveness
3. *Employee Intensity* has a negative and significant effect on competitiveness, shown by p value of  $0.0147 < 0.05$  and negative regression coefficient of -17.7976, this shows a negative influence (in the opposite direction) between the variables of *Employee Intensity* and competitiveness. This means that the higher the Employee Intensity, the lower the level of competitiveness, and vice versa, the lower the Employee Intensity, the higher the level of competitiveness.
4. *Intellectual Capital* has a positive and significant effect on competitiveness, shown by p value  $0.0050 < 0.05$  and a positive regression coefficient of 0.0094, this means that the higher the Intellectual Capital, the greater the level of competitiveness, vice versa the lower the Intellectual Capital, the smaller the level of competitiveness.

### Test R2

The determination coefficient test is carried out to determine how much the ability of the independent variable model to explain the dependent variable.

**Table 9 R2 Sticky Cost Test**

R-squared	0.019635	Mean dependent var	0.006267
Adjusted R-squared	0.005495	S.D. dependent var	0.052006
S.E. of regression	0.051849	Sum squared resid	0.559161
F-statistic	1.388625	Durbin-Watson stat	1.939552
Prob(F-statistic)	0.247293		

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Source : Data processed with Eviews 11, 2023

Based on the table above, it shows an R value of 0.0055 or 0.55%. It can be explained that the variation of the *Sticky Cost* variable can be explained by the variable variation of the variables *Asset Intensity*, *Employee Intensity*, *Intellectual Capital* while the result value of the overall factor minus R (1 - 0.0055) obtained 0.9945 or 99% can be explained by other factors that are not included in this research model. The lack of influence of *Asset Intensity*, *Employee Intensity*, *Intellectual Capital* due to other factors related to *Sticky Cost*, such as (*human capital efficiency*, *SCE (structural capital efficiency)*) and other independent variables that were not included in this study.

**Table 10 R2 Test of Competitiveness**

R-squared	0.141468	Mean dependent var	-0.018696
Adjusted R-squared	0.124878	S.D. dependent var	0.025288
S.E. of regression	0.023630	Sum squared resid	0.115581
F-statistic	8.527340	Durbin-Watson stat	1.874982
Prob(F-statistic)	0.000002		

Source : Data processed with Eviews 11, 2023

Based on the table above, it shows an R value of 0.1249 or 12%. It can be explained that the variation of the Competitiveness variable can be explained by the variable variation of the variables *Asset Intensity*, *Employee Intensity*, *Intellectual Capital* and *sticky cost* while the result value of the overall factor minus R (1 - 0.1249) obtained 0.8751 or 88% can be explained by other factors that are not included in this research model. The lack of influence of *Asset Intensity*, *Employee Intensity*, *Intellectual Capital* due to other factors related to competitiveness that were not included in this study.

**Regression Equation**

Based on the t-test table above, the multiple linear regression equation can be obtained as follows::

$$Y1 = 0,0284 + 0,0007 (Asset Intensity) - 10,2821 (Employee Intensity) - 0,0043 (Intellectual Capital)$$

From the results of the regression it can be concluded that:

- a) The constant  $\alpha = 0.0284$  means that if *Asset Intensity*, *Employee Intensity*, *Intellectual Capital* is constant, the value of *Sticky Cost* increases by 0.0284
- b) The *Asset Intensity regression coefficient* is 0.0007. This shows that every 1 point increase in *Asset Intensity* and other variables is fixed, it will cause an increase in the *Sticky Cost* received by the coefficient value of 0.0007
- c) The *Employee Intensity regression coefficient* is -10.2821. This shows a negative influence (in the opposite direction) between the variables *Employee Intensity* and *sticky cost*. This means that if the *Employee Intensity* variable increases every 1 point increase from *Employee Intensity*

and other variables are fixed, it will cause a decrease in *the Sticky Cost* received by the coefficient value of -10.2821.

- d) The regression coefficient of *Intellectual Capital* is -0.0043. This shows a negative influence (in the opposite direction) between *the variables of Intellectual Capital* and sticky costs. This means that if the Employee Intensity variable increases every 1 point increase from *Intellectual Capital* and other variables are fixed, it will cause a decrease in *the Sticky Cost* received by the value of the coefficient -0.0043.

$$Y_2 = -0,1696 - 0,0263 (\text{Asset Intensity}) - 17,7947 (\text{Employee Intensity}) + 0,0094 (\text{Intellectual Capital}) - 0,0031 (\text{Sticky Cost})$$

From the results of the regression it can be concluded that:

