

## Determinant Factors on Labor Absorption in Small and Medium Industries in Central Sulawesi Province Eastern Indonesia in 2016-2021



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**ABSTRACT:** This study aims to (1) determine whether Production Value, Number of Industries, and Minimum Wage had a significant impact on employment in small and medium-sized industries in Central Sulawesi Province from 2016 to 2021, and (2) ascertain whether Production Value, Number of Industries, and Minimum Wage had a partial and significant effect on Labor Absorption in small and medium industries in the region during the same period. The data used in this study were derived from secondary sources obtained from the publication of the Office of Industries and Trade as well as the Office of Manpower and Transmigration in Central Sulawesi Province. Furthermore, the Fixed Effect Model (FEM) was chosen as the best model for panel data regression analysis. The results showed that Production Value had a positive but insignificant effect on employment with a probability value of 0.4691. Number of industries had a positive and significant effect on employment with a probability value of 0.0000. Production Value had a negative and insignificant effect on employment with a probability value of 0.8988. Finally, Minimum Wage had a negative and insignificant effect on Labor Absorption with a probability value of 0.9219.

**KEYWORDS:** Labor Absorption, Production Value, Number of Industries, Production Value, and Minimum Wage

**JEL Classification:** J30, O11, O15, R23

### I. INTRODUCTION

Small and medium enterprises have the potential to generate a substantial amount of employment opportunities. Its growth can lead to an increase in job openings, thereby highlighting the critical role of SMEs in promoting economic progress and employment in Indonesia. According to the Ministry of Cooperatives SMEs make up nearly 99% of businesses in Indonesia, indicating their significant contribution to the economy. Furthermore, the rise and fall of Labor Absorption in a region depends on number of business units available, with an upsurge likely to lead to an increase in job openings within the area.

Data from Central Sulawesi Province Industries and Trade Office showed a decrease in number of workers, despite the increase in the number of businesses between 2016 and 2021. For instance, in Palu City, the number of enterprises increased by 3.78% from 1,363 units in 2018 to 1,878 units. However, within the same period, the number of workers decreased by 13.48% from 10,936 in 2018 to 9,462 in 2020.

One of the crucial factors capable of influencing Labor Absorption is Production Value, which can be increased through industrial investment. According to studies, investment refers to capital expenditure utilized to purchase production equipment and raw materials to enhance the ability of industries to manufacture goods and render services within the economy. Augmenting Production Value in industries can increase its quantity, thereby leading to a rise in the output produced, and Labor Absorption.

Data on Production Value of small and medium industries in Central Sulawesi Province showed that from 2016 to 2021, certain regions, including Morowali Regency, witnessed an upward trend. However, this increase was not accompanied by a corresponding rise in Labor Absorption. In 2019, Production Value increased from IDR 12,665,596,281, IDR 20,830,555,780, which is a 64.46% increase. Despite this investment growth, Labor Absorption data indicated a decrease in number of workers. For instance, in 2018, there were 1,755 workers, which decreased to 1,637 in 2020, indicating a -6.67% percentage decline.

Production Value of industries is also a significant determinant of Labor Absorption because it represents the total value of goods produced. The extent of labor needed to generate output is directly proportional to the amount produced and typically influenced by market demand. When there is an increase in market demand, producers raise their production capacity, leading to absorption of more labor by the company.

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Production Value data for SMEs in Central Sulawesi Province obtained from 2016 to 2021 showed fluctuations in Production Value. Although some regions witnessed an increase in labor, there has been no corresponding rise in Labor Absorption. For example, Palu City recorded a Production Value of IDR.384,652,070,667 in 2018, which increased to IDR 650,341,139,389 in 2020. However, within the same period, labor force declined, from 10,936 workers in 2018 to 9,462 in 2020.

Wage play a crucial role in determining the extent of labor employed. An increase in wage can lead to a decrease in the quantity of labor demanded by a company. When wage level rises, while the costs of other inputs remain constant, labor becomes relatively more expensive compared to other inputs. In such cases, companies are compelled to reduce labor to maintain maximum profits, which leads to a decrease in employment opportunities.

The data on Minimum Wage in Central Sulawesi Province obtained from 2016 to 2021 revealed a consistent annual increase. In 2016, the average Minimum Wage was IDR 1,670,000, which progressively rose to IDR 2,303,711 in 2021, thereby indicating a significant percentage increase of 37.95%. During the same period, number of Labor Absorption also increased from 20,024 workers in 2016, to 29,477 in 2021, which is an increase of 47.21%. These findings deviate from the conventional theory indicating an inverse relationship between wage level and labor quantity. The observed correlation between increased Minimum Wage and augmented employment opportunities in small and medium industries has sparked interest and curiosity, prompting further investigation into The Effect of Production Value, Number of Industries, Production Value, and Minimum Wage on Labor Absorption.

