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Analysis of the human development index in East Java Province 2017-2021

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A R T I C L E I N F O

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ABSTRACT

This research aims to determine Population, Education and Minimum Wages on the Human Development Index. The dependent variable is the Human Development Index, while the independent variables are Population, Education and Minimum Wage. The data used in this research is secondary data which examines data for 5 (five) periods 2017 – 2021 with Regencies/Cities in East Java Province. The research method used is panel data regression analysis. The tool used to carry out testing is Eviews 9. The tests used in this research are the FE, CE, RE, Chow, Hausman and LM tests. The results of this research are: 1) Population is significant and has a positive effect on the Human Development Index in the Regency/City of East Java Province, 2) Education is significant and has a positive effect on the Human Development Index. and 3rd) Minimum Wage has a significant negative effect on the Human Development Index.

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1. INTRODUCTION

In the development and economic process, the government makes the quality of human resources its basic capital. The quality of human resources can be measured using the Human Development Index (HDI) which consists of three basic dimensions which include education, decent living standards and health.(Novia Dwi Cahyanti, 2001). People's welfare is realized so that people can live decently, so that they can develop themselves so that they can carry out social functions well. A prosperous society means that society experiences prosperity. This welfare can be measured by looking at the health and economic conditions of society to see the extent of success in human welfare. HDI is a benchmark for the welfare of a region or country which is seen based on three dimensions, namely: life expectancy at birth, literacy rate and average years of schooling, and purchasing power. The life expectancy indicator measures health, the literacy rate indicator for the adult population and the average number of years of schooling measures education and finally the purchasing power indicator measures the standard of living.(Statistics, Data and Information in Figures for East Java Province, 2017).

The Human Development Index is a benchmark for the development of a region which has a negative correlation with poverty conditions in that region. Therefore, it is hoped that a region that has a high HDI value, ideally, the quality of life of the people will also be high or it can also be said that if the HDI value is high, then the people are prosperous. However, if the HDI value is low then

the community is not prosperous. The quality of life of the people in a country/region is reflected in the Human Development Index (HDI) on the island of Java which has experienced increases and decreases in the past 5 years. However, of the 6 provinces on the island of Java, East Java Province has the lowest score compared to other provinces.

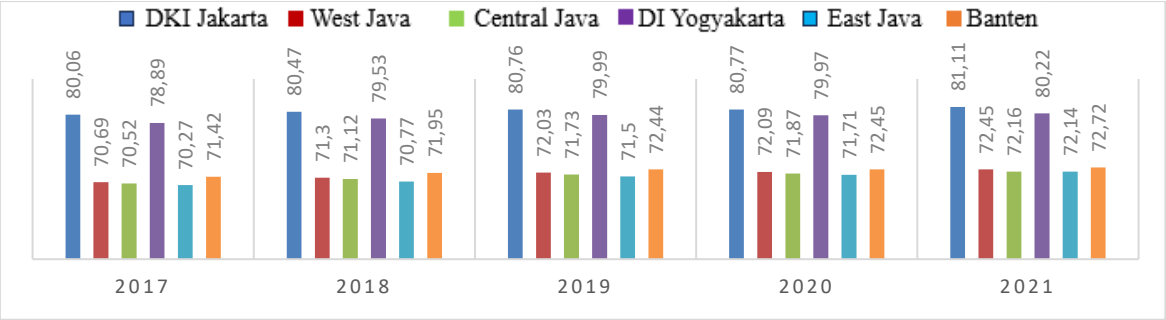

Figure 1. Graph of the Human Development Index in Java Province for 2017-2021

Based on Figure 1, it can be seen that in 2017 the comparison of the HDI of East Java Province with other provinces is ranked number 6 after Banten Province. In 2018 and 2019, East Java Province was ranked number 6 after Central Java Province in 2018 and after Central Java Province in 2019. In 2020 and 2021 East Java Province was ranked number 6 after Central Java Province. Data from BPS in 2022. In East Java Province, the highest HDI values are in the cities of Surabaya and Mojokerto City with 82.31 percent and 78.43 percent, while the lowest HDI values are in Probolinggo Regency at 66.26 percent and Bondowoso Regency at 66.59 percent.