- a) The constant  $\alpha = -0.1696$  means that if *Asset Intensity*, *Employee Intensity*, *Intellectual Capital*, *Sticky Cost* constant then the value of competitiveness decreases by -0.1696
- b) The Asset Intensity regression coefficient is -0.0263. This shows a negative influence (in the opposite direction) between *the variables Asset Intensity* and Competitiveness. This shows that every 1 point increase in *Asset Intensity* and other variations is fixed, it will cause a decrease in the competitiveness received by the value of the coefficient of -0.0263
- c) The Employee Intensity regression coefficient is -17.7947. This shows a negative influence (in the opposite direction) between the variables *Employee Intensity* and Competitiveness. This shows that every 1 point increase in *Employee Intensity* and other variables is fixed, it will cause a decrease in the Competitiveness received by the value of the coefficient -17.7947.
- d) The regression coefficient of *Intellectual Capital* is 0.0094. This shows that every 1 point increase in *Intellectual Capital* and other variables is fixed, it will lead to an increase in the Competitiveness received by the coefficient value of 0.0094.
- e) The Sticky Cost regression coefficient is -0.0031. This shows a negative influence (in the opposite direction) between the variables *Sticky Cost* and Competitiveness This shows that every increase of 1 point from *Intellectual Capital* and other variables is fixed, it will cause a decrease in Competitiveness received by the value of the coefficient of -0.0031

### Uji Sobel

Sobel Test Calculation Results: *Sticky cost* mediates the effect of *Asset Intensity* on competitiveness



Input:		Test statistic:	Std. Error:	p-value:
a	0.000718	Sobel test: -0.0439031	0.00005111	0.96498164
b	-0.003125	Aroian test: -0.00384735	0.00058319	0.99693027
s <sub>a</sub>	0.011913	Goodman test: NaN	NaN	NaN
s <sub>b</sub>	0.048766	Reset all	Calculate	

The P-Value obtained is  $0.9650 > 0.05$  with a Test Statistic Sobel Test value of  $-0.0439 < 1.92$ , it can be concluded that the Asset Intensity Variable (X1) does not have a significant effect on the sticky cost variable (Y1) or indirectly the sticky cost variable (Y1) is not able to mediate the influence of the competitiveness variable (Y2)

Sobel Test Calculation Results: *Sticky Cost* mediates the effect of *Employee Intensity* on competitiveness

Input:		Test statistic:	Std. Error:	p-value:
a	-10.28210	Sobel test: 0.06405912	0.50159235	0.94892315
b	-0.003125	Aroian test: 0.05921399	0.54263468	0.95278167
s <sub>a</sub>	4.245182	Goodman test: 0.07032856	0.45687786	0.94393215
s <sub>b</sub>	0.048766	Reset all	Calculate	

The P-Value obtained is  $0.9489 > 0.05$  with a Statistical Sobel Test value of  $0.06406 < 1.92$ , it can be concluded that the *Employee Intensity Variable* (X2) does not have a significant effect on the sticky cost variable (Y1) or indirectly the sticky cost variable (Y1) is not able to mediate the influence of the competitiveness variable (Y2).

Sobel Test Calculation Results: *Sticky Cost* mediates the influence of *Intellectual Capital* on competitiveness

Input:		Test statistic:	Std. Error:	p-value:
a	-0.004287	Sobel test: 0.06405135	0.00020916	0.94892934
b	-0.003125	Aroian test: 0.0577686	0.00023191	0.95393295
s <sub>a</sub>	0.002054	Goodman test: 0.07296215	0.00018361	0.94183624
s <sub>b</sub>	0.048766	Reset all	Calculate	

The P-Value obtained is  $0.9489 > 0.05$  with a Statistical Sobel Test value of  $0.0640 < 1.92$ , it can be concluded that the *Intellectual Capital Variable* (X3) does not have a significant effect on the sticky cost variable (Y1) or indirectly the sticky

cost variable (Y1) is not able to mediate the influence of the competitiveness variable (Y2).

## CONCLUSION

From this study, it can be concluded that the research aims to determine the influence of Asset Intensity, Employee Intensity, and Intellectual Capital, with a sample size of 212. The following conclusions can be drawn: 1. Asset Intensity does not have a positive and significant effect on Sticky Cost. 2. Employee Intensity has a negative and significant effect on Sticky Cost. 3. Intellectual Capital also has a negative and significant effect on Sticky Cost. 4. Sticky Cost does not have a negative and significant effect on competitiveness. 5. Asset Intensity does not have a negative and significant effect on competitiveness. 6. Employee Intensity has a negative and significant effect on competitiveness. 7. Intellectual Capital has a positive and significant effect on competitiveness. 8. Sticky Cost cannot mediate the influence of Asset Intensity on Competitiveness. 9. Sticky Cost cannot mediate the influence of Employee Intensity on Competitiveness. 10. Sticky Cost cannot mediate the influence of Intellectual Capital on Competitiveness.

Recommendations: The results of this study are used to understand the influence of Asset Intensity, Employee Intensity, and Intellectual Capital on Competitiveness, with Cost Stickiness as a mediating variable in the Manufacturing Industry. Practical implications include evidence of sticky cost behavior in Indonesian manufacturing companies, indicating that cost changes do not always follow changes in activity levels. Suggestions for future research involve adding other independent variables, such as ROA, Leverage, and examining different cost components. For companies, the research can provide recommendations for managing sales and administrative costs effectively. Lastly, for society, the research contributes to assessing a company's performance and competitiveness, which can impact its stock value.

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