Analysis of the Influence of Economic Growth, Poverty, and Education on the Subosukawonosraten Human Development Index 2016 To 2020

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Abstract: *The economic development process that occurs in the Subosukawonosraten area causes disparities in economic growth, poverty, and education levels between districts/cities. These disparities result in inequality in the human development index (HDI). The aim of this study is to examine the impact of economic growth, poverty, and education on the Human Development Index in the Subosukawonosraten Area from 2016 to 2020. This is a quantitative research design that uses secondary panel data, consisting of time series and cross-section data. A panel power regression model (Pooled Least Square) and panel data analysis using Fixed Effect Model (FEM) were used as the analysis method to estimate the impact of Economic Growth, Poverty, and Education Variables on Human Development Index Variables in the Subosukawonosraten area from 2016 to 2020. According to the regression analysis results, the Economic Growth variable has a negative and significant impact on the Human Development Index in the Subosukawonosraten Area, followed by the Poverty variable, which has a negative and significant impact, and the Education variable, that has a positive and significant impact*

Keywords : *Human Development Index, Economic Growth, Poverty, Education, Fixed Effect Model, Subosukawonosraten.*

I. INTRODUCTION

Subosukawonosraten is an acronym for the name of the area consisting of seven regencies/cities in Central Java Province: Surakarta City, Boyolali Regency, Sukoharjo Regency, Karanganyar Regency, Wonogiri Regency, Sragen Regency, and Klaten Regency. Approximately 6 million people live in the Subosukawonosraten area, which covers an area of approximately 5,719 km2 and is interconnected between one area and other areas around it. According to Rasyida and Muta'ali's (2019) research, the Subosukawonosraten area has a very advantageous location due to its proximity to the centers of commerce area in Central and East Java and its plenty of resources in each region. One indication of the success of the economy at both the national and regional levels is economic growth. Economic growth is strongly tied to the rise in goods and services produced in a society, therefore the greater the increase in goods and services produced, the greater the improvement in societal welfare.

The rapid development of science and technology encourages the acceleration of the development process, and the replacement of human labor with sophisticated machines has an impact on the efficiency, quality, and quantity of a number of economic development activities, leading to accelerated economic development. rate of economic expansion. Based on the description of the background, it can be formulated several research questions, as follows:

1. How does economic growth impact the human development index in the Subosukwonosraten Region between 2016 and 2020?
2. How does poverty affect the human development index in the Subosukawonosraten Region between 2016 and 2020?

3. How does education impact the human development index in the Subosukawonosraten Region between 2016 and 2020?

II.   LITERATURE REVIEW

The Human Development Index (HDI) is a composite index that measures the level of human development needed to live a good or quality life in terms of health, education, and the economy. HDI is also used to determine whether a nation is developed, developing, or undeveloped, as well as to quantify the impact of economic policies on the quality of life.

To determine the HDI successes between areas based on a study of the human development index according to the UNDP HDI, it is possible to categorize the regions into different categories, namely:

1. HDI < 60 = Low HDI
2. 60 < HDI < 70 = Medium HDI
3. 70 < HDI < 80 = High HDI
4. HDI > 80 = Very High HDI

Regardless of the pace of population growth and changes in the structure of the economy, economic growth is a rise in gross domestic product. According to Sukirno (2011), economic growth is a periodically developing economic activity that might affect real national income. Economic growth can reflect an improvement in people's well-being through an annual rise in their income. Through the processing of production factors to generate output in the form of commodities or services, the value of community income may be assessed, with the community or owners of production factors receiving compensation. (Agusalim, 2016).

According to Kuncoro (2010), poverty is the inability to fulfill basic necessities. Several variables, including Gross National Product or GNP per capita, national relative growth and per capita income, poverty, distribution of national income, and social welfare, are used to define a country's level of living. The low standard of living associated with living issues can be attributed to a low overall income, a lack of sufficient housing, inadequate health care, a lack of education and a dearth of employment opportunities, resulting in lower quality of human resources. Poverty is a state in which a person lacks the funds to purchase basic essentials, such as clothing, food, and shelter.