Unemployment can be understood as a condition where a person enters a group or workforce and is active in looking for work, but does not get a job (Sukirno in(Ningrum, 2017). Open unemployment includes individuals who are looking for work, both those who have never worked before and those who have worked before, as well as people who are not currently working. This includes those who are looking for work because they have difficulty getting it, and also those who already have a job but have not yet started working. Research(Indra Suara Luther Sirangi Si'lang, 2019)found that the GRDP of the Agricultural Sector, Direct Expenditures, and private investment had a positive and significant effect on the HDI of the northern province of West Sulawesi. On the other hand, open unemployment has a relatively small negative impact. According to(Amalia, 2019), the Human Development Index (HDI) is not significantly or negatively affected by economic growth and the open unemployment rate (TPT).

Poverty is a complex problem, efforts to overcome poverty must be comprehensive and cover all aspects of people's lives(Ayu, 2018). In addition, someone who has a minimum wage or below average income (BPS) and does not have the economic capacity to meet basic needs is called a poor person. Dewi's (2019) research found that the number of poor people and the open unemployment rate had a negative and significant impact on the human development index of Central Java province, while the capital expenditure variable had a significant impact on the human development index of Central Java province. Central Java Province had a positive and significant impact on HDI.

One component of citizens' income in an area is the minimum wage, which functions as a measure of people's welfare in that country. The Human Development Index can be improved by increasing the minimum wage. This can increase a decent standard of living and people's purchasing power(Zamharir, 2016). Investors of course who want to invest capital in an area must consider the minimum wage, especially for those whose aim is to build a factory industry that requires a relatively large workforce. A high minimum wage indicates economic growth in a region(Wayan Yoga Andika Putra, 2020). StudiesNursiah Chalid & Yusuf (2014)found that the human development index was negatively influenced and there were significant results by the level of poverty and unemployment. However, the rate of economic growth and minimum wages are showing an impact.

According to (Alfiyah, 2018)Poverty has a negative and significant impact on the human development index of East Java province. On the other hand, the regional minimum wage and Gross Domestic Product variables have a positive and significant effect on the HDI of East Java province.

This research is different from previous research because both use panel data regression. What differentiates this research from the four previous studies is the variables, time and location

used. This study focuses on 10 districts in East Java Province and their human development index which is influenced by the unemployment rate, the number of poor people and the minimum wage.

2. RESEARCH METHOD

This quantitative descriptive research uses dependent and independent variables. Secondary data includes the human development index, open unemployment rate, number of poor people and minimum wages from 2017 to 2021 in East Java province, has been processed from written reports or other documents. This data was collected from the East Java Central Statistics Agency (BPS)..

In this research, descriptive analysis and regression analysis are used on panel data. Panel data is a combination of time series (time series) and individual cross sections. In this study, 5 years of time series data (t=5) from 2017 to 2021 were used, as well as individual cross-sectional data consisting of 38 districts (n=38). Thus, the total data used in this research is 38 x 5 = 190 data.

The following is the general model equation for panel data regression as follows:

$$\mathbf{Yit= \alpha++ +}\boldsymbol{\beta_1 X_{1it} \beta_2 X_{2it} \beta_3 X_{3it} + \mu_{it}}$$

Information :

Y = Human Development Index
i = Cross section data "East Java Province"
t = 2017 Time Series Data– 2021
α = Constant
$\beta_1 - \beta_2 - \beta_3$ = Regression Coefficient
X1 = Open Unemployment Rate
X2 = Number of Poor People
X3 = Minimum Wage
μ_{it} = Error Term

Three general approaches are used to analyze regression model estimation methods with panel data: common effects, fixed effects, and chance effects. Tests, such as the Chow Test, Husman Test, and LM Test are used to find the best panel data regression model.

