



## Original Article

# The Influence of Production Value, Wages and Number of Business Units on Labor Absorption in the Industrial Sector with Investment as a Moderating Variable in East Java Province for the Period 2019-2024

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## Abstract:

This study analyzes the effect of production value, wages, and number of business units on labor absorption in the industrial sector in East Java Province during the period 2019-2024. The role of investment as a moderating variable is also tested in this relationship. The data used are secondary data sourced from the Central Statistics Agency of East Java Province with a sample size of 28 regencies and cities. The analysis method uses a quantitative approach using the Structural Equation Modeling (SEM) method using the Analysis of Moment Structures (AMOS) software. The results of the study through hypothesis testing indicate that production value, wages and number of business units have a positive and significant effect on labor absorption. Moderation analysis reveals that investment has a positive value in moderating the relationship between production value, wages and number of business units on labor absorption. The implications of this study indicate that increasing production value, wages, number of business units and investment have a crucial role in job creation. Therefore, policies on production value, wages, number of business units and investment need to be considered and maintained so as not to hinder labor absorption. The limitations of this study are the limited scope of variables and the sample data period.

**Keywords:** Production Value, Wages, Number of Business Units, Labor Absorption, Investment.

## Introduction

Economic development is a fundamental effort undertaken by developing countries like Indonesia to increase national income, productivity, and ultimately, public welfare. One indicator of successful economic development is job creation, which is strongly driven by the industrialization process. Through industrialization, the



government can create and expand employment opportunities by promoting equitable industrial development, which ultimately absorbs labor and increases the population's income (Soca & Woyanti, 2021).

Labor absorption is the number of workers employed by a company or industry, where they possess expertise or skills in producing goods and services. The level of labor demand influences the number of workers employed. In general, a company's or industry's capacity can be measured by the number of workers it can absorb. However, each company's capacity to absorb labor varies, so the number of workers employed by each company or industry varies (Yasin & Kartini, 2023).

As a key economic growth region, Java, particularly East Java Province, is a key focus for employment. East Java's strategic location, bordering Central Java and the Bali Strait, makes it a potential location for economic development. The province also boasts a highly dense population, with approximately 41.14 million people, or 14.75% of Indonesia's total population, of which 18.51 million are in the workforce (BPS Jawa Timur, 2025).

The high population and workforce in East Java pose a serious challenge: unemployment. Data from the Central Statistics Agency (BPS) shows that East Java's population continues to increase, from 39,698,631 in 2019 to 41,920,000 in 2024. Although East Java's unemployment rate ranks fifth lowest on the island of Java, it remains high and a burden on the employed workforce.

**Table 1. Population in East Java Province 2019-2024 (people).**

<b>Years</b>	<b>Population</b>
<b>2019</b>	<b>39.698.631</b>
<b>2020</b>	<b>40.665.696</b>
<b>2021</b>	<b>40.878.789</b>
<b>2022</b>	<b>41.149.974</b>
<b>2023</b>	<b>41.527.962</b>
<b>2024</b>	<b>41.920.000</b>

Source: East Java BPS data, various editions, (2025).

To reduce unemployment, the regional government, through the Department of Manpower, Transmigration, and Population Affairs, is implementing various programs. One of the most important strategies is the development of industrialization, which aims to improve the quality of life for the community. The industrial sector, particularly the manufacturing industry, has experienced rapid growth in East Java and plays a vital role in regional and national economic development (Agista et al., 2021).

The manufacturing sector's dominant role is evident in its largest contribution to East Java's Gross Regional Domestic Product (GRDP) compared to other sectors. Its contribution fluctuated, declining from 30.71% in 2021 to 30.51% in 2023, but rebounding to 30.85% in 2024, indicating this sector is a key driver of regional economic growth (East Java BPS data, 2025).

One of the main aspects of the industrial sector is the production process. Production is the activity of processing raw materials or semi-finished goods, or creating new products with higher utility value to meet the needs of life. In industry, production activities aim to generate profits from invested capital. The higher an industry's production volume, the greater the need for labor. The amount of profit an industry earns is also a determining factor in decisions to increase or decrease the workforce (F. Sari et al., 2023). Information regarding production volume can be seen in the table below.