## II. LITERATURE REVIEW

### 2.1. Labor

The working-age population, consisting of individuals who have been employed for over 10 years, exhibits diverse behaviors in relation to labor market. These behaviors can be categorized into two groups, namely the economically and non-economically active parties. Labor force is included in the economically active group. It comprises of individuals who are actively employment, and those unemployed (Sumarsono, 2003).

#### 2.1.1. Employment Opportunities and Labor Absorption

Employment opportunities refer to number of job openings that can be filled to generate a specific level of output. However, prospective workers must meet certain requirements to be eligible for employment. According to (Feriyanto, 2014), the available labor supply may not completely meet the demand for labor in the workforce, leading to unemployment.

The demand for labor is related to the extent required by industries. Labor demand function establishes the relationship between labor utilized by the firm and changes in labor wage. This can be visualized through labor demand curve, which represents the willingness of entrepreneurs to hire workers at different wage levels within a specific time frame. Labor demand is the examination of production function, comprising two input factors, namely capital (K) and labor (L), expressed as  $Q = f(K, L)$ .

#### a. Short-term Labor Demand

In production process, the output produced is influenced by the input factors, namely capital and labor. When production technology is constant, an increase in input factors affects the output. In the short term, the demand for labor is influenced by the use of constant capital in production process of industries companies. Labor is considered a variable input factors, and production function is expressed as  $Q = f(L, \bar{K}, L)$ .

Wage paid by a company to its workers for their services is determined by the marginal product of labor ( $MP_L$ ) and the price of the output produced (P), known as value of the marginal product of labor ( $VMP_L$ ). Therefore, wage can be calculated using the following equation  $VMP_L = MP_L \times P = \text{Wage}$ .

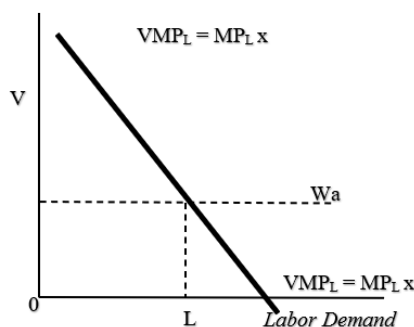


Figure 2.1

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## Labor Demand

$VMP_L$  curve serves as a graphical representation of labor demand, as it determines the maximum wage that a company is willing to pay workers at varying levels. The demand curve exhibits a negative slope, thereby indicating a negative correlation between labor wage and the existence of labor employed by the company. In other words, an increase in wage leads to a decrease in the optimal level of labor utilization, and vice versa. The optimal amount of labor utilized by the company ( $L^*$ ) is the point at which  $VMP_L$  equals wage. The optimum labor is the equilibrium condition between the company income generated from the additional use of labor ( $VMP_L$ ) and wage. This reflects the balance between wage, which constitutes an additional cost for the company, with increase in labor (Feriyanto, 2014).

## b. Long-term Labor Demand

The behavior of companies in using labor differs in short and long-term. In the long-term, companies tend to substitute the use of relatively cheaper input factors. The production function is expressed as  $Q = f(K, L)$ , where  $K$  and  $L$  denote capital and labor, respectively and both input factors are variable. The high flexibility of the company allows it to respond more effectively to changes in input factors. For example, an increase in labor wage, will reduce the use of labor in the long term.

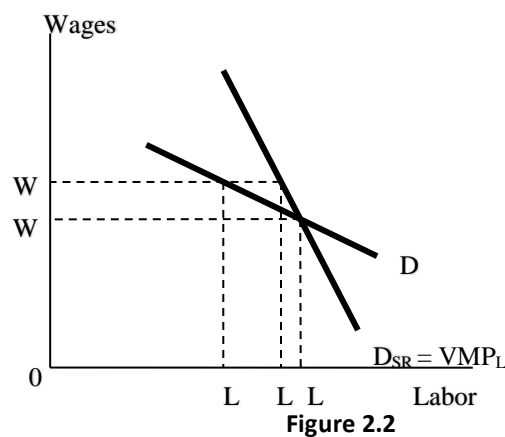


Figure 2.2

## Short-term and Long-term Labor Demand

Based on Figure 2.2, an increase in wage from  $W_1$  to  $W_2$  led to a decrease in the amount of labor employed from  $L_1$  to  $L_2$  in the short term. However, in the long term, the company exhibited a more pronounced responsiveness to labor demand ( $D_{LR}$ ) by further reducing it from  $L_2 < L < L_1$ . The reduction in labor is then compensated by an increase in capital investment (Feriyanto, 2014).

## 2.2. Investment

Investment is the allocation of funds to sustain the capital assets of a company, such as machinery, equipment, plant, and raw material supplies, which are utilized in production processes. It encompasses expenditures made by economic actors to purchase or add capital goods. These capital goods undergo production process before they are transformed into finished goods or products ready for consumption (Didgdowiseiso, 2016).

