DETERMINANT ANALYSIS OF THE MANUFACTURING INDUSTRY SECTOR'S ON LABOR ABSORPTION IN SIDOARJO AND PASURUAN DISTRICTS

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Abstract

The phenomenon of suboptimal labor absorption in Sidoarjo and Pasuruan districts as the industrial base areas of East Java Province has led to an increase in unemployment problems in both districts. To maximize the potential of existing industries to absorb more labor, it is necessary to analyze the influence of industrial sector factors on the absorption of industrial sector labor in Sidoarjo and Pasuruan districts. This research method uses a quantitative descriptive approach. The type of data used is time series data from 2010-2023. The data analysis technique used is multiple linear regression model analysis using classical assumption test. The results of data analysis found that Industrial GRDP and HDI have a positive and significant effect on employment in Sidoarjo and Pasuruan districts. Meanwhile, the number of industries and industrial investment have no significant and positive effect on employment in Sidoarjo and Pasuruan districts. Furthermore, the minimum wage has a significant and negative effect on employment in Sidoarjo and Pasuruan districts.

Keywords: Labor Apsorption, Manufacturing Sector, Multiple Linear Regression

INTRODUCTION

Economic development is a complex stage to reduce inequality, unemployment, and accelerate economic growth. One of the government's efforts to accelerate economic development is through industrialization. There needs to be a leading sector to absorb more labor in an area. However, in reality there are still many cases and phenomena that occur and result in failure to achieve good economic development.

Employment problems in a country, including Indonesia, generally include an increase in the number of the labor force accompanied by an imbalance in the growth of employment, and the fact that all sectors have not functioned properly in terms of absorbing labor, becoming one of the problem factors in the development of a country, namely the unemployment rate.

One of the regions in East Java province, Sidoarjo Regency and Pasuruan Regency, has a major role and contribution to the East Java economy. And the incorporation of all activities in economic growth in the Gerbang Kertasusila Region makes these two districts an industrial base in East Java.