Table 2. Production Volume in the Medium and Large Industrial Sector in East Java Province 2019-2024.

<b>Years</b>	<b>Output Total</b>
<b>2019</b>	<b>697.548.214.166</b>
<b>2020</b>	<b>751.027.992.932</b>
<b>2021</b>	<b>775.341.778.648</b>
<b>2022</b>	<b>817.728.318.132</b>
<b>2023</b>	<b>897.548.214.166</b>
<b>2024</b>	<b>907.948.224.141</b>

Source: East Java BPS data, various editions, (2025).

It can be seen that production in the medium and large industrial sector continues to increase. In 2019, production reached 697.548 billion, with a workforce of 734,672 people in this sector, which increased to 897.548 billion in 2023. This continued increase in production was also accompanied by an increase in the number of workers in the medium and large industrial sector in 2023, reaching 929,557 people. This increase indicates a relationship between production value and the number of workers in the medium and large industrial sector.

The Decent Living Wage (KHL) was lower than the wages workers received. This indicates that the wages provided were sufficient to cover daily living expenses for one month. A living wage can motivate individuals to work and ensure a sustainable livelihood. The government has established minimum wage policies in each region to prevent labor exploitation. Although the wage increase from 2021 to 2023 is not significant, the wages provided are sufficient to meet workers' living needs (Indri Widyapangesti et al., 2022). The level of labor absorption is influenced by several factors, such as the number of business units, investment, and production value.

The number of business units refers to entities carrying out production activities, whether by individuals or households in a region. An increase in the number of business units in the medium and large industrial sectors will drive increased production, ultimately contributing to increased employment. In East Java, the number of medium and large industrial units continues to increase annually (Agista et al., 2021). The increase in the number of business units, particularly in medium and large industries, will increase labor demand and create new jobs. Statistics Indonesia (BPS) data shows that the number of business units in East Java continues to rise annually, from 807,478 in 2019 to 819,127 in 2024. This increase is driven by strategic location, population growth, and political stability.

The magnitude of investment in an industry plays a crucial role in driving its progress and development. Investment itself is the activity of investing capital or procuring goods and production equipment with the goal of generating profit (Reza et al., 2022). In East Java Province, investment in the medium and large industrial sector reached IDR 67,271 billion in 2019. Investment in medium and large industries plays a significant role in increasing production and is expected to impact increased employment along with increased investment (Widodo & Woyanti, 2023).

Seeing the urgency of the unemployment problem and the great potential of the industrial sector in East Java, this study was conducted to analyze the influence of production value, wages, and the number of business units on labor absorption, with investment as a moderating variable.

This study aims to answer six problem formulations that focus on the influence of

production value, wages, and the number of business units on labor absorption, as well as the moderating role of investment in this relationship in the industrial sector in East Java for the period 2019-2024.

This research is expected to provide theoretical and practical benefits. Theoretically, this study can enrich labor economics theory, provide empirical evidence on the role of investment as a moderating variable, and contribute to regional economic growth theory with a focus on East Java. Practically, the results of this study can serve as a basis for local governments in East Java to formulate more effective employment policies, such as providing investment incentives to achieve workforce absorption targets. For business actors, this research can help them develop smart recruitment and business expansion strategies, as well as optimize production efficiency.