3. RESULTS AND DISCUSSIONS

From panel data testing used to determine the relationship between the independent variable and the dependent variable, namely the Human Development Index variable, Open Unemployment Rate, Number of Poor Population and Minimum Wage in Districts/Cities in East Java Province in 2017-2021 using the best model, namely Randome Effect as follows:

Table 1. Random Effect Model Results

Variable	Coefficient	Prob
C	-272.2397	0.0000
TPT (X1)	3.947008	0.0000
JPM (X2)	-5.639447	0.0000
UM (X3)	56.97462	0.0000

Source: data processed with Eviews 9

Random Effect Model estimation results:
Human Development Index (Y) = -272.2397 +3.947008 -5.639447 +56.97462 +eit.

Selection of the Best Model

In selecting the best model between the Common Effect, Fixed Effect and Random Effect models, you need to test the Chow Test, Hausman Test and Lm Breusch Pagan Test.

Table 2. Results of Model Selection with Chow Test

Effects Test	Statistics	df	Prob.
Cross-section F	0.000000	(37,149)	1,0000
Chi-square cross-section	0.000000	37	1,0000

Source: data processed with Eviews 9

The results of the Chow Test using the Fixed Effect (FE) Test, can be seen that the Prob Cross-Section F value is 1,000, this indicates that the value is greater than 0.05so it was decided to accept H0. Thus, it can be said that the common effect model is more appropriate to use than the fixed effect model.

Table 3. Results of Hausman Test Model Selection

Effects Test	Statistics	df	Prob.
Random cross-section	0.000000	3	1,0000

Source: data processed with Eviews 9

The results of the Hasuman Test using the Random Effect (RE) Test, can be seen that the Prob Cross-Section Random Effect value is 1,000, this indicates that the value is greater than 0.05so it is decided to accept H0 and reject H1. Thus, it can be said that the random effect model is more appropriate to use than the fixed effect model.

Table 4. Results of Breush-Pagan LM Test Model Selection

	Cross-section	Test Hypothesis Time	Both
Breusch-Pagan	23,75000 (0.0000)	3515,000 (0.0000)	3538.750 (0.0000)

Source: data processed with Eviews 9

LM Test Results using the Random Effect model, The probability obtained from Breusch Pagan is 0.0000. This value is smaller than α (0.05), so it was decided to reject H0. Thus, it can be said that the random effect model is more appropriate to use than the common effect model.

Based on the Chow, Hausman and LM tests above, the best model chosen was the Random Effect (RE) model for the Hausman and LM tests, while the Chow test chose the Common Effect (CE) model. The following are the results of processing using Random Effect (RE):

Table 5. Random Effect Regression Model Test Results

Variables	Coefficient	Prob
C	-2,722,397	0.0000
TPT__X1_	3,947,008	0.0000
JPM__X2_	-5,639,447	0.0000
UM__X3_	5,697,462	0.0000
R-Square	0.927271	
Adjusted R-Square	0.926097	
F-Statistics	7,904,742	
Prob (F-Statistic)	0.000000	

Source: data processed with Eviews 9

Based on the results of testing the Random Effect Model panel data, it can be seen that the Random Effect Model equation is as follows:

Human Development Index = -180.9867 +3.947008 (Open Unemployment Rate) -5.639447 (Number of Poor Population) +56.97462 (Minimum Wage).