Investment is commonly classified into two main categories, namely real and financial sectors. Real sector investment involves investing in durable goods such as capital assets, while financial sector investment, is the process of investing in securities, such as stocks and bonds within the capital market.

## 2.2. Industries

Industries are business entities that engage in economic activities aimed at manufacturing goods or providing services. They are situated in specific locations or building and maintain administrative records related to production and cost structure, with one or more individuals responsible for the operations. Essentially, industries involve production processes that transform raw materials into semi-finished or finished products to generate added value and realize profits.

There are four groups of processing industries which are based on the size of their workforce, namely:

1. Large industries (total workforce of 100 people or more)
2. Medium industries (20 to 99 workers)
3. Small industries (5 to 9 workers)
4. Household industries (1 to 4 workers)

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This classification is solely based on number of employees and does not take into consideration the industries ability to use machinery or the amount of capital invested (Statistic, 2022).

### **2.3. Production Value**

Production Value represents the overall level of goods produced within a specific timeframe. According to Central Agency of Statistics (BPS), it is determined by multiplying the quantity of production by the price per unit of the respective commodities. The price per unit is evaluated by the producer at the time of production.

### **2.4. Minimum Wage**

According to Government Regulation Number 36 of 2021, the minimum wage is the lowest basic pay and allowances set at the regional, sectoral, and subsectoral levels (Sumarsono S. , 2009).

### **2.5. Relationship between Investment and Labor Absorption**

Investment is one of the components of aggregate expenditure, and its increase leads in a rise in aggregate demand and national income. Consequently, rise in Labor Absorption creates to a positive effect on output growth. As output increases, more labor is needed, which creates more job opportunities and helps to reduce unemployment (Dharmala & Suharto, 2016).

### **2.6. Relationship between number of Industries and Labor Absorption**

An increase in the number of companies raises the number of workers absorbed and vice versa. Meanwhile, an increase in number of business units in a specific sector is likely to result in job growth. When business units in industries sector expand, the demand for labor also increases.

### **2.7. Relationship between Production Value and Labor Absorption**

Production Value represents the monetary worth of all goods and services produced in a company. The relationship between Production Value and Labor Absorption is interconnected, as labor demand within the company is largely influenced by the market demand for the products and services manufactured and rendered. When Production Value increases, companies tend to expand their workforce to meet production targets and generate higher income.

### **2.8. Relationship between Minimum Wage and Labor Absorption**

Wage play a crucial role in determining the demand for labor. Any changes in wage levels tend to significantly affect Labor Absorption, hence entrepreneurs aim to minimize them to achieve optimal profits. In circumstances, where wage rate rises, production costs of the firm also increase, leading to a higher price per unit of goods produced. This can cause a decrease in demand as consumers tend to reduce their consumption, thereby increasing the number of unsold goods. Consequently, the use of labor-intensive technology can reduce the level of production by the company, thereby leading to a decrease in labor demand. In situations where Minimum Wage of labor is higher than the equilibrium wage level, the demand for labor by the firm tends to decrease, thereby leading to reduced employment opportunities. When Minimum Wage of labor is lower than the equilibrium wage rate, the demand for labor and the employment increases.

## **III. STUDY METHODS**

This study applied a quantitative approach with an associative study design. Secondary data and cross-sectional information on Production Value, Number of Industries, Production Value, Minimum Wage, and Total Labor in small and medium industries sector were collected from 2016 to 2021. The data used were sourced from Central Sulawesi Province Industries and Trade Office such as the Transmigration and Labor Parastatals, providing information on Production Value, Number of Industries, Production Value, Total Labor, and Minimum Wage by Regency or City in the region from 2016 to 2021.

## **IV. RESULT AND DISCUSSION**

The panel data model consists of three estimation techniques, namely Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM).

The CEM technique is a basic panel data regression approach that combines time series and cross-sectional data, without accounting for time or individual effects. The CEM model estimation results obtained are shown in Table 1.

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**Table 1. CEM Estimation Results**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-10.77681	4.241983	-2.540513	0.0132
NI	0.478614	0.047784	10.01628	0.0000
Jl	0.448254	0.067941	6.597645	0.0000
NP	-0.028924	0.035366	-0.817834	0.4162
UMP	0.341176	0.300439	1.135592	0.2599
R-squared	0.887504	Mean dependent var	7.111805	
Adjusted R-squared	0.881254	S.D. dependent var	0.948038	

Source: Study Finding

$$\text{LnPTK}_{it} = \alpha + \beta \text{LnNI}_{it} + \beta \text{LnJl}_{it} - \beta \text{LnNP}_{it} + \beta \text{LnUMP}_{it} + e$$

$$\text{LnPTK}_{it} = -10.77681 + 0.478614\text{NI}_{it} + 0.448254\text{Jl}_{it} - 0.028924\text{NP}_{it} + 0.341176\text{UMP}_{it} + e$$

$$\text{LnPTK}_{it} = (-2.540513) (10.01628)^{***} (6.597645)^{***} (-0.817834) (1.135592)^*$$

