

ANALYSIS OF ECONOMIC GROWTH, HDI, AND POPULATION IMPACT ON POVERTY IN PAPUA (2012-2017)

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ABSTRACT

This research aims to analyze the specific effects of economic growth, the Human Development Index (HDI), and population size on poverty levels in Papua Province from 2012 to 2017. Secondary data is used by this research from the Central Bureau of Statistics. The analysis used in this research is analysis of panel data consisting of cross sections of 29 districts/cities and time series data over the period 2012-2017. The model of data panel uses is fixed effect model. The results of the research showed that HDI and population rates affect negatively and significantly on poverty in Papua during 2012-2017. Meanwhile, the economic growth rate variable affects poverty negatively and not significantly in Papua during 2012-2017. The high coefficient of determination ($R^2 = 0.973966$) indicates that 97.4% of the variation in poverty levels in Papua Province can be explained by the combined effects of economic growth, HDI, and population size. This finding underscores the significant role of human development and population management in poverty alleviation efforts. Future policies should prioritize education, healthcare, and sustainable population growth to effectively reduce poverty in the region.

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1. INTRODUCTION

Development is a process of change that is carried out towards better conditions than before in order to achieve the goal of including an advanced, competitive and just society. Development is one of the things that is really needed by every country because it can be a benchmark for the level of prosperity and welfare of the country. The goal of developing a country is to be able to improve the country's economy and improve the welfare of its people (Todaro & Smith, 2011).

Economics is an effort that is usually carried out so that there is an increase in the standard of living in a particular country and is measured by the level of real per capita income of the population of that country in the long run. Each country hopes that the economic development carried out can have an impact on the welfare of the people of each country. Several factors are needed by each country both as a country with an advanced category and a country that is still developing in terms of economic development, namely natural resources, capital, human resources, and technological capabilities. Reducing the poverty rate is one of the main targets and indicators of the success of national development and economic development (Irawan & Suparmoko, 2002).

Poverty remains a persistent issue globally, particularly in developing countries. Recent studies (UNDP, 2020; World Bank, 2018). This is still difficult to overcome today and is the root of the problems experienced by each country. Poverty occurs when a person or group in society is unable to meet their needs in achieving economic prosperity and welfare based on a certain standard of living. The causes of poverty are due to low Human Resources (HR), scarce means of fulfilling basic needs, and low productivity. Poverty is still considered a major obstacle by developing countries, including Indonesia (Didu & Fauzi, 2016).

Indonesia has the fourth largest population in the world with a total population of 269 million people. Indonesia is also one of the developing countries and the poverty rate is still considered high and the number of population is always increasing every year. Even though poverty in Indonesia is decreasing every year, the poverty rate in that country is still high. The problem of poverty in Indonesia has been going on for a long time until now and is one of the indicators preventing Indonesia from becoming a developed country. Almost every region in Indonesia makes poverty a problem that is still difficult to solve today (Safuridar, 2017).



Figure 1. Poverty Development in Indonesia 1999-2019
Source: Processed data, 2020

Based on this figure, Indonesia's poverty for the last 20 years, from 1999 to 2019. The highest poverty rate was 1999 with a percentage of 23.43% and the lowest poverty rate was 9.22% in 2019. The high poverty rate in 1999 was caused by the monetary crisis, namely in 1998. Then the percentage of the population in the poor category always decreased every year, although in 2004 there was an increase from the previous year to 17.75% and in 2007 there was an increase from the previous year to 20.37%. The poverty rate until 2017 is still above 10 percent (hardcore poverty), so the government has not yet reached the target. However, in 2018 the poverty rate was below 10% for the first time, namely 9.66%.

Table 1. Highest Poverty Rate by Province in Indonesia 2012-2017 (Percent)

Province	2012	2013	2014	2015	2016	2017
Papua	30.66	31.53	27.80	28.17	28.54	27.62
West Papua	27.04	27.14	26.26	25.82	25.43	25.10
NTT	20.41	20.24	19.60	22.61	22.19	21.85
Maluku	20.76	19.27	18.44	19.51	19.18	18.45
Gorontalo	17.22	18.01	17.41	18.32	17.72	17.65

Source: Processed BPS Papua Province data, 2020

Based on the table 1, shows descriptive statistics for each variable which includes the dependent variable, namely the poverty rate and the independent variables, namely economic growth, HDI, and the population of Papua during the period 2012 to 2017. The average dependent variable or poverty rate is 30.66. The highest poverty rate occurred in Deiyai in 2017, namely 47.52%. Meanwhile, the highest poverty rate in Merauke in 2014 was 10.20%.