The explanation is as follows:

1) The results of processing the regression test on the influence of the Open Unemployment Rate on the Human Development Index obtained a value of 3.947008. This shows that when the Open Unemployment Rate increases by 1% it will reduce the Human Development Index by 3.947008. Meanwhile, if the Human Development Index decreases by 1%, the Open Unemployment Rate will increase by 3.947008, assuming other variables are considered constant.
2) The results of the regression test processing of the Number of Poor Population on the Human Development Index obtained a coefficient value of -5.639447. This shows that when the number of poor people increases by 1%, the Human Development Index will decrease by -5.639447, whereas if the number of poor people decreases by 1%, the Human Development Index will increase by -5.639447, assuming other variables are considered constant.
3) The results of processing the Minimum Wage regression test on the Human Development Index obtained a coefficient value of 56.97462. This shows that when the Minimum Wage increases by 1% it will increase the Human Development Index by 56.97462, whereas if the Minimum Wage decreases by 1% then the Human Development Index will decrease by 56.97462, assuming other variables are considered constant.

Hypothesis test

Table 6. F-Statistics Test Results

R-Square	0.927271
Adjusted R-Square	0.926097
F-Statistics	7,904,742
Prob (F-Statistic)	0.000000

Source: data processed with Eviews 9

Based on the table above, it can be seen that the f-statistic value obtained is790.4742with a value of df1 (k-1)=(4-1)=3, df2 (nk)=(190-4)= 186, and a significance level of <0.05. The degree of freedom value obtained is 2.65, F-statistic (790.4742) > f-table (2.65). So, it can be concluded to accept H1 and reject H0. Meanwhile, the F-statistic probability value is 0.000000. This value is smaller than α = 5% or (0.05), so it can be decided to reject H0. Therefore, it can be concluded that the variables Open Unemployment Rate, Number of Poor Population, Minimum Wage influence the Human Development Index variable.

Table 7. t test results

Variable	Coefficient	t-Statistics	Prob.
C	-2,722,397	-2,743,256	0.0000
TPT___X1_	3,947,008	2,158,073	0.0000
JPM__X2_	-5,639,447	-6,542,956	0.0000
UM__X3_	5,697,462	3,532,721	0.0000

Source: data processed with Eviews 9

For the variable Open Unemployment Rate (X1), based on the table above it can be seen that the t-statistical value is21.58073with a value of df (nk)=(190-4) = 186 then the value of df is 1.65309,t-statistic of (21.58073) > t-table (1.65309). Meanwhile, the value of Prob t is 0.0000. This value is smaller than α = 5% or (0.05), so it was decided to reject H0 and accept H1. Therefore, this means that the Open Unemployment Rate has a positive and significant effect on the Human Development Index.

Meanwhile, the variable Number of Poor Population (X2), based on the table above, can be seen as a t-statistical value of-6.542956 with df (n-1)=(190-4)=186 then the df value is1.65309, t-statistic of (-6.542956) > t-table (1.65309). Meanwhile, the Prob t value is 0.0000. These values are the samerather than α = 5% or (0.05), so it is decided to reject H0 and accept H1. Therefore, this means that the number of poor people has a negative and significant effect on the Human Development Index.

And for the Minimum Wage variable (X3), based on the table above it can be seen that the t-statistic value is35.32721with the value df (nk)=(190-4)=186 then the df value is 1.65309,t-statistic of (35.32721) > t-table (1.65309). Meanwhile, the Prob value is 0.0000. This value is smaller than α = 5% or (0.05), so it is decided to reject H0 and accept H1. Therefore, this means that the Minimum Wage has a positive and significant effect on the Human Development Index.

Table 8. R-Square Test Results

R-Square	0.927271
Adjusted R-Square	0.926097
F-Statistics	7,904,742
Prob (F-Statistic)	0.000000

Source: data processed with Eviews 9

Based on the table of Random Effect (RE) model regression results, an R-Squared value is obtained0.927271or 92% This means that the diversity of the Human Development Index variables can be explained by the variables Open Unemployment Rate, Number of Poor Population and Minimum Wage of 92%, while the remaining 8% is explained by other variables outside the model studied.