**Description:**

(\*\*\*) Significant at  $\alpha = 1$  percent

(\*\*) Significant at  $\alpha = 5$  percent

(\*) Significant at  $\alpha = 10$  percent

Based on the CEM estimation results, Production Value has a positive and significant impact on Labor Absorption, with a probability value  $<0.05$ . The number of industries variable demonstrates a significant and positive effect with a probability value  $<0.05$ . Production Value variable has a negative and insignificant effect, with a probability value  $>0.05$ , while Minimum Wage has a positive and insignificant effect, with a probability value  $>0.05$ . This model indicated that Production Value, number of industries, and Minimum Wage variables have a positive and significant relationship with a probability value  $<0.05$  when considered simultaneously. The adjusted R-Squared value of 0.887504, showed that 88% of the employment variable can be explained by Production Value, Number of Industries, Production Value, and Minimum Wage.

## 4.1. Result

### 4.1.1. The FEM Technique

The FEM estimation technique is a panel data approach that assumes differences between time and individuals can be captured by varying intercepts. The *E-views* application was utilized to process the FEM model estimation, and the obtained results are outlined as shown in Table 2.

**Table 2. The FEM Estimation Result**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.007908	2.665384	0.378147	0.7067
NI	0.034107	0.046817	0.728523	0.4691
Jl	0.925505	0.076130	12.15696	0.0000
NP	-0.002753	0.021546	-0.127763	0.8988
UMP	-0.016913	0.171767	-0.098465	0.9219

Source: Study Finding

The equation of the FEM estimation results are as follows,

$$\text{LnPTK}_{it} = \alpha + \beta \text{LnNI}_{it} + \beta \text{LnJl}_{it} - \beta \text{LnNP}_{it} - \beta \text{LnUMP}_{it} + e$$

$$\text{LnPTK}_{it} = 1.007908 + 0.034107\text{NI}_{it} + 0.925505\text{Jl}_{it} - 0.002753\text{NP}_{it} - 0.091380\text{UMP}_{it} + e$$

$$\text{LnPTK}_{it} = (0.0378147) (0.728523) (12.15696)^{***} (0.127763) (-0.098465)$$

**Description:**

(\*\*\*) Significant at  $\alpha = 1$  percent

(\*\*) Significant at  $\alpha = 5$  percent

(\*) Significant at  $\alpha = 10$  percent

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The FEM estimation results showed that Production Value has a positive but insignificant impact on Labor Absorption, with a probability value  $>0.05$ . On the other hand, the number of industries variable demonstrated a significant positive effect with a probability value  $<0.05$ . Similarly, Production Value and Minimum Wage variables have an insignificant negative effect, with probability value  $>0.05$ . The model also demonstrated that Production Value, Number of Industries, Production Value, and Minimum Wage variables have a positive and significant relationship with a probability value  $<0.05$  when considered simultaneously. The adjusted R-Squared value of 0.981635 showed that 98% of the employment variable can be explained by Production Value, Number of Industries, Production Value, and Minimum Wage.

### 4.1.2. The REM Technique

The REM technique was utilized for estimating panel data that accounts for the interrelated disturbance variables between time and individuals. The estimation results were computed using the *E-views 10* application, and the obtained outcomes are shown in Table 3.

**Table 3. REM Estimation Results**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.101154	2.484345	-1.248278	0.2160
NI	0.145600	0.041567	3.502790	0.0008
JI	0.775455	0.067085	11.55929	0.0000
NP	0.000791	0.021035	0.037610	0.9701
UMP	0.148750	0.163729	0.908514	0.3666
Effects Specification				
			S.D.	Rho
Cross-section random			0.268261	0.7749
Idiosyncratic random			0.144595	0.2251
Weighted Statistics				
R-squared	0.884391	Mean dependent var		1.537704
Adjusted R-squared	0.877968	S.D. dependent var		0.482083

Source: Study Finding

The equation for the REM estimation results is stated as follows

$$\text{LnPTK}_{it} = \alpha + \beta \text{LnNI}_{it} + \beta \text{LnJI}_{it} + \beta \text{LnNP}_{it} + \beta \text{LnUMP}_{it} + e$$

$$\text{LnPTK}_{it} = -3.101154 + 0.145600\text{NI}_{it} + 0.775455\text{JI}_{it} + 0.000791\text{NP}_{it} + 0.148750\text{UMP}_{it} + e$$

$$\text{LnPTK}_{it} = (-1.248278) + (3.502790)^{***} (11.55929)^{***} (0.037610) (0.908514)$$

Description:

(\*\*\*) Significant at  $\alpha = 1$  percent

(\*\*) Significant at  $\alpha = 5$  percent

(\*) Significant at  $\alpha = 10$  percent

The REM estimation results showed that Production Value and variable number of industries had a significant and positive effect on Labor Absorption with a probability value of less than 0.05. Meanwhile, the Production Value and Minimum wage had a positive but insignificant effect with a probability value greater than 0.05. The model also showed that Production Value, number of industries, and Minimum Wage variables had a positive and significant relationship simultaneously with a probability value of less than 0.05. The adjusted R-squared value of 0.877968 suggests that 87 percent of Production Value, Number of Industries, Production Value, and Minimum Wage variables can be used to explain employment.