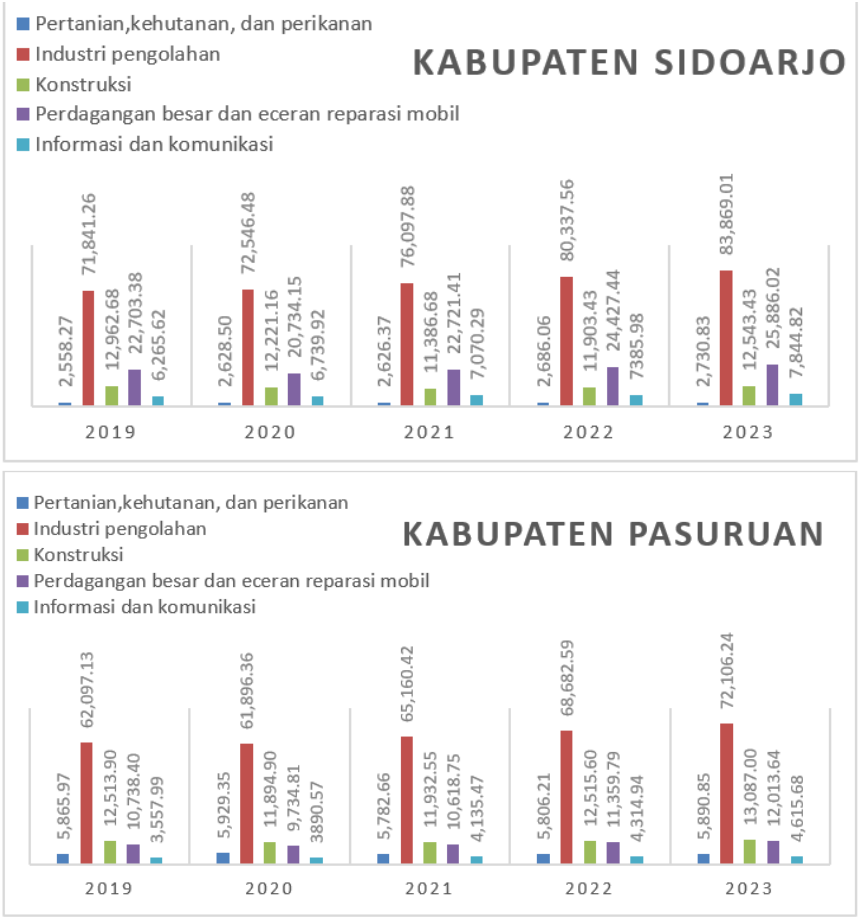
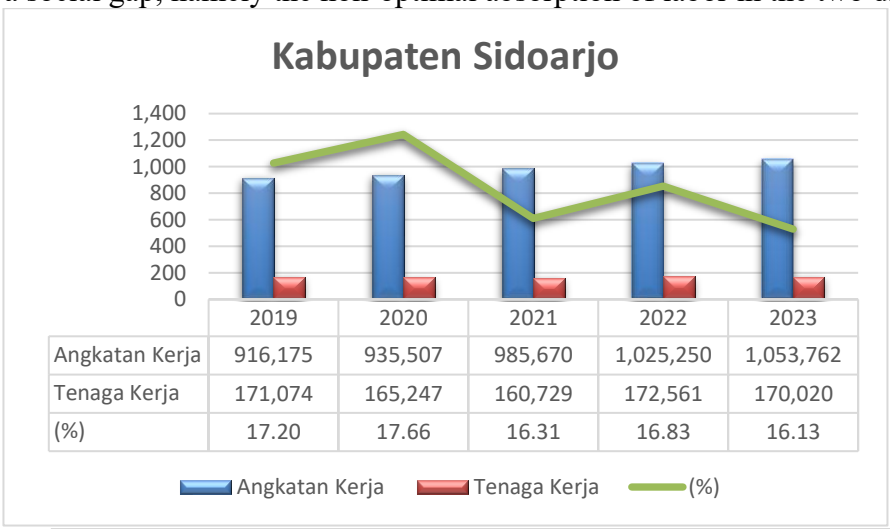
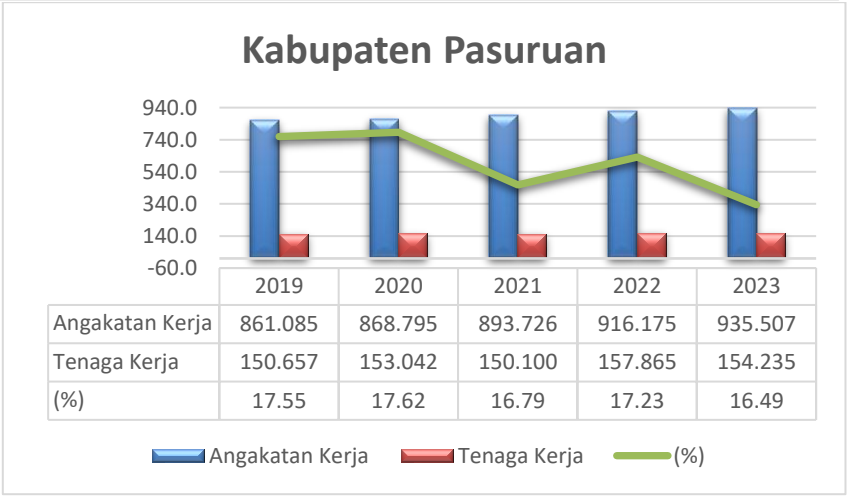


Figure 1.
ADHK 2010 GDP by Business Field in Sidoarjo and Pasuruan Districts (billion rupiah) 2019-2023
Source: BPS East Java

Judging from the GRDP data at constant prices in 2023 above, Sidoarjo Regency and Pasuruan Regency excel in the processing industry sector. From the last five years, the manufacturing sector has continued to show good performance. However, it turns out that there is still a social gap, namely the non-optimal absorption of labor in the two districts.



	2019	2020	2021	2022	2023
Angkatan Kerja	916,175	935,507	985,670	1,025,250	1,053,762
Tenaga Kerja	171,074	165,247	160,729	172,561	170,020
(%)	17.20	17.66	16.31	16.83	16.13



	2019	2020	2021	2022	2023
Angakatan Kerja	861.085	868.795	893.726	916.175	935.507
Tenaga Kerja	150.657	153.042	150.100	157.865	154.235
(%)	17.55	17.62	16.79	17.23	16.49

Figure 2.
Total Labor Force and Employment in Sidoarjo Regency and Pasuruan Regency (Population) 2019-2023
Source: East Java Provincial Labor Office

In the figure above, it can be seen that the number of workers absorbed in Pasuruan Regency and Sidoarjo Regency in the last 5 years has fluctuated. In addition, it also illustrates the condition of the number of labor forces in Sidoarjo Regency and Pasuruan Regency from 2019 to 2023 looks higher than the number of workers. This condition indicates that the labor force is not optimally absorbed in the two districts. One of the factors in this problem is the availability of jobs that have not covered all the labor force in the industrial sector.