According to Law No. 20 of 2003, formal education is an organized and tiered educational pathway that consists of elementary education, secondary education, and higher education. Formal education is an intentional learning activities by both residents and students in a school-structured environment (Suprijanto, 2009)

Referring to prior research and theoretical framework, this study's hypothesis are as follows:
1. It is believed that Economic Growth has a positive impact on the Human Development Index in the Subosukawonosraten Area throughout the period 2016 to 2020.
2. It is believed that Poverty has a negative impact on the Human Development Index in the Subosukawonosraten Area throughout the period 2016 to 2020.
3. It is believed that Education has a positive impact on the Human Development Index in the Subosukawonosraten Area throughout the period 2016 to 2020.

III.   RESEARCH METHOD

This research is a quantitative research. The method used in data collection is the documentation method by using data related to the object of research obtained from the Central Java Province BPS, journals, and related articles. This rsearch employs a panel data regression model that will be estimated in various phases in order to acquire the correct model and estimate. The form of the equation may be characterized using a linear equation using Latuconsina's (2017) research model as follows:

Model Equation

$Y = \beta 0 + \beta 1 X1 + \beta 2 X2 + \beta 3 X3 + \varepsilon it$ (1)

Pooled Least Squares or Common Effect Model (CEM)

The Common Effect model assumes that the intercept and slope are constant across time and independent of one another. The disturbance variable will explain the distinction between the intercept and the slope (error or residual). Thus, the following equation describes this method:

$Yit = \beta_0\ it + \Sigma n\ \beta\ X + \varepsilon it$ (2)

i=1,.....,N and t=1,   ,K

Estimation With Fixed Effect Models (FEM) Approach

It is assumed that the intercept between individuals differs, but that the slope for each individual remains constant. Thus, the following is the linear equation for the Fixed Effect Model:

$Yit = ai + \Sigma nj\ \beta jXit + \Sigma n\ ajDi + \varepsilon it$

…(3)

i=1,.....,N and t=1,   ,K

Estimation With Random Effect Models (REM) Approach

The disadvantage of the fixed effect model is the restricted degree of freedom, which reduces the effectiveness of the parameter. This disturbance variable may have temporal and regional associations. Using a disturbance variable (error term) to tackle this problem is known as the random effect approach. The equation for the random effect is as follows:

$Yit = ai + \beta 1 X1 it + \beta 2 X2 it + \beta 3 X3 it + \beta nXnit + \varepsilon it$ (4)

i=1,.....,N and t=1, ,Klts.

IV.   RESULT AND ANALYSIS

A.   Description of Research Object

To ensure a high-quality product, diagrams and lettering MUST be either computer-drafted or drawn using India ink. Figure captions appear below the figure, are flush left, and are in lower case letters. When referring to a figure in the body of the text, the abbreviation "Fig." is used. Figures should be numbered in the order they appear in the text.

Table captions appear centered above the table in upper and lower case letters. When referring to a table in the text, no abbreviation is used and "Table" is capitali By Central Java Provincial Regulation No. 23 of 2014, the Central Java Provincial Government created the 2018-2023 RPJMD in terms of the development strategy direction for the Central Java province. In the period between 2018 and 2023, the provincial government identifies 8 (eight) development areas that will lead to enhanced district or city growth. Subosukawonosraten is one of the established development areas; it is the Strategic Development Area comprising Surakarta City, Boyolali Regency, Sukoharjo, Karanganyar, Wonogiri, Sragen, and Klaten Regency

Subosukawonosraten Area HDI

The Human Growth Index (HDI) is an index that assesses a region's socio-economic development by combining achievements in the categories of education, health, and adjusted per capita real income. The high or low HDI value of a country or area is determined by the state or regional government's internal policies, not just addressing the magnitude of the per capita income obtained by the community, but also encompassing characteristics of human development (Arsyad, 2014).

In 2016, the human development index for the Subosukawonosraten area was classified as "high" at 73.87. However, the HDI value is not uniformly distributed throughout the districts and cities in the area. The development of HDI is significantly impacted by its basic components. To raise the value of the human development index, the government must be committed to improving the fundamental capabilities of the populace, which will have a positive influence on living quality.