Discussion of Research Results

Open Unemployment Rate against HDI

Based on the data processing explained above, using multiple linear regression on panel data with a random effect model, it shows that the Open Unemployment Rate variable produces a positive and significant value, every time the Open Unemployment Rate increases by 1%, it experiences an increase of 3.947008. It can be concluded that the results have an influence on the Human Development Index. Which means that when the Open Unemployment Rate increases, the Human Development Index also increases.

The results of this research are in accordance with previous research conducted by Primandari (2019) where the results of this research show that the Open Unemployment Rate has a positive and significant or opposite effect on the Human Development Index. This challenges the theory that unemployment should have a negative influence on the Human Development Index. Where if the HDI increases it will result in unemployment decreasing. If we look further, it turns out that the positive influence that occurs is due to the existence of frictional unemployment, where the higher a person's level of education, the more likely they are to choose jobs so that they prefer to be unemployed and try to find a job that suits their level of education. Frictional unemployment is inevitable in a changing economy. This is in accordance with the theory related to frictional unemployment, where what is meant by frictional unemployment is unemployment that occurs due to temporary difficulties in matching job seekers and existing job vacancies. The cause of this temporary difficulty occurs due to several factors, including the availability of job opportunities not being comparable to the workforce which results in reduced demand for labor. Apart from that, other causes can be simply the waiting time required during the application and selection procedures, or occur due to distance or lack of information (Mankiw, 2003).

Number of Poor Population Against HDI

Based on the data processing explained above, using multiple linear regression on panel data with a random effect model, it shows that the variable Number of Poor People produces a negative and significant value, every time the Number of Poor People decreases by 1%, there is a decrease of -5.639447. It can be concluded that the results have no effect or are contrary to the Human Development Index. Which means that when the number of poor people increases, the Human Development Index decreases.

Poor people use more of their time and spend all their income to fulfill basic needs. If the number of poor people decreases, it means that people have high incomes so that they are able to meet their purchasing power and consumption levels so that the human development index will also increase.

The results of this research are in accordance with previous research conducted by Selvia Sinta Dewi (2019), where the results of this research show that the number of poor people has a negative and significant effect on the Human Development Index. Because the results of this research make it clear that the higher the number of poor people, the lower the human development index will be, this is because poor people have low purchasing power so they cannot meet their living needs.

Minimum Wage Against HDI

Based on the data processing explained above, using multiple linear regression on panel data with a random effect model, it shows that the Minimum Wage variable produces a positive and significant value, every time the Minimum Wage increases by 1%, there is an increase of 56.97462. It can be concluded that the results have an influence on the Human Development Index. Which means that when the Minimum Wage increases, the Human Development Index also increases.

The results of this research are in line with research conducted by Nurul Alfiyah (2018) where the results of this research show that the Minimum Wage has a positive and significant effect on the Human Development Index. Because of everything kinIf the minimum wage increases every year, the human development index will also increase in the following year.

4. CONCLUSION

Based on the results and discussion of the research that has been carried out, it can be concluded that the influence of the variables Open Unemployment Rate, Number of Poor Population and Minimum Wage on the Human Development Index in Regencies/Cities of East Java Province in 2017-2021 is as follows, 1) The results of the Open Unemployment Rate variable have a positive

and significant effect on the Human Development Index in the Districts/Cities of East Java Province in 2017-2021. This means that if the Open Unemployment Rate variable increases, the Human Development Index (HDI) variable will increase. 2) The results of the Number of Poor Population variable have a negative and significant effect on the Human Development Index (HDI) in the Districts/Cities of East Java Province in 2017-2021. This means that the variable Number of Poor Population has an inverse relationship with the Human Development Index, where the Number of Poor Population increases but the Human Development Index (HDI) decreases. 3) The results of the Minimum Wage variable have a positive and significant effect on the Human Development Index (HDI) in the Districts/Cities of East Java Province in 2017-2021. This means that if the Minimum Wage variable increases, the Human Development Index (HDI) variable increases.

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