Based on the reality of the situation from the description above. In addition, to maximize the potential of the processing industry sector in Sidoarjo and Pasuruan Regencies in absorbing more labor, it is necessary to analyze the factors that affect the absorption of

industrial sector labor in the two Regencies such as industrial sector GRDP, number of industries, industrial sector investment, Regional Minimum Wage, and Human Development Index. Therefore, this study aims to analyze how much influence some of these factors have on labor absorption, especially in the industrial sector.

REVIEW OF LITERATURE

Employment

The labor theory is the basis for issues related to labor. The theory proposed by Adam Smith emphasizes that labor is a measure of the value of a good. Where the main function of the labor value theory is the role of human resources in productive activities. According to Adam Smith in the book (Try Wahyu Utami et al., 2023). Labor is an important indicator of production factors in a country's economy. Abundant natural resources are meaningless if there is no labor to manage them.

Labor Apsorption

Labor absorption is seen from the amount of working population or labor absorbed in the labor market and spread across various sectors of the economy (Try Wahyu Utami et al., 2023). The concept of labor absorption refers to the number of workers who have worked in a particular business unit. Labor absorption occurs and is spread across various sectors of the economy. Where the main driving factors of labor absorption are divided into two groups, namely external factors and internal factors. External factors include variables such as economic growth rate (GRDP), unemployment rate, inflation rate, and interest rate. Meanwhile, internal factors include wage rates, capital, labor productivity, business units, and non-wage costs.

Manufacturing Industry

In economic terms, industry is one of the economic sectors that has production activities in it, processing raw materials into finished goods (Dumairy, 2010). This definition makes the word industry often referred to as the manufacturing or processing industry. The industrial sector is also known as the leading sector, because the industrial sector is considered capable of driving the pace of a country's economy compared to other sectors.

Gross Regional Domestic Product (GRDP)

According to Muamar (et al., 2024), Gross Regional Domestic Product (GRDP) comes from the total production of goods and services produced in various sectors of the economy by a region in a certain period. GRDP is used to measure the performance of a region's economic growth. The development of economic growth can create new jobs and increase people's income. GRDP influences the number of workers employed. It can be concluded that when the value of GRDP increases, the amount of production in all units in a region will also increase. The company will increase its labor demand when there is an increase in the output of goods or services. Therefore, it can be stated that the increase in GRDP value will have an impact on the increase in labor demand.

Industry Sector Investment

Economic theory defines investment as spending to add production equipment used to increase the economy's ability to produce goods and services (Firdayanti, 2022), In Indonesian Law Number 25 of 2007 related to investment, investment is divided into two, namely foreign investment (PMA) and domestic investment (PMDN). Based on Keynes' theory, there is a

positive impact between investment and employment. Increased industrial investment in a regional unit can encourage production capacity which can expand employment. Investment in the industrial sector is expected to increase labor absorption. However, the transfer of more capital-intensive resources can also be a challenge to investment for workers.

Number of Industry Companies

The number of industrial companies is a unit that is used as a place for production activities to produce goods and services. The more the number of business units available in an area, the more its labor absorption will increase (Ardiansyah et al., 2018). This is because industry has a close relationship with labor absorption. Industry requires labor to carry out the production process.

Regional Minimum Wage

Wages are one aspect that has an impact on the level of employment. According to Todaro (2011), changes in wages can affect the level of production costs of a company. Increasing product prices due to high production costs can reduce the level of demand for the product, thus making companies reduce the quantity of output or products produced. This will certainly result in a decrease in the number of workers as well. In addition, according to (Mankiw, 2013), if the minimum wage exceeds the market equilibrium, it will reduce labor demand and result in decreased employment opportunities. Likewise, if the minimum wage is below the market equilibrium, it will increase labor demand and can expand employment opportunities.

Human Development Index

The human development index is used as a measure of the success of human development in a region based on several basic components of quality of life that affect the level of productivity of each individual. The higher the level of quality of life of a person, it will encourage an increase in the productivity of goods and services produced. According to Keynes' theory in the journal (Syolikhah, 2021), an increase in people's purchasing power towards demand for goods and services can create employment opportunities. This is supported by Okum's Law, which states that productivity growth due to an increase in HDI can lead to an increase in economic growth. This condition is expected to increase labor opportunities and demand.