During 2016 to 2020, the HDI value of each district/city in the Subosukawonosraten Area improves annually. Surakarta is the city with the highest average HDI, at 81.43 percent. In contrast, Wonogiri Regency is the district with the lowest HDI average of 69.30 percent, placing it in the category of medium category. The disparity in the value of the human development index has an effect on the disparity in the quality of development in the Subosukawonosraten Region, as measured by health, education, and the economy, therefore affecting the development and welfare of the people in the particular area.

Economic Growth in Subosukawonosraten Area

Economic growth is the process of a region's economy consistently improving over a period of time. The pace of economic growth is a crucial metric for identifying the direction of a region's development. The magnitude of a region's economic growth might be indicative of its economic health.

The economic growth of each district/city in the Subosukawonosraten Region changed between 2016 to 2020. Wonogiri Regency is the district with the lowest average economic growth over the last five years, at 4.97 percent. Wonogiri's high poverty rate, which is projected to reach 104,400,000 persons in 2020, is one of the reasons behind Wonogiri Regency's poor economic growth rate.

The Sukoharjo Regency is the district in the Subosukawonosraten Region with the greatest average economic growth over the past five years, at 5.48 percent. Wardoyo, the Regent of Sukoharjo Regency (2019), remarked that the high economic growth in Sukoharjo Regency had something to do with the decreasing unemployment rate over the past five years, which was 3.4% in 2019.

Poverty in Subosukawonosraten Area

According to the Central Statistics Agency (BPS), poverty is the inability of individuals to achieve the minimal standard of food and non-food basic necessities.

The poverty rate in the area of Subosukawonosraten is relatively high. Multiple factors contribute to the high rate of poverty, including the population's health, level of education, and level of income. The area in Subosukawonosraten with the largest number of poor people is Klaten Regency, with an average of 156,12 thousand poor people between 2016 to 2020. In addition to the lack of employment opportunities, this also occurred as a result of the COVID-19 Pandemic, so that many workers were laid off, there were numerous layoffs (Terminations of Employment), the company's operations were disrupted, and a number of tourist attractions were closed, resulting in a decrease in society's income levels.

Meanwhile, Surakarta City can be classified as an advanced region in terms of regional development. This is demonstrated by the comparatively low average number of poor people throughout the period 2016 to 2020, which is 50 thousand. The low poverty rate in Surakarta is a result of the city's many economic opportunities and low unemployment rate.

Education in Subosukawonosraten Area

Education could boost a person's creativity and imagination, as well as his possibilities to achieve his goals. Educated individuals will pay greater attention to their health in order to live longer and have a greater chance of obtaining a job and a more acceptable wage. Therefore, education becomes a tool of enhancing the quality of individuals in order to increase their opportunities.

In the context of human development, the education component in the construction of HDI values is one of the factors that influences the improvement of the quality of human resources. The education component is quantified using the Education index, which includes two indicators: Expected Years of Schooling (HLS) and Average Years of Schooling (RLS).

The mean years of schooling (RLS/MYS) is the number of years spent on formal education by the population in total. RLS can be used to assess the quality of an area's public education. In the Subosukawonosraten area between 2016 to 2020, the average length of time for attaining the highest level of education was 10.50 years in Surakarta, followed by 9.8 years in Sukoharjo. In Wonogiri Regency, the average length of time a community acquired an education was the shortest at 6.90 years.

B.   Data Analysis
Determination of the Best Estimation Model

The Chow Test, Haussman Test, and Lagrange Multiplier Test can be used to determine the best estimating model for panel data testing. Based on the Chow test (see Appendix B), which generated a probability of 0.0000 alpha 0.05, H0 (the most appropriate test is CEM) is rejected and H1 (the most appropriate test is FEM) is accepted, indicating that the FEM model is the best model.

