The effect of education and unemployment on poverty in East Java Province, 2011-2016

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Abstract. This study aims to determine the effect of education and unemployment on poverty in East Java Province partially and simultaneously. The data collection method used is the study of documents sourced from the BPS (Badan Pusat Statistik) of East Java in 2011-2016. Data analysis in this study used multiple linear regression with the help of SPSS 20 for Windows. The results showed that: (1) the education variable had a positive and significant effect on poverty, (2) the unemployment variable had a negative and significant effect on poverty, (3) the education and unemployment variables had a positive and significant effect on poverty. Education and unemployment affect poverty by 96.6% while the remaining 3.4% is influenced by other variables not present in this study. The government is advised to be able to provide more employment and provide training to people who are still unemployed so that they have the skills and are able to open their own businesses.

1. Introduction
One of the problems faced by many developing countries is poverty. Poverty is the powerlessness of the community towards the system applied by a government so that they are in a weak position. The fact shows that poverty is not only related to the inability to fulfill basic needs, but also relates to various dimensions of human life such as health insurance, education, and the future.

BPS (Badan Pusat Statistik) uses the concept of the ability to fulfill basic needs to measure poverty [1]. With this approach, poverty is seen as an economic inability to fulfill basic food and non-food needs measured by expenditure. Poor living is not only lack of money and low-income level, but there are other factors that influence such as education and low health [2].

BPS (Badan Pusat Statistik) stated that there was a decrease in the number of poor people in Indonesia [1]. Based on data in BPS, the percentage of poor people in Indonesia in 2015 was 11.13% while in 2016 it was 10.70%. This shows that there was a decrease of 0.43%.

Java Island is the island with the highest population in Indonesia. Java Island is divided into 6 provinces, where there are a number of poor people that vary in each region. The following are presented data on the number of poor people in Java:

### Table 1. Poor Population in Java in 2011-2016 (in thousands)

| Province of | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  |
|-------------|-------|-------|-------|-------|-------|-------|
| DKI Jakarta | 363.42 | 363.20 | 354.19 | 393.98 | 398.92 | 384.30 |
| West Java   | 4,648.63 | 4,477.53 | 4,297.04 | 4,327.07 | 4,435.70 | 4,224.33 |
| Central Java | 5,107.36 | 4,977.36 | 4,732.95 | 4,836.45 | 4,577.04 | 4,506.89 |
| DIY         | 560.88  | 565.32  | 550.20  | 544.87  | 550.23  | 494.94  |
| East Java   | 5,356.21 | 5,070.98 | 4,771.26 | 4,786.79 | 4,789.12 | 4,703.30 |
| Banten      | 690.49  | 652.80  | 656.25  | 622.84  | 702.40  | 658.11  |

Source: BPS (Badan Pusat Statistik)

Based on BPS data above, for five years East Java Province was the highest contributor to poverty in Java. In 2011, East Java province had a population of 5,356,210 people. Then there was a decrease in the number of poor people in 2012 and 2013 to 5,070,980 and 4,771,260 people. In 2014 and 2015 there was an increase, but in 2016 there was a decline to 4,703,300 poor people.
Unemployment has a detrimental effect, namely a reduction in the level of one's prosperity due to reduced income [3]. The decreasing welfare of the community due to the absence of income will provide an opportunity for increased poverty. The size of poverty in an area can be seen or known by using a number of measuring instruments commonly referred to as poverty indicators, namely: income or consumption per week/month/year, assets, total wealth, food consumed, residence, formal education, basic household infrastructure, and health [4].

Education is a pioneer in the development of a nation's future because economic development is supported by quality human resources obtained through quality education as well. The Law of the Republic of Indonesia Number 20 of 2003 states that education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop themselves to have high self-potential [5].

The analysis of investment in education is integrated into the approach of human capital. Human investment in building human capital is divided into three stages, namely at the age of children, adolescents, and adults, and when entering the labor market. In childhood, the form of investment human capital in the form of guidance from parents and environmental influences around the period of child growth, for example in school. Meanwhile, in adolescence and adulthood, investment in human capital is usually obtained from formal education in schools. Whereas in the period of entering the labor market, workers invest in the form of experience, on the job training, skills training, and special programs [6].