RESEARCH METHOD

This research falls into the type of quantitative research using a quantitative descriptive approach research method. The quantitative data used in this research is secondary data sourced from the Central Bureau of Statistics (BPS) of East Java Province, the Investment Office, the Industry and Trade Office, the Manpower Office, and the East Java Governor Regulation. The type of data based on the time dimension in this research uses time series data with a 10-year period starting from 2013 to 2023. The data analysis technique used in this research is multiple linear regression model analysis using BLUE (Best Linear Unbiased Estimator) classical assumption testing. The calculation formula for multiple linear regression models with time series data is as follows:

$$Y_t = \alpha + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + e$$

Notes:

Y_t : Industrial Sector Labor Absorption

α	: Constanta
$\beta_1\ \beta_2\ \beta_3\ \beta_4\ \beta_5$	: Regression Coefficient of Independent Variable
X_{1t}	: Industry Gross Regional Domestic Product
X_{2t}	: Number of industry
X_{3t}	: Industry sector investment
X_{4t}	: Regional Minimum Wage
X_{5t}	: Human development index
E	: Error term

Furthermore, to determine the effect of the independent variables on the dependent variable, it can be done with the t-test (partial test), F-test (simultaneous test), the coefficient of determination (Adjusted R-square) and using the classical assumption test.

RESULTS AND DISCUSSION

Multiple linear regression analysis is used as a measuring tool to predict whether or not there is a relationship and influence of the independent variable on the dependent variable. The following are the results of multiple linear regression analysis testing and hypothesis testing results in this study:

Table 1.
Results of Multiple Linear Regression in Sidoarjo Regency

Model	Variabel	B	Std.Error	Standardized Coefficient Beta	t	Sig
1	(Constant)	320.839	49.086		6.536	0.001
	Industrial GRDP	5.145	0.267	0.991	14.196	0.001
	Number of Industries	0.116	0.024	0.325	4.621	0.002
	Industrial Investment	0.889	0.247	0.162	3.597	0.007
	District Minimum Wage	-0.894	0.126	-0.367	-4.715	0.002
	HDI	1.608	0.668	0.198	2.409	0.043

Table 1 Regression results can be formulated from the multiple regression analysis equation model, as follows:

$$Y_t = 320{,}839 + 5.145X1 + 0{,}116X2 + 0{,}889X3 + -0{,}894X4 + 1{,}608X5 + e$$

From the above equation, it can be seen that:

1. The constant value of this study is 320,839, this indicates that all independent variables, namely Industrial GRDP (X1), Number of industries (X2), Industrial sector investment (X3), regional minimum wage (X4), and HDI (X5) if assumed to be constant (zero), then the dependent variable, namely Labor Absorption (Y), has increased by 320,839.
2. The regression coefficient value of the industrial GRDP variable is 5,145. So that if industrial GRDP increases by one unit, labor absorption will increase by 5,145 people.
3. The regression coefficient value of the industry number variable is 0,110. So that if the number of industries increases by one unit, employment will increase by 0,110 people.

4. The regression coefficient value of the industrial investment variable is 0,889. So that if the investment in the industrial sector increases by one unit, employment will increase by 0,889 people.
5. The regression coefficient value of the minimum wage variable is -0,894. so that labor absorption will decrease by -0,894 people if the regional minimum wage increases by one unit.
6. The regression coefficient value of the HDI variable is 1,608. So that if the HDI increases by one unit, employment will increase by 1,608 people.

Table 2.
Results of Multiple Linear Regression in Pasuruan Regency

Model	Variabel	B	Std.Error	Standardized Coefficient Beta	t	Sig
1	(Constant)	39.290	59.729		0.658	0.529
	Industrial GRDP	0.325	0.07	0.478	4.668	0.001
	Number of Industries	0.116	0.037	0.458	1.18	0.273
	Industrial Investment	1.125	1.038	0.089	1.083	0.31
	District Minimum Wage	-0.405	0.118	-0.333	-3.422	0.002
	HDI	3.692	1.388	0.361	2.661	0.029

Table 1 Regression results can be formulated from the multiple regression analysis equation model, as follows:

$$Y_t = 39{,}290 + 0{,}325X1 + 0{,}116X2 + 1{,}125X3 + -0{,}405X4 + 3{,}692X5 + e$$

From the above equation, it can be seen that:

1. The constant value of this study is 39,290, this indicates that all independent variables, namely Industrial GRDP (X1), Number of industries (X2), Industrial sector investment (X3), regional minimum wage (X4), and HDI (X5) if assumed to be constant (zero), then the dependent variable, namely Labor Absorption (Y), has increased by 39,290.
2. The regression coefficient value of the industrial GRDP variable is 0,325. So that if industrial GRDP increases by one unit, labor absorption will increase by 0,325 people.
3. The regression coefficient value of the industry number variable is 0,116. So that if the number of industries increases by one unit, employment will increase by 0,116 people.
4. The regression coefficient value of the industrial investment variable is 1,125. So that if the investment in the industrial sector increases by one unit, employment will increase by 1,125 people.
5. The regression coefficient value of the regional minimum wage variable is -0,405. So that if the regional minimum wage increases by one unit, employment will decrease by -0,405 people.
6. The regression coefficient value of the HDI variable is 3,692. So that if the HDI increases by one unit, labor absorption will increase by 3,692 people.

The coefficient of determination is a test used to measure how much the ability of the regression equation model to explain variations in the dependent variable. The following are the results of the R2 coefficient of determination test in the two districts:

Table 3.
Determination Coefficient Test R2 Sidoarjo and Pasuruan Districts

	Model	R	R Square	Adjusted R Square
Kabupaten Sidoarjo	1	0.997	0.993	0.989
Kabupaten Pasuruan		0.988	0.975	0.960

In table 3, it is known that the Adjusted R Square value in Sidoarjo and Pasuruan districts is 0.989 and 0.960. So, it can be concluded that the variables of Industrial GRDP (X1), Number of industries (X2), Industrial sector investment (X3), Minimum Wage (X4), and HDI (X5) simultaneously contribute 0.989% and 0.960% to employment and the remaining 1.1% and 4.0% are influenced by other variables that come from outside the variables studied.

Partial test or t test is a test conducted to determine whether the independent variable really has an influence on the dependent variable and measure how much significance the influence between the two is. The following are the results of the t test in this study:

Table 4.
t Test Sidoarjo and Pasuruan Districts

Model		Kabupaten Sidoarjo		Kabupaten Pasuruan	
		t	Sig	t	Sig
1	(Constant)	6.536	0.001	0.658	0.529
	Industrial GRDP	14.196	0.001	4.668	0.001
	Number of Industries	4.621	0.002	1.180	0.273
	Industrial Investment	3.597	0.007	1.083	0.310
	Minimum Wage	-4.715	0.002	-3.422	0.002
	HDI	2.409	0.043	2.661	0.029

Table 4 t test results in the two districts in this study obtained the following hypothesis results:

a. Gross Regional Domestic Product (GRDP)
The Industrial GRDP variable (X1) has a significant value of 0.001 < 0.05 and a calculated t value of 14.196 > t table 1.761 in Sidoarjo Regency and 4,668 > t table 1.761 in Pasuruan Regency. This means that the industrial GRDP variable has a significant and positive effect on labor absorption in both districts. The results of the analysis state that if industrial GRDP increases, the number of workers will also increase. So it can be concluded that the hypothesis is accepted. The results of this data analysis are in accordance with the Harrod-Domar theory which explains that an increase in production

capacity will require more labor demand so that there is no decrease in the amount of production. The results of this study are also in line with research (Muamar Gading, et al., 2024).

b. Number Of Industry Companies

There are differences in the results obtained between Sidoarjo and Pasuruan districts. The variable number of industries (X2) in Sidoarjo Regency has a significant value of 0.002 <0.05 and a t value of 4.621> t table 1.761. This means that the variable number of industries has a significant and positive effect on employment. The results of the analysis state that if the number of industries increases, then employment in Sidoarjo Regency also increases. So it can be concluded that the hypothesis is accepted. In accordance with Matz's statement in the journal (Fauziah et al., 2021), it states that the addition of industrial units will increase labor, because each industrial unit requires labor.