From the Haussman test output (can be seen in Appendix C) the probability output is 0.0000 <0.05, then H0 (the most appropriate test is REM) is rejected and H1 (the right test is FEM) is accepted, meaning that this test also results that the model FEM is a suitable model. It can be concluded that both the Chow test and the Haussman test get the results that the Fixed Effect Model (FEM) model is the best model to do, so there is no need to do the Lagrange Multiplier Test. Following are the processed results to determine the best estimation model:

Estimated Pooled Least Square

Pooled Least Square/CEM is a method that combines these data without looking at differences between time and individuals (Agus, 2013). The results of panel data regression testing using the Common Effect Model method are as follows:

Tabel 1. Pooled Least Square Test Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Y	43.79546	2.656792	16.48434	0.0000
GROWTH (X1)	0.402937	0.240370	1.676321	0.1037
POVERTY (X2)	1.92E-05	6.77E-06	2.840552	0.0079
EDUCATION (X3)	3.269976	0.190856	17.13318	0.0000
R-squared	0.942297	Mean dependent var		74.74857
Adjusted R-squared	0.936713	S.D. dependent var		3.547449
S.E. of regression	0.892430	Akaike info criterion		2.717473
Sum squared resid	24.68935	Schwarz criterion		2.895227
Log likelihood	-43.55577	Hannan-Quinn criter.		2.778833
F-statistic	168.7446	Durbin-Watson stat		0.436390
Prob(F-statistic)	0.000000			

The results of the panel data processing above can be seen that the coefficient of determination (R-squared) is 0.942297, meaning that the variables of economic growth, poverty and education in the model are able to explain 94.2% of the human development index variable, while the remaining 5.8% is explained. by variables outside the model.

Estimated Fixed Effect ModelTable 8 VIF

It is assumed in this fixed effect model that the intercept between individuals is varied but the slope is the same. The panel data regression results utilizing the fixed effect model method from the Eviews 10 test are as follows:

Tabel 2. Fixed ffect Model Test Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Y	70.21767	3.683390	19.06333	0.0000
GROWTH (X1)	-0.276238	0.114315	-2.416457	0.0233
POVERTY (X2)	-3.37E-05	9.47E-06	-3.556169	0.0015
EDUCATION (X3)	1.143795	0.315580	3.624417	0.0013

Effects
Specification

Cross-section fixed (dummy variables)

R-squared	0.993349	Mean dependent var	74.74857
Adjusted R-squared	0.990954	S.D. dependent var	3.547449
S.E. of regression	0.337399	Akaike info criterion	0.899855
Sum squared resid	2.845950	Schwarz criterion	1.344240
Log likelihood	-5.747455	Hannan-Quinn criter.	1.053256
F-statistic	414.8424	Durbin-Watson stat	1.584034
Prob(F-statistic)	0.000000		

From the results of the panel data regression processing above, it can be seen that the value of the coefficient of determination (R-square) from the estimation results is 0.993349, which indicates that the variables of economic growth, poverty and education are able to explain 99.3% of the variables of the human development index, while The remaining 0.7% is explained by variables outside the model.

Estimated *Random Effect Model*

In this Random Effect Model, it will connect between time and between regions by using a disturbance variable (error term). he coefficient of determination (R-squared) from the estimation results of the panel data regression processing is 0.893583, which means that the variables of economic growth, poverty, and education can explain 89.3% of the human development index variable, while the remaining 10.7% is explained by other variables outside the model.

Normality Test

Based on the results of the normality test with Kolmogorov-Smirnov in the table above, it is known that the probability value of p or Sig. of 0.378. Because the probability value of p, which is 0.378, is greater than the level of significance, which is 0.05. This means that the assumption of normality is met. In addition to using statistical analysis, the normality test can also be seen by using graphical analysis in the form of a normal histogram. Based on this, it can be concluded that the data are normally distributed and the assumption of normality is met.

Multicollinearity Test

In this study, the data used in this multicollinearity test are data from independent variables. Based on the results of multicollinearity detection, each VIF value is known as follows:
a. The VIF value for the Independent Economic Growth variable is 1.03 < 10, therefore the Independent Economic Growth variable can be stated that there is no multicollinearity signs.
b. The VIF value for the Poverty Independent variable is 2.22 < 10, therefore the Poverty variable can be stated that there are no signs of multicollinearity.

c. The VIF value for the Independent Education variable is 2.21 < 10, therefore the Education Independent variable can be stated that there are no signs of multicollinearity.

Heteroscedasticity Test and Autocorrelation Test

The GLS technique is believed to overcome the time series autocorrelation and the correlation between observations (cross section). The GLS method produces an estimator to meet the Best Linear Unbiased Estimation (BLUE) property which is a treatment method to overcome violations of the heteroscedasticity and autocorrelation assumptions (Greene, 2007).