The equation used to estimate the REM, is stated as follows.

### 4.1.3. Panel Data Analysis Model Selection

The selection of the panel data analysis model involved three tests, namely the Lagrange Multiple (LM), the Chow, and the Hausman tests. These tests are explained in detail as follows,

H<sub>0</sub>: CEM

H<sub>1</sub>: REM

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**Table 4. LM Test Results**

Null (no rand. Effect) Alternative	Cross-section One-sidea	Time One-sidea	Both
1	2	3	4
Breusch-Pagan	44.79079 (0.0000)	2.772891 (0.0959)	47.56368 (0.0000)

**Sumber:** Study Finding

The LM test is used to determine the appropriateness of the REM. When the LM statistical value is greater than the Chi-Square, the null hypothesis is rejected and vice versa. The LM test results indicated that the Bruch-Pagan probability value is  $0.0000 < \alpha < 0.05$ , meaning  $H_0$  is rejected and  $H_1$  is accepted. This led to the selection of the REM.

#### 4.1.4. The Chow Test Results

The Chow test was employed to identify the optimal model between the FEM and the REM. On the other hand, the hypothesis proposed for the Hausman test is stated as follows:

$H_0 = \text{CEM}$

$H_1 = \text{FEM}$

**Table 5. Chow Test Results**

Effects Test	Statistic	d.f.	Prob.
1	2	3	4
Cross-section F	25.627599	(12,60)	0.0000
Cross-section Chi-square	139.559699	12	0.0000

**Source:** Study Finding

The best model for the Chow test is selected assuming the p-Value is less than  $\alpha < 0.05$ , then  $H_0$  is rejected and  $H_1$  accepted. Based on Table 4.10, the Chi-Square probability value of 0.0000, is less than 0.05, indicating that the FEM was selected.

#### 4.1.5. The Hausman Test Results

The Hausman test is a statistical evaluation employed to determine the ideal model between the FEM and the REM. The hypothesis used in the Hausman test is stated as follows

$H_0 = \text{REM}$

$H_1 = \text{FEM}$

**Table 6. Hausman Test Results**

	Chi-Sq.		
Test Summary	Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	28.648178	4	0.0000

**Source:** Study Finding

The Hausman test results depend on whether the Hausman statistic value is greater or smaller than the critical value. When the Hausman statistic value is greater than the critical value, the FEM is the preferred model, and supposing it is smaller, the REM is selected. In this study, the Chi-Square statistical value had a probability value of less than 0.05, hence the null hypothesis ( $H_0$ ) was rejected, and the alternative hypothesis ( $H_1$ ) accepted. This simply means that the preferred model is the FEM.

#### 4.1.6. Results of the Coefficient of Determination ( $R^2$ )

The coefficient of determination ( $R^2$ ) test is used to assess the extent to which the independent variable can accurately account for the variation in the dependent one. The coefficient of determination value ranges between zero and one. A higher R-Square value indicates that the model can be used to absolute explain the effect of the independent variable on the dependent one. The coefficient of determination is stated as follows

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**Table 7. Coefficient of Determination Results**

R-squared	0.981635
Adjusted R-squared	0.976737

Source: Study Finding

An R-Squared of 0.981635 or 98.16 percent is shown in the *Eviews* output results, indicating that Labor Absorption (PTK) variable can be properly explained by Production Value (NI), Number of Industries (JI), and Minimum Wage (UMP). The remaining 1.84 percent of the variation in the TPK variable is attributed to other factors not included in the model.

### 4.1.7. Hypothesis Test Results

#### a. Fisher Test Results

The F test is used to evaluate the collective impact of the independent variables on the dependent one. The standard evaluation method for the F test is to compare the probability value with  $\alpha$  0.05. When the p-value is less than  $\alpha$  0.05, then the independent variables have a simultaneous effect on the dependent one. The F test results are shown in Table 8:

**Table 8. Statistical Fisher Test Results**

F-statistic	Prob(F-statistic)
1	2
200.4406	0.000000

Source: Study Finding

The statistical results of the F test showed that the *p-value* is 0.000000, meaning the independent variables, namely Production Value, Number of Industries, Production Value, and Minimum Wage, have a significant joint effect on Labor Absorption.

#### b. T-test Results

The t-statistic test was used to assess the individual effect of each independent variable on the dependent one. However, to evaluate the t-test, the probability value of each independent variable was compared with  $\alpha$  0.05. The results of the t-test are shown in Table 9.