Meanwhile, Pasuruan Regency has a significant value of 0.273 > 0.05 and a t value of 1,180 < t table 1,761. This means that the variable number of industries has no significant and positive effect on labor absorption. The results of the analysis state the correlation between the number of industries and labor absorption has a positive impact even though it does not have any effect on labor absorption in Pasuruan Regency. So it can be concluded that the hypothesis is rejected. This is because some medium and large companies in Pasuruan Regency have used modern technology in their production, so the increase in industry has no impact on employment. The results of this data analysis are also in accordance with research conducted by (Widyaningrum & Bintariningtyas, 2021).

c. Industry Sector Investment

There are differences in the results obtained between Sidoarjo and Pasuruan districts. The industrial investment variable (X3) in Sidoarjo Regency has a significant value of 0.007 <0.05 and a calculated t value of 3.597> t table 1.761. This means that the industrial investment variable has a significant and positive effect on employment. The results of the analysis state that if the industry sector investment increases, then employment in Sidoarjo Regency also increases. So it can be concluded that the hypothesis is accepted. In accordance with Keynes' theory, there is a positive correlation between investment and employment. Investment acts as the main factor driving economic growth, increasing aggregate demand and employment opportunities.

Meanwhile, Pasuruan Regency has a significant value of 0.310 > 0.05 and a calculated t value of 1,083 < t table 1,761. This means that the industrial investment variable has no significant and positive effect on labor absorption. The results of the analysis state the correlation between the industry sector investment and labor absorption has a positive impact even though it does not have any effect on labor absorption in Pasuruan Regency. So it can be concluded that the hypothesis is rejected. This is because there is a phenomenon of resource diversion that is more capital intensive. Many industrial sector investments in Pasuruan Regency lean towards capital-intensive investments, so that the increase in industrial investment has no impact on labor absorption. The results of this data analysis are in accordance with the research (Fadel et al., 2021).

d. Regional Minimum Wage

The minimum wage variable (X4) has a significant value of 0.002 < 0.05 and a calculated t value of -4.715 > t table 1.761 in Sidoarjo Regency and -3.422 > t table 1.761 in Pasuruan Regency. This means that the minimum wage variable has a significant and negative effect on labor absorption in both districts. The results of the analysis state that if the regional minimum wage increases, then employment in Sidoarjo and Pasuruan districts decreases. So it can be concluded that the hypothesis is accepted. According to Todaro (2011), the labor market theory and wage effects explain that changes in wages can have an impact on the level of production costs of a company. As a result, the company will experience inefficiency and will take action to reduce production costs by reducing labor. The results of this data analysis are in accordance with the research (Usman et al., 2023).

e. Human Development Index

The HDI variable (X5) of Sidoarjo Regency has a significant value of 0.043 <0.05 and a calculated t value of 2.409 > t table 1.761. Pasuruan Regency has a significant value of 0.029 < 0.05 and a calculated t value of 2.661 > t table 1.761. This means that the HDI variable has a significant and positive effect on labor absorption in Sidoarjo and Pasuruan districts. The result of the analysis states that if HDI increases, the number of workers will also increase. So, it can be concluded that the hypothesis is accepted. The results of this data analysis are in accordance with the human capital theory put forward by Schultz in the book (Wahed et al., 2021), explaining that human capital investment is the potential ability of each individual to obtain better performance.

The F test is carried out to determine whether there is a simultaneous or overall influence of the independent variable on the dependent variable The following are the results of the F test in this study:

Table 5.
F Test Sidoarjo and Pasuruan Districts

Kabupaten Sidoarjo						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig**
1	Regression	2.236.752	5	447.35	230.844	<0.001
Kabupaten Pasuruan						
1	Regression	4.209.702	5	841.94	63.301	<0.001

Table 5 F test results obtained a significant value of <0.001 smaller than 0.05. So it can be concluded that simultaneously industrial GRDP, number of industries, industrial investment, minimum wage, and HDI have a significant effect on the absorption of industrial sector labor in Sidoarjo and Pasuruan districts.

CONCLUSION

Based on the multiple linear regression data analysis that has been carried out, it can be concluded that industrial factors such as Industrial GRDP have a significant and positive effect on employment in Sidoarjo and Pasuruan districts in 2010-2023. The variable number

of industries has a significant and positive effect in Sidoarjo Regency, while in Pasuruan Regency it has no significant and positive effect on employment. Furthermore, industrial investment has a significant and positive effect on employment in Sidoarjo Regency, while in Pasuruan Regency it has no significant and positive effect on employment. Furthermore, the minimum wage variable has a significant and negative effect on labor absorption in Sidoarjo and Pasuruan districts. Finally, the human development index has a significant and positive effect on labor absorption in Sidoarjo and Pasuruan districts in 2010-2023. The Sidoarjo and Pasuruan governments should focus more on developing industries that absorb a lot of labor. In addition, they should ensure that incoming industrial investment can have a direct impact on job creation.

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