## **Literature review**

### **Endogenous Growth Theory**

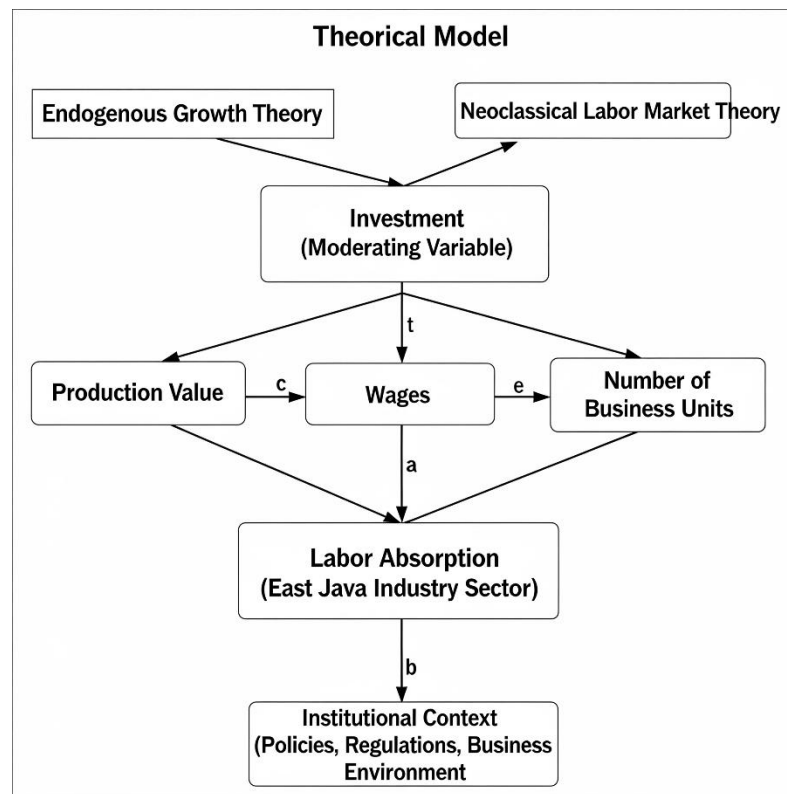
This theory explains that long-term economic growth originates from internal, not external, factors. Figures like Paul Romer emphasize the role of knowledge, innovation, and human capital as key drivers of growth. Unlike neoclassical theory, knowledge in this theory does not depreciate, allowing it to be widely used without diminishing. This theory also highlights the importance of government policies, such as incentives for research and development, in creating an environment conducive to sustainable growth (Wijayanto, 2019).

### **Neoclassical Labor Market Theory**

This approach analyzes how labor supply and demand interact to determine wage levels and the number of workers. Based on the assumption of a perfectly competitive market, wages are determined by the marginal productivity of labor. Firms will hire workers until their marginal product equals the wage rate. While this theory provides a logical analytical framework, critics consider it too idealistic because real labor markets often contain asymmetric information and are influenced by institutional factors such as labor unions (Malik, 2018).

### **Relationship Framework in Grand Theory**

Both theories, Endogenous Growth Theory and Neoclassical Labor Market Theory, state that higher production values in the industrial sector will increase the demand for labor. Optimal wages encourage efficient recruitment, and the growth in the number of new business units directly impacts employment. Investment acts as a moderating variable, strengthening or weakening the relationship between production values, wages, and the number of business units on employment.



Source: (Wijayanto, 2019).

Figure 1. Theoretical Model

## Hypothesis

Based on theoretical foundations and previous research, the following hypotheses are formulated:

H1: Production value influences employment in the medium and large industrial sector in the regencies/cities of East Java Province during the 2019-2024 period.

H2: Wages influence employment in the medium and large industrial sector in the regencies/cities of East Java Province during the 2019-2024 period.

H3: The number of business units influences employment in the medium and large industrial sector in the regencies/cities of East Java Province during the 2019-2024 period.

H4: Investment moderates the relationship between production value and employment in the medium and large industrial sector in the regencies/cities of East Java Province during the 2019-2024 period.

H5: Investment moderates the relationship between wages and employment in the medium and large industrial sector in the regencies/cities of East Java Province during the 2019-2024 period.

H6: Investment moderates the relationship between the number of business units and employment absorption in the medium and large industrial sectors in the regencies/cities of East Java Province for the 2019-2024 period.

## Methods

This research uses a quantitative approach with a descriptive approach. Quantitative research is based on the philosophy of positivism and aims to test hypotheses and produce clear findings. Meanwhile, a descriptive approach is used to

analyze data by describing the collected data without drawing general conclusions (Agustianti et al., 2022).