Hypothesis Test Partial Test (t Test)

Tabel 3. Hasil Uji t

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Y	70.21767	3.683390	19.06333	0.0000
GROWTH (X1)	-0.276238	0.114315	-2.416457	0.0233
POVERTY (X2)	-0.0000337	0.00000947	-3.556169	0.0015
EDUCATION (X3)	1.143795	0.315580	3.624417	0.0013

The results of the partial test (t test) are as follows :
1. The Economic Growth variable generate a positive probability value of 0.0233 or less than 5 percent alpha (0.05). From these results, it means that H1 is accepted and H0 is rejected, so with the results of this test it can be concluded that Economic Growth has a negative and significant effect on the Human Development Index in the Subosukawonosraten area in 2016 to 2020.2.
2. Poverty variable generate a positive probability value of 0.0015 or less than 5 percent alpha (0.05). From these results, it means that H1 is accepted and H0 is rejected, so with the results of this test it can be concluded that Poverty has a negative and significant effect on the Human Development Index (IPM) in the Subosukawonosraten area in 2016 to 2020.
3. Education variable generate a positive probability value of 0.0233 or less than 5 percent alpha (0.05). From these results it means that H1 is accepted and H0 is rejected so that with the results of this test it can be concluded that education has a positive and significant effect on the Human Development Index in the Subosukawonosraten area in 2016 to 2020.

Simultaneous Test (F-Statistical Test)

F-Statistical test is used to determine whether the variables together affect the dependent variable or not. Based on the output of the fixed effect regression model in the F-statistics column, it is known that the F-statistical value is 414.8424 with a probability F statistic of 0.000000 < 5%, which means H0 is rejected and H1 is accepted. The independent variables, namely economic growth, poverty and education, have a significant effect on the dependent variable, namely the human development index

Coefficient of Determination Test (R2)

Based on the output of the fixed effect regression model in the R-square column, it is known that the R2 coefficient value is 0.993349, which means that the independent variables, namely economic growth, poverty and education, are able to explain the dependent variable, namely the human development index of 99.33% while the remaining 0.67% is explained by other variables outside the model.

V.   Result Interpretation
Economic Growth's Impact on Human Development Index

Tests on the economic growth variable on the human development index in each district/city in the Subosukawonosraten area generate an economic growth coefficient value of 0.276238 with a probability value of 0.0233, both of which are less than 0.05, implying that the economic growth variable has a partially negative and

significant effect on the human development index. That is, for every 1% gain in economic growth, the human development index falls by 0.276238%.

Based on the partial test (t test) findings on the variable Economic Growth, it generates a positive probability value of 0.0233, or less than 5% alpha (0.05). Based on these findings, H1 is accepted and H0 is rejected, implying that Economic Growth has a negative and substantial influence on the Human Development Index (HDI) in the Subosukawonosraten Area in 2016 to 2020. This differs from the first hypothesis, which predicted that varied economic growth would have a beneficial effect.

The findings of this study are consistent with the findings of Anantika and Sasana's 2020 research in APEC member countries, which obtained a coefficient of economic growth of - 1.062749 with a significance value of 0.0000, which is less than 0.05, indicating that economic growth has a negative and significant effect on the development index. man. Policies that are proved to increase economic growth might have a detrimental impact on human development since APEC member nations' economic progress is unequal.

Similar results are shown by research conducted in Indonesia in 2020 by Hasibuan, Rujiman, and Sukardi, which has a negative and significant impact on the human development index because it shows that the percentage data for Indonesia's economic growth from 2014 to 2019 has stagnated at around 5%, so it does not provide an impact on economic development, especially HDI, for that period. The findings of this study contradict Kutznet's (Todaro, 2006) notion that one of the hallmarks of per capita production growth is that as economic growth grows, people's spending habits shift, causing the three composite human development indices to rise.

Poverty's Impact on Human Development Index

Tests on the poverty variable on the HDI in each district/city in the Subosukawonosraten region provide a poverty coefficient value of 0.276238 with a probability value of 0.0015, both of which are less than 0.05, implying that the poverty variable has a negative and significant influence on the human development index partially. This is congruent with the first hypothesis, which states that the poverty variable should have a negative effect.