**Table 9. Results of the t-Statistic Test**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.007908	2.665384	0.378147	0.7067
NI	0.034107	0.046817	0.728523	0.4691
JI	0.925505	0.076130	12.15696	0.0000
NP	-0.002753	0.021546	-0.127763	0.8988
UMP	-0.016913	0.171767	-0.098465	0.9219

Source: Study Finding

The t-statistic test was used to determine the partial effect of independent variables on the dependent one. In order to assess the t-test, the probability value of the independent variable was compared with  $\alpha$  0.05. The results of the t-test in this study indicated that Production Value variable has an insignificant effect on Labor Absorption with a probability value of  $0.4691 > 0.05$ . In contrast, number of Industries variable significantly influences Labor Absorption, with a probability value of  $0.0000 < 0.05$ . Production Value (NP) variable does not have a significant effect on Labor Absorption, as evidenced by its probability value of  $0.8988 > 0.05$ . Similarly, the Province Minimum Wage variable does not significantly affect Labor Absorption, with a probability value of  $0.9219 > 0.05$ . This simply means that Minimum Wage variable does not have a significant effect on Labor Absorption.

#### c. Classical Assumption Test Results

After the test results, the FEM was selected using the Pooled Least Square (PLS) approach. It is important to check the classical assumptions to ensure that the chosen model meets the requirements for the Best Linear Unbiased Estimator (BLUE).

In this study, only selected classic assumption tests were used when applying the OLS approach, which included the Multicollinearity and Heteroscedasticity tests.



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## d. Multicollinearity Test Results

The multicollinearity test was employed to determine the correlation among the independent variables in a regression model. The Multicollinearity Test results are shown in Table 10.

**Table 10. Multicollinearity Test Results**

	X <sub>1</sub> NI	X <sub>2</sub> Jl	X <sub>3</sub> NP	X <sub>4</sub> UMP
1	2	3	4	5
X <sub>1</sub> NI	1.000000	0.684332	0.671242	0.392648
X <sub>2</sub> Jl	0.684332	1.000000	0.554217	0.3377568
X <sub>3</sub> NP	0.671252	0.554217	1.000000	0.080608
X <sub>3</sub> UMP	0.392648	0.337568	0.080608	1.000000

**Source:** Study Finding

According to Table 10, the model tested showed a VIP value of less than 10, indicating the absence of multicollinearity.

## e. Heteroscedasticity Test Results

The purpose of the heteroscedasticity test was to identify whether the residuals between observations in a regression model have unequal variances. The results of the Heteroscedasticity Test are shown in Table 11.

**Table 11. Heteroscedasticity Test Results**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.694941	1.013684	-0.685560	0.4956
NI	0.000662	0.017805	0.037154	0.9705
Jl	0.018739	0.028953	0.647212	0.5200
NP	-0.012207	0.008194	-1.489694	0.1415
UMP	0.064869	0.065325	0.993017	0.3247

**Source:** Study Finding

The heteroscedasticity test was used to determine whether the heteroscedasticity exists in the regression model. The assessment criteria evaluated the test by comparing the probability value (p-value) to a significance level of  $\alpha = 0.05$ . When the p-value is greater than  $\alpha$ , it indicated the absence of heteroscedasticity related problem. The results in Table 11 showed that the model used in this study does not exhibit heteroscedasticity.

## 4.2. Discussion

The study outcomes allow for analysis and discussion of the simultaneous and partial influence of Production Value, Number of Industries, and Minimum Wage on Labor Absorption in Small and Medium Industries located in Central Sulawesi Province. This was interpreted as follows

### 4.2.1 Simultaneous Effect of Production Value, Number of Industries, and Minimum Wage on Labor Absorption in Small and Medium Industries in Central Sulawesi Province

The test results suggested that the most suitable estimation model for this study is the FEM. According to the t-statistic tests, Production Value variable has a positive but insignificant impact, number of Industries has a positive and significant impact, Production Value has a positive but insignificant impact, and Minimum Wage has a negative and insignificant impact.

The regression analysis revealed that Production Value, Number of Industries, and Province Minimum Wage variables collectively have an impact on Labor Absorption in small and medium industries located in Central Sulawesi Province, as proven by the F-statistic test results. Additionally, the coefficient of determination ( $R^2$ ) test results showed that these variables hold a significant influence of relatively 98.16 percent on Labor Absorption. This indicated that only 1.84 percent of the variance in Labor Absorption is influenced by other factors not addressed in this study. In conclusion, other variables outside the scope of this study were used to explain 1.84 percent of the variability in Labor Absorption.

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### **4.2.2 The Effect of Production Value on Labor Absorption in Small and Medium Industries in Central Sulawesi Province**

The partial analysis showed that Production Value variable has a positive but not statistically significant effect on Labor Absorption, as evidenced by its coefficient and probability of 0.034107 and 0.4691, respectively. This indicated that a 1 percent increase in Production Value resulted in a 0.034107 percent increase in Labor Absorption. The findings of this study are consistent with (Chusna, 2013), that Production Value positively affects absorption of labor in industries sector. The results also align with the theory that investment activities can stimulate national income growth and expand employment opportunities.