The research objects include independent variables (production value, wages, and number of business units), dependent variables (labor absorption), and moderating variables (investment). The research subjects are the medium and large industrial sectors in the regencies/cities of East Java Province for the period 2019-2024. The research location was chosen because East Java has a significant contribution to the industrial sector in Indonesia, and the 2019-2024 period covers industrial dynamics before, during, and after the COVID-19 pandemic.

The population of this study comprised all medium and large industrial sectors in the regencies/cities of East Java Province during the 2019-2024 period. The sample was selected using a purposive sampling technique, which involves selecting samples based on specific criteria (Ansori, 2020). These criteria included industries with complete data for all variables and registered in the Large and Medium Industry Survey (IBS) by the Central Statistics Agency (BPS). Based on these criteria, the study sample consisted of 168 data sets from 28 regencies and cities in East Java over a six-year period.

Data analysis used the Structural Equation Model (SEM) method with Analysis of Moment Structural (AMOS) software. The data analysis techniques in this research are:

### **Descriptive Statistics**

According to Santoso (2021), descriptive statistics is a method for describing data through statistical tables and graphs (bar charts, pie charts, and line charts). This analysis aims to provide an overview of the data obtained from the research sample and support the process of drawing conclusions in the research.

### **Inferential Statistics**

According to Siregar et al., (2023), inferential statistics is a data analysis technique used to process sample data, where the results of the analysis are used to draw conclusions about the research population. Inferential statistics are divided into two types: parametric and nonparametric. Parametric inferential statistics assume that the population has a normal distribution, so the analysis is conducted using sample data to test the population. Meanwhile, nonparametric inferential statistics are used for data analysis without having to meet the assumption of a normal distribution.

### **SEM Assumption Test**

Normality Test: Data is considered normally distributed if the critical ratio (c.r) value falls within the range of  $-1.96 \leq c.r \leq 1.96$  or within the loose limit of  $-2.58 \leq c.r \leq 2.58$ . Linearity Test: Performed using a curve fit. The model is considered linear if all linear models are significant or all models are non-significant. Outlier Test: Data are considered free of outliers if the Mahalanobis d-squared value is not higher than the chi-square value at the relevant degrees of freedom and a significance level of 0.001.

### **Validity and Reliability Test**

Convergent Validity: An indicator is declared valid if the critical ratio (CR) is twice the standard error (SE). Discriminant Validity: Achieved if the chi-square value of the unconstrained model is lower than that of the constrained model. Reliability: Data is considered reliable if the Construct Reliability (CR) value is above 0.70 (Santoso, 2021).

### **Model Goodness of Fit Analysis**

Used to determine the model's level of fit with the data. Criteria considered include X<sup>2</sup> Chi-Square, Probability, CMIN/DF, RMSEA, GFI, AGFI, TLI, and CFI, each with a specific cut-off value.

Table 3. Godness of Fit.

<b>Godness of Fit</b>	<b>Cut-Off</b>
<b>X<sup>2</sup> Chi Square</b>	<b>Kecil</b>
<b>Probabilitas</b>	<b>≥ 0,05</b>
<b>CMIN/DF</b>	<b>≤ 2,00</b>
<b>RMSEA</b>	<b>≤ 0,08</b>
<b>GFI</b>	<b>≥ 0,90</b>
<b>AGFI</b>	<b>≥ 0,90</b>
<b>TLI</b>	<b>≥ 0,95</b>
<b>CFI</b>	<b>≥ 0,95</b>

Source: (Santoso, 2021).

### Hypothesis Testing

The hypothesis is accepted if the probability (p) value is less than 0.05 or the critical ratio (CR) value is greater than the standard error S.E ([Siregar et al., 2023](#)).