According to the table of individual parametric significance test findings (t test) on the poverty variable above, it generates a positive probability value of 0.0015 or less than 5% alpha (0.05). These results indicate that H1 is accepted and H0 is denied, implying that poverty has a negative and substantial influence on the Human Development Index (IPM) in the Subosukawonosraten Region between 2016 to 2020.

The result of the research is that the regression coefficient is negative, which means that there is an opposite relationship between poverty and the human development index. If the number of poor people increases, it will reduce the human development index in the Subosukawonosraten area. Conversely, if the number of poor people decreases, it will increase the human development index in the Subosukawonosraten area.

One of the causes of the high ratio of poor people in the Subosukawonosraten area is the impact of the Covid-19 pandemic which has disrupted the regional economy. There are many workers who are laid off and even expelled from the company so that the unemployment rate is increasing and will increase the number of poor people in the Subosukawonosraten area. The results of this study are in line with the research conducted by Mirza in Central Java in 2011 which showed that the poverty rate had a negative and significant effect at the 5% level on the HDI in Central Java Province, which means that when poverty decreases, the HDI value increases. Similar results are shown by research conducted by Muliza., Zulham, and Seftarita, in Aceh Province in 2017 which shows that the poverty rate has a negative and significant influence on the HDI, which means that if the poverty rate decreases, the HDI will increase.

Education's Impact on Human Development Index

Tests on the education variable on the human development index in each district/city in the Subosukawonosraten area generate an education coefficient value of 1.143795 with a probability value of 0.0013, which is less than 0.05, implying that the education variable has a partially positive and significant effect. That is, for every year added to the average length of schooling, the human development index rises by 1.143795%.

Based on the partial test (t test) findings on the Education variable, it generates a positive probability value of 0.0233 or less than 5% alpha (0.05). Based on these findings, H1 is accepted and H0 is rejected, implying that education has a positive and substantial influence on the Human Development Index (HDI) in the Subosukawonosraten Region in 2016 to 2020. The findings of this study support the initial hypothesis that the education variable has a positive and substantial influence on the human development index variable in the Subosukawonosraten area.

The longer a person receives formal education, the higher the quality of human resources, allowing them to create more optimal output when working. When the product generated rises, so will the income, allowing them to spend more, so improving people's well-being. The findings of this study are consistent with those of Maulana and Bowo (2013) and Bhakti, Istiqomah, and Suprapto (2014), who found that education has a positive and substantial effect on HDI, implying that the greater a person's education level, the higher the human development index.

VI. CONCLUSION

The study's findings lead to the following conclusions:Brand image has a positive and significant effect on purchasing decision.

1. Economic growth has a negative and statistically significant influence on the human development index. This indicates that when economic growth increases, so does the human development index. The pace of economic growth in the Subosukawonosraten region has varied, such that the rate of economic growth does not provide a rise in the human development index.

2. The poverty variable has a negative and substantial influence on the human development index. That is, if the number of impoverished people grows, so will the HDI rate in the Subosukawonosraten region. If the number of impoverished people reduces, the HDI rate in Subosukawonosraten will rise.

3. Education has a positive and statistically significant influence on the human development index. That example, if the average length of education increases, it will create higher-quality human resources, increasing the value of the human development index.

Based on the results of the study, there are several things that need more attention and follow-up through local government policies in order to increase the HDI value of districts/cities in the Subosukawonosraten area from the three independent variables, namely economic growth, poverty, and education.

Some suggestions are given to improve the HDI in the Subosukawonosraten area and for future research including, firstly, the district/city government in the Subosukawonosraten area in increasing the HDI value to focus on improving the quality of human life by improving the skills and expertise of the community through seminars and improving functions of the job training center (BLK) so that the community is able to compete in the world of work.

Second, to increase the HDI value, district/city governments are expected to focus more on infrastructure development and human development in a balanced way, both in areas with high population and low population areas. Third, the district/city government in the Subosukawonosraten area in increasing the HDI value in order to continue to improve the quality of education by increasing the capacity of the number of teachers, increasing educational facilities and affordable costs so that the literacy rate and average length of school continue to increase.

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