Poverty cannot be separated from the number of unemployed. Providing employment and absorbing labor from a very low working-age population is one of the causes of rising unemployment. Unemployment as a situation where a person belonging to the workforce category does not have a job and is actively not looking for work [7]. In addition, unemployment is defined as a situation where a person belonging to the workforce wants to get a job not yet able to obtain it [3].

2. Methods
This research was conducted with quantitative methods. The data collection method used was the study of documents sourced from BPS (Badan Pusat Statistik), which included the average length of school, the open unemployment rate and the percentage of poor people in East Java Province in 2011-2016. Analysis of the data used is multiple linear regression with the help of SPSS 20 for Windows.

3. Results and Discussion
3.1. Classical Assumption
Test Analysis requirements test aims to determine whether there are deviations or disturbances to the variables in the model. The result of classic assumption test using SPSS 20 for windows is as follows:

3.1.1. Multicollinearity Test
The result of the multicollinearity test are shown in the following table:

| Model | Collinearity Statistics | Tolerance | VIF |
|-------|-------------------------|-----------|-----|
| (Constant) |                        |           |     |
| 1 | Education                | .819      | 1.222 |
|    | Unemployment             | .819      | 1.222 |

Source: SPSS output

VIF values for education and unemployment variables show the same number, which is equal to 1.222. While the value tolerance is 0.819. Because the VIF value is> 10, multicollinearity does not occur in the two independent variables.

3.1.2. Heteroscedasticity Test
The results of heteroscedasticity test can be seen in the figure below:
Figure 1. Heteroscedasticity Test Results

From the picture above, it can be seen that the point distribution does not form a certain pattern. This shows that heteroscedasticity did not occur in this study.

3.1.3 Normality Test
The results of the normality test are shown by the figure below:

Figure 2. Normality Test Results

Based on the picture above the data is said to have a normal distribution, this is indicated by the distribution of points that are relatively close to a straight line

3.1.4 Autocorrelation Test
The autocorrelation test aims to find out whether or not there is a correlation between bullies in period t and errors in period t-1. The autocorrelation test results are shown in the following table:

| Model | Std. Error of the Estimate | Durbin-Watson |
|-------|-----------------------------|---------------|
| 1     | .15469                      | 1.815         |

Source: SPSS output

The table above shows that Durbin-Watson is worth 1.815. This means there is no autocorrelation.
3.2. **T-test analysis**

The test is used to test the effect of the independent variables on the dependent variable partially. If the value is a prob. t count is smaller than the error rate (alpha) 0.05, it can be said that the dependent variable is significantly influenced by the independent variable. The results of calculations using SPSS can be seen in the table below:

| Model       | t    | Sig.  |
|-------------|------|-------|
| (Constant)  | 8.517| 0.003 |
| 1           | -6.223| 0.008 |
| Unemployment| 3.439| 0.041 |

Source: SPSS Output

From the table above you can see the prob. value t count from variable X2 or education shows the number 0.008. This means 0.008 <0.05 so that the education variable has a negative and significant influence on the poverty variable in East Java Province in 2011-2016. This is in accordance with the research of I Wayan Sudiana and I Ketut Sudiana which shows that the education variable has a negative and significant effect on poverty in Bali Province from 1995-2013 [8].

Higher education investment can produce quality human resources that can be seen from increasing one's knowledge and expertise. Increased knowledge and expertise can encourage increased labor productivity. With high productivity, the community is able to get high income or salary. In addition, the World Bank (in Nirwana, 2013) stated that education is one of the most powerful instruments to reduce poverty.

Prob. value t count from variable X2 or unemployment variable shows the number 0.041. This figure shows less than 0.05 which means that the unemployment variable has a positive and significant influence on the poverty variable in East Java Province in 2011-2016. This is in accordance with the research of Anggit Yoga Permana and Fitrie Arianti which obtained results that the unemployment rate has a positive and significant effect on poverty [9].

A person's level of prosperity is influenced by income received. Judging from the individual angle, unemployment raises various economic and social problems to those who experience it [3]. If unemployment in a country is very bad, the welfare of society and the prospect of long-term economic development will also have a bad effect. When unemployment is high, people's welfare will decline and this will increase poverty due to the absence of income received.