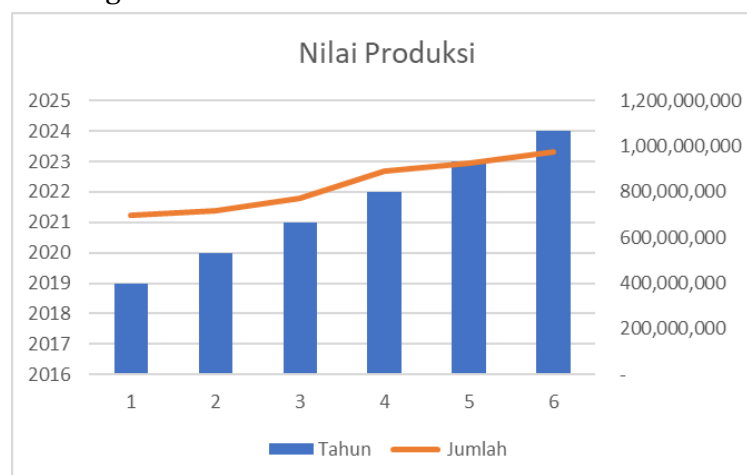
### Results

#### Sub 1 Research Subject Description

Geographically, East Java Province is located in the easternmost part of Java Island and encompasses the mainland and the Madura Islands. The province has a total area of 46,428.57 km<sup>2</sup> and administratively comprises 29 regencies and 9 cities. Its topography is dominated by lowlands (60%), but also includes highlands and active volcanoes such as Semeru and Bromo. East Java's transportation infrastructure, including six airports and the Port of Tanjung Perak, facilitates mobility and supports economic activity. Demographically, East Java is the second most populous province in Indonesia with a growing population, although the economic gap between urban and rural areas contributes to high poverty rates. Economic growth in East Java is quite good, although unemployment remains a challenge, partly due to declining interest in working in the agricultural sector.

#### Sub 2 Descriptive Analysis

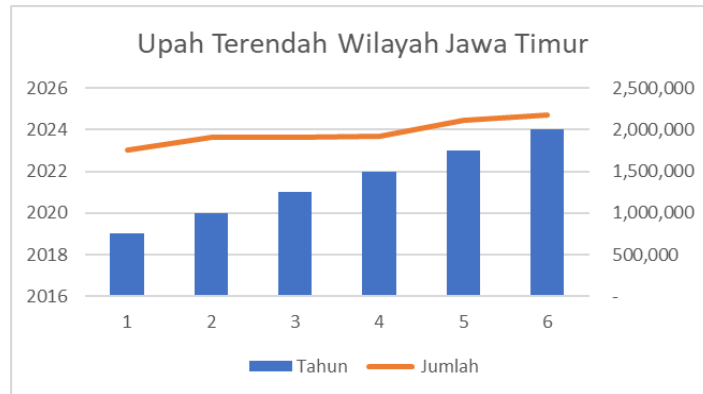
- Production Value: The production value of medium and large industries in East Java increased steadily from Rp 697.548 billion in 2019 to Rp 907.948 billion in 2024, indicating consistent growth.



Source: East Java BPS data, processed 2025.

Figure 2. Production Value Data of East Java Province

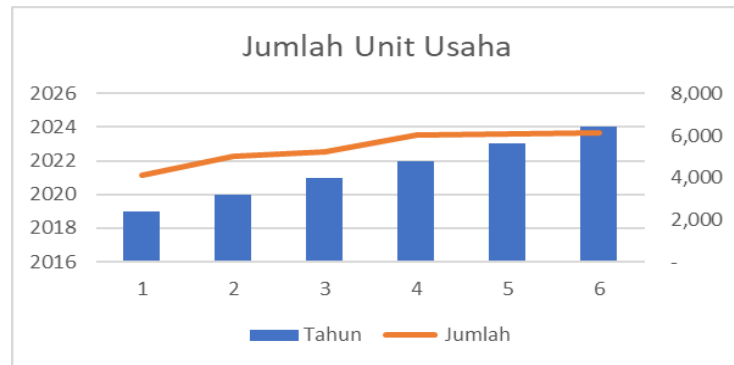
- b. Wages: The minimum wage in East Java has increased almost every year, except in 2020 and 2021 due to the COVID-19 pandemic. Despite this, workers' wages are sufficient to meet the Decent Living Needs (KHL).