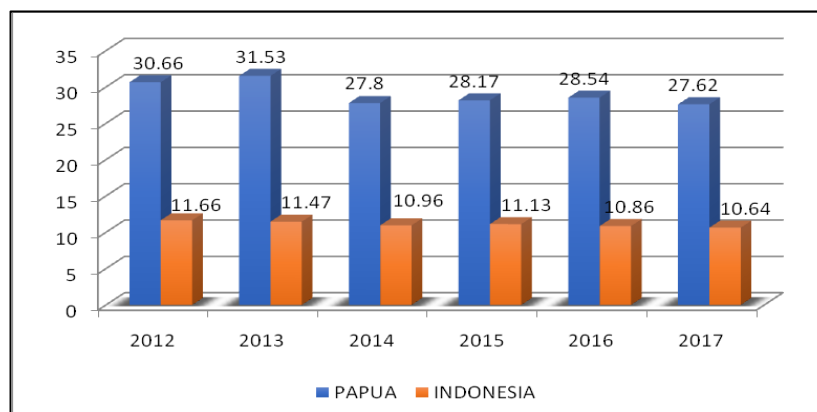


Figure 2. Development of the Percentage of Poor Population in the Provinces of Papua and Indonesia in 2012-2017 (percent)

Source: Processed BPS Papua Province data, 2020

Based on the figure 2, it shows that the percentage of poor people in Papua Province is still far above the percentage of poor people nationally. Poverty in Papua Province fluctuates every year with the percentage of poor people being above 25 percent each year. The high poverty in the province can be caused by rising inflation, prices for basic needs and low people's incomes. The Special Autonomy (Otsus) that has been implemented and given special authority to the province by the central government is considered to have not been able to significantly reduce the poverty rate.

Economic growth has a close relationship with the poverty rate of a region. The definition of economic growth is an increase in economic activity so that there is an increase in production of goods and services for the welfare of society. Economic growth is an indicator to determine the level of success of development carried out in regions and countries (Tambunan & Sikumbang, 2011). One of the most needed indicators to be able to measure the economic growth of a region is the Gross Domestic Product (GDP). GRDP is an important indicator in the region because it can determine the total amount of net production of goods or services which is used as a basis for planning and evaluating regional development (Jhingan, 2016).

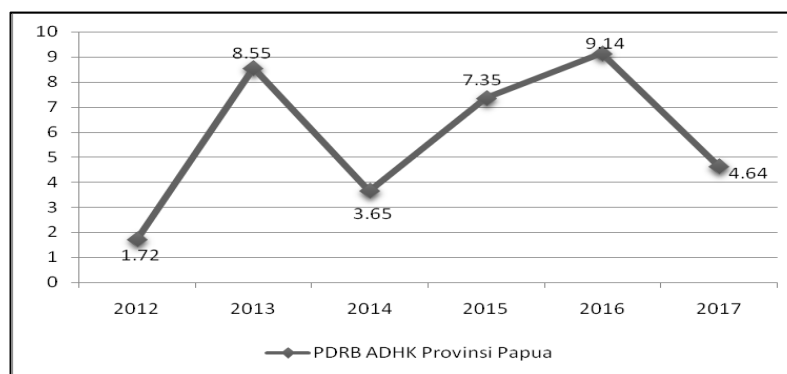


Figure 3. ADHK GRDP Growth Rate in Provinces 2012-2017 (percent)

Source: Processed BPS Papua Province data, 2020

Based on this figure, the growth rate of GRDP per capita in Papua in the period 2012 to 2017 has fluctuated every year. The highest increase in GRDP growth rate was in Papua in 2013 with a percentage of 6.83% and the lowest increase in GRDP growth rate was in 2016 of 1.79% from the previous year. The efforts made by the Papua Provincial government have not been able to increase the GRDP growth rate every year and still tend to be unstable due to fluctuations in the GRDP growth rate. This can be caused by the inability to use and manage natural resources due to limited human resources.

Poverty can occur because of the low quality of existing human resources in a person. The low level of this can be measured using the Human Development Index (HDI). HDI describes several components, namely