The study by (Nasution, 2018) titled Analysis of Investment, PAD and number of SME Units Against SME Labor Absorption in Labuhanbatu Regency, supported the positive relationship between investment and employment in the SME sector. Economists stated the crucial role of investment formation as a primary determinant of economic growth. This is because it is the primary driver of the economy. Therefore, investment is a significant variable in promoting the creation of Labor Absorption.

Investment activities are instrumental in promoting economic development and expanding employment opportunities, resulting in increased national income and improved living standards for people. Investing in a company can have a significant impact on employment opportunities as it increases the need for human labor in production process, thereby creating more jobs. Moreover, investment in output has a multiplier effect, where any increase in investment leads to a corresponding increase in output. This, in turn, generates additional income and creates a chain reaction of consumption expenditure, leading to further job creation.

Investment plays a vital role in driving regional development and fostering economic growth. In the field of macroeconomics, a rise in investment increased aggregate demand and national income, thereby increasing production capacity and generating more employment opportunities as more labor is needed in production process.

### **4.2.3 The Effect of number of Industries on Labor Absorption in Small and Medium Industries in Central Sulawesi Province**

The variable Number of Industries has a significant and positive effect on Labor Absorption, with coefficient and probability value of 0.902726 and 0.0000, respectively. This implies that a 1% increase in number of industries will lead to a 0.902726% increase in Labor Absorption. The significance of number of IKM to Labor Absorption is because labor is a crucial production factors in industries. Therefore, an increase in number of SMEs established in Central Sulawesi would require more labor to carry out production activities, leading to greater Labor Absorption.

(Soca & Woyanti, 2021), stated that there is a correlation between number of business units and Labor Absorption. Since labor is an integral part of production factors, an increase in number of business units leads to a greater need for labor in production process, ultimately increasing Labor Absorption.

Similarly, by (Purnawati & Khoirudin, 2019), also reported positive and significant results. The study stated that number of business units had a positive and significant impact on Labor Absorption in industries. The establishment of more business units leads to an increase in labor demand. As a result, more production factors, such as labor, are required, thereby reducing number of unemployed people.

These findings are consistent with the study carried out by (Endarwanti, Qosjim, & Suswandi, 2014), which reveals a positive and significant impact of number of business units on Labor Absorption in the trade sector in Jember Regency from 2001 to 2012. As more businesses are established, more labor is absorbed, especially in small and medium-sized businesses. Since establishing a large trading business requires a significant amount of capital, small and medium-sized businesses are more prevalent, especially in areas with low living standards. The growth of the trade sector leads to an increase in Labor Absorption, which subsequently results in a reduction in the unemployment rate.

### **4.2.4 The Effect of Production Value on Labor Absorption in Small and Medium Industries in Central Sulawesi Province**

Production Value variable has a coefficient and probability of -0.002753 and 0.8988, respectively, indicating a partial negative and insignificant effect on Labor Absorption. This negative relationship between Production Value and Labor Absorption in Central Sulawesi Province is due to the impact of the COVID-19 pandemic. The policy of the government to impose lockdowns and social distancing measures disrupted socio-economic activities and had an adverse effect on SMEs in Central Sulawesi Province As a result, Production Value of many SMEs decreased, causing them to go out of business and reduce or terminate their workforce (PHK).

The findings align with the demand theory of labor, suggesting that the demand for company production significantly impacts the demand for labor. In order to maintain production input, which includes labor, the demand for production output from the public must remain stable or potentially increase. Therefore, as the public demand for a company goods increases, there will be a higher demand for labor, leading to increased Labor Absorption (Sumarsono S. , 2009).

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(Dewi & Syaifullah, 2022), reported that there is no significant relationship between Production Value and Labor Absorption. This means that the level or extent of company production does not affect Labor Absorption.

(Dewi & Syaifullah, 2022), stated that there was no significant impact of Production Value on employment in the manufacturing industries sector of East Java Province. When Production Value increases, it does not necessarily increase labor force. However, an increase in Production Value for middle and lower-industries companies can lead to an increase in production, which in turn requires more labor, thereby creating employment opportunities.

### 4.2.4 The Effect of Minimum Wage on Labor Absorption in Small and Medium Industries in Central Sulawesi Province

Minimum Wage has a non-significant negative effect on Labor Absorption, with a coefficient and probability of -0.016913 and 0.9219, respectively. This indicated that 1 percent increase in Minimum Wage resulted in a reduction of Labor Absorption by -0.016913. The insignificance of Minimum Wage on Labor Absorption in Central Sulawesi Province can be attributed to the practice of SMEs providing employee wage based on productivity rather than the mandated Minimum Wage. Therefore, an increase in Minimum Wage does not necessarily lead to a decrease in Labor Absorption.