Source: East Java BPS data, processed 2025.

Figure 3. Lowest Wages in East Java

- c. Number of Business Units: The number of business units in the medium and large industrial sectors continues to increase, from 807,478 units in 2019 to 819,127 units in 2024. The most significant increase occurred in 2021-2022, triggered by the easing of the pandemic.



Source: East Java BPS data, processed 2025.

Figure 4. Number of Medium and Large Sector Business Units

- d. Labor Absorption: Labor absorption in the medium and large industrial sectors decreased from 2019 to 2020 due to layoffs during the pandemic, but has since increased again in line with industrial growth.



Source: East Java BPS data, processed 2025.

Figure 5. Absorption of Medium and Large Sector Labor

- e. Investment: The value of investment in the medium and large industrial sectors continues to increase year after year, reaching the most significant increase of IDR 29.3 trillion in 2022.



Source: East Java BPS data, processed 2025.

Figure 6. Investment Value of Medium and Large Sectors

Sub 3 Analysis Results and Discussion

**SEM Assumption Test**

Table 4. Results of Convergent Validity Test Using Regression Weights.

			Estimate	S.E.	C.R.	P
IN	<---	JUU	0.35	0.065	5.361	***
IN	<---	NP	-0.016	0.014	1.182	0.237
IN	<---	UP	-0.198	0.103	1.919	0.055
PTK	<---	NP	-0.185	0.145	1.28	0.2
PTK	<---	JUU	-0.595	0.727	0.817	0.414
PTK	<---	UP	-0.335	1.08	2.301	0.757
PTK	<---	IN	8.773	1.235	7.101	***
X1.1	<---	NP	1			
X1.2	<---	NP	1.177	0.08	14.702	***
X1.3	<---	NP	1.204	0.085	14.218	***
X1.4	<---	NP	0.2	0.067	2.963	0.003
X1.5	<---	NP	1.072	0.092	11.646	***
X1.6	<---	NP	1.206	0.091	13.225	***
X2.1	<---	UP	1			
X2.2	<---	UP	1.573	0.199	7.897	***
X2.3	<---	UP	1.545	0.161	9.591	***
X2.4	<---	UP	1.48	0.18	8.242	***
X2.5	<---	UP	1.283	0.156	8.228	***
X2.6	<---	UP	1.515	0.158	9.607	***
X3.1	<---	JUU	1			
X3.2	<---	JUU	0.87	0.066	13.277	***
X3.3	<---	JUU	1.215	0.071	16.995	***
X3.4	<---	JUU	0.439	0.053	8.266	***
X3.5	<---	JUU	1.149	0.065	17.63	***
X3.6	<---	JUU	1.22	0.07	17.56	***

			Estimate	S.E.	C.R.	P
Z.1	<---	IN	1			
Z.2	<---	IN	1.063	0.018	58.99	***
Z.3	<---	IN	0.808	0.029	27.678	***
Z.4	<---	IN	0.429	0.053	8.134	***
Z.5	<---	IN	0.918	0.063	14.687	***
Z.6	<---	IN	0.902	0.066	13.701	***
Y.1	<---	PTK	1			
Y.2	<---	PTK	1.18	0.121	9.791	***
Y.3	<---	PTK	0.462	0.07	6.569	***
Y.4	<---	PTK	0.988	0.107	9.234	***
Y.5	<---	PTK	0.662	0.124	5.338	***
Y.6	<---	PTK	1.098	0.142	7.749	***

Source: Output IBM Amos (v.26), 2025.

The test results indicate that the data meets the assumptions required for SEM analysis. The normality test indicates that the critical ratio (c.r.) is within the normal range, the linearity test indicates that all variables are linear, and the outlier test does not detect any deviant data. Furthermore, convergent validity, discriminant validity, and reliability tests are also met, indicating that the data and model are valid and reliable.