3.3. **F test Analysis**

The test is conducted to see whether the education and unemployment variables simultaneously influence poverty in East Java Province. A model can be said to be feasible when the error rate of 0.05 is greater than the prob. value F count, while the regression model is not feasible if the error rate of 0.05 is smaller than the prob. value F. Calculation results using SPSS can be seen in the table below:

| Model       | Sum of Squares | df | Mean Square | F     | Sig.  |
|-------------|----------------|----|-------------|-------|-------|
| Regression  | 2,011          | 2  | 1,005       | 42.018| 0.006b|
| 1           | Residual       | 0.072| 3      | 0.024 |       |
| Total       | 2,083          | 5  |             |       |       |

a. Dependent Variable: Poverty
b. Predictors: (Constant), Unemployment, Education

Source: SPSS Output
Based on the table above, prob value F count (sig.) Shows the number 0.006. This shows that 0.006 <0.05. It can be concluded that education and unemployment have a significant effect on poverty in East Java province in 2011-2016. This is in line with the research conducted by Dicky Arisandi, Harjono, and Marheni which states that the education and unemployment variables simultaneously have a significant effect on poverty in the city of Pangkalpinang [10].

3.4. Coefficient of Determination
The coefficient of determination explains the variation in the influence of independent variables on the dependent variable, or it can also be said as the proportion of the influence of all independent variables on the dependent variable. In this study the value of R Square can be seen in the table below:

| Model | R   | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-----|----------|-------------------|----------------------------|
| 1     | .983 | .966     | .943              | .15469                     |

Source: SPSS Output

The table above shows the R square value of 0.966. This shows that education and unemployment affect poverty by 96.6% while 3.4% is influenced by other variables not present in this study.

3.5. Data Analysis Techniques
The analysis is an activity that aims to simplify data into a form that is easier to read and interpret. To analyze the data so that the level of influence of independent variables on the dependent variable can be known, multiple linear regression statistical techniques are used. The results of the calculations are shown in the following table:

| Model   | Unstandardized Coefficients | Standardized Coefficients |
|---------|----------------------------|---------------------------|
|         | B       | Std. Error | Beta   |
| 1       | (Constant) | 29.349 | 3.446 |
|         | Education | -2.735 | .440  | -.737 |
|         | Unemployment | .565  | .164  | .407  |

Source: output SSS

Based on the table above, the regression equation is obtained as follows:

\[ Y = 29.349 - 2.735X_1 + 0.565X_2 + e \] (1)

From the regression equation above explains that:

a. Constants of 29.349; meaning that if education and unemployment are zero, then poverty (Y) is 29.349.

b. Educational variable regression coefficient (X_1) is -2.735; meaning that if the unemployment variable (X_2) is fixed and the education variable has a 1% increase, then poverty (Y) will decrease by 2.735. The coefficient is negative, meaning there is a negative relationship between education and poverty. The higher education the lower the poverty. The quality of human resources can be improved through educational investment, which in turn will be able to improve one's knowledge and skills. The higher the level of education of a person, then the knowledge and skills will also increase. Thus it will encourage an increase in work productivity. The low access to education can cause the productivity of the poor to be low [11].

c. The unemployment variable regression coefficient is 0.565; meaning that if the education variable remains and the unemployment variable increases by 1%, then poverty will increase by 0.565. Coefficients are positive, which means there is a positive relationship between unemployment and poverty. The higher the unemployment, the higher the poverty will be.
The amount of unemployment reflects the good and bad of the economy. The higher the unemployment rate shows the worse the economy. Unemployment and poverty have a positive relationship because unemployment will cause the level of income and the level of prosperity of the community is not optimal and they are always among very poor groups [12].

4. Conclusions
Based on the results of research and discussion it can be concluded that the education variable has a positive and significant effect on the poverty variable. There is a negative and significant effect of the variable unemployment on poverty. Educational and unemployment variables have a positive and significant effect on the poverty variable. The model developed in this study is still limited to three variables. Therefore, it is necessary to conduct further research on the factors that influence poverty such as GRDP, Regional Minimum Wages and Economic Growth in East Java Province.

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