The negative and insignificant impact of wage on Labor Absorption is consistent with wage efficiency theory (Shapiro & Stiglitz, 1984), which explains how wage affect worker productivity in the absence of negligence and labor market disequilibrium. When labor market is at full employment, the risk of job loss decreases, leading to worker negligence. Meanwhile, assuming a worker loses their job, they can easily find another one due to zero unemployment. In such a situation, a firm may pay more to increase worker productivity, but it may not benefit the firm since workers are less concerned about losing their jobs and may continue to be negligent. When a firm pays higher wage, it may have to lay off some employees, leading to a decrease in Labor Absorption. This creates fear of job loss among workers and forces them to work with responsibility. As a result, firms may be unable to absorb labor from workers who are willing to receive a lower Minimum Wage due to concerns about negligent workers who demand higher wage.

The theory of labor wage elasticity is consistent with the findings of this study. When labor demand is unitary elastic, changes in wage do not affect the total labor cost (TLC) as it remains constant.

The theory of labor demand supports the negative impact of Minimum Wage on labor, by stating that as labor wage increases, the quantity demanded decreases. As a result, each unit of capital is expected to produce more output, leading to the inability of companies to absorb more labor due to the continuous increase in employee wage.

The negative correlation between Minimum Wage and Labor Absorption aligned with labor substitution theory, stating that when wage increases, entrepreneurs opt to substitute labor with technology in production process to lower production costs. This occurred under the assumption that other prices remained constant.

According to the study proposed by David Ricardo, the amount of wage paid to workers is based on the cost of their living needs. This means that companies pay wage based on their ability to do so, and when they pay high wage, the welfare of the workers and their families would be guaranteed, increasing the supply of labor. A large supply of labor can lead to a decline in wage. On the other hand, assuming wage level increases, the company costs will also increase, which will trigger the price per unit of goods produced. Consumers tend to respond quickly to an increase in prices by reducing their consumption or looking for cheaper alternatives. This can result in a decrease in the demand for certain products, prompting producers to reduce the quantity of goods produced. As a consequence, companies may be compelled to reduce their labor force and instead adopt capital-intensive production methods, such as utilizing machinery, etc.

The findings of this study are consistent with (Widyaningrum & Bintariningtyas, 2021), who reported the existence of a negative relationship between Micro and Small Enterprises (MSEs) and Labor Absorption in industries sector. When MSEs increase in number, it leads to a reduction in job opportunities. Furthermore, when workers demand higher wage, it can result in reduced employment, ultimately leading to higher unemployment rates. Increased wage also raises production costs for companies, causing inefficiencies in production process. As a result, companies may implement labor reduction policies to mitigate additional costs. Consequently, an increase in Minimum Wage can lead to a decrease in number of workers and a decline in overall Labor Absorption.

by (Windyana & Darsana, 2020), stated that a negative relationship exists between Minimum Wage and Labor Absorption in the large and medium processing industries sector. This is because most of the large and medium-sized processing companies in Surabaya City are capital-intensive industries, meaning they prefer to use capital technology rather than labor in production process to offset the high production costs incurred from using labor.

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## V. CONCLUSION AND SUGGESTIONS

### 5.1 Conclusion

In conclusion, this study examined the joint and individual impacts of Production Value, Number of Industries, Production Value, and Province Minimum Wage on Labor Absorption in Small and Medium Industries in Central Sulawesi Province from 2016 to 2021. The findings from the preceding chapter indicated the following:

1. From 2016 to 2021, the progress of Production Value, Number of Industries, Production Value, and Province Minimum Wage) in the 13 regencies or cities of Central Sulawesi Province was unstable. Palu City, Morowali Regency, Tojo Una-Una, Sigi Regency, and Buol Regency were among the regions with the highest Labor Absorption.
2. The study used the FEM with panel data analysis to estimate the effects of Production Value, Number of Industries, Production Value, and Province Minimum Wage on Labor Absorption in SMEs in Central Sulawesi Province. The findings indicate that all four variables have a combined impact on Labor Absorption, with Number of Industries partially influencing Labor Absorption. However, Production Value, Production Value, and Minimum Wage have no partial influence on Labor Absorption in Small and Medium Industries in Central Sulawesi Province.

### 5.2 Suggestion

Taking into account the analysis results and the aforementioned conclusions, the following suggestions were offered

1. In order to improve the quality of the workforce through non-formal education, the government need to organize competency-based training programs and establish certified competency institutions, which can meet the criteria as training institutions for community empowerment.
2. When setting Minimum Wage, the government should consider the welfare of workers while avoiding a significant increase in production costs of companies that could lead to a reduction in employment or job loss. This policy is part of government efforts to intervene in labor market and create a conducive environment for labor.
3. One limitation of this study is the incomplete data on small and medium industries from several regions in Central Sulawesi Province, which may hinder a comprehensive description of the influence of variables on Labor Absorption in province.

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