### Hypothesis Testing and Discussion

Table 5. Regression Weights Hypothesis Test Results.

			Estimate	S.E.	C.R.	P
Y	<---	X1	0.143	0.147	2.907	0.004
Y	<---	X2	0.243	0.165	1.228	0.019
Y	<---	X3	0.161	0.157	2.168	0.007
Y	<---	ModerasiX1	0.264	0.342	2.225	0.026
Y	<---	ModerasiX2	0.406	0.202	3.106	0.012
Y	<---	ModerasiX3	0.303	0.101	2.435	0.017

Source: Output IBM Amos (v.26), 2025.

According to Siregar et al. (2023), a relationship is considered significant and the hypothesis is accepted if the P-value is less than 0.05. This study states that the P-value of each variable is less than 0.05. The following is a descriptive explanation of the test in Table 5:

#### H1: Production Value Has a Positive and Significant Effect on Labor Absorption

This hypothesis is accepted. The findings indicate that production value has a positive and significant effect on labor absorption. Increased production requires more labor to operate machinery and manage processes, which aligns with previous research showing a positive relationship between these two variables.

#### H2: Wages Have a Positive and Significant Effect on Labor Absorption

This hypothesis is also accepted. Although classical theory sometimes argues otherwise, the results of this study indicate that wages have a positive and significant effect on labor absorption in East Java. This can be explained by the fact that decent wages can increase worker motivation and productivity, as well as increase purchasing power, which ultimately drives labor demand and absorption.

#### H3: The Number of Business Units Has a Positive and Significant Influence on Labor Absorption

The third hypothesis is accepted. The greater the number of operating business units, the greater the labor absorption. Each business unit requires human resources to run its operations, so the growth in the number of companies is directly correlated with job creation.

#### **H4: Investment Moderates the Relationship between Production Value and Labor Absorption**

This hypothesis is accepted. Investment has been shown to strengthen the relationship between production value and labor absorption. Investment enables industries to absorb labor more effectively and efficiently, even with minimal production value, because investment can be directed toward expanding factory capacity or building new, labor-intensive industries.

#### **H5: Investment Moderates the Relationship between Wages and Employment**

This hypothesis is also accepted. The test results indicate that investment has the ability to moderate the relationship between wages and employment. Investment can act as a buffer or accelerator that determines how wage policy affects labor market dynamics, for example by directing investment to labor-intensive sectors when wages increase.

#### **H6: Investment Moderates the Relationship between the Number of Business Units and Employment**

This hypothesis is accepted. Investment has been shown to strengthen the relationship between the number of business units and employment. The presence of investment ensures that each additional business unit will have better job creation quality, as investment can be directed toward labor-intensive technologies that employ a large number of workers.

### **Conclusion**

Based on the results of testing and analysis, this study found several important conclusions regarding the factors influencing labor absorption in East Java Province. Overall, production value, wages, and the number of business units were proven to have a positive and significant influence on labor absorption. These findings indicate that labor absorption in East Java's industries is highly dependent on the amount of product value produced, the minimum wage level applied, and the total number of operating business units. Furthermore, this study revealed the crucial role of investment as a moderating variable. The presence of investment was shown to strengthen the relationship between production value and labor absorption, influencing the impact of increased production on the number of workers absorbed. Furthermore, investment was also able to moderate the relationship between wages and labor absorption, influencing the dynamics between the applicable minimum wage and labor absorption in the industry. Finally, investment was also shown to moderate the relationship between the number of business units and labor absorption, indicating that investment strengthens the impact of growth in the number of business units on job creation in the province.

### **Suggestion**

Based on the conclusions above, several recommendations are provided:  
For Industry Players: Industry players are advised to raise awareness of the importance

of investment to achieve profits and implement effective and efficient labor absorption strategies. Furthermore, it is also important to increase production value and quality to attract more investors.

For Future Researchers: It is recommended to expand this research by adding or modifying the indicators and variables used to obtain better results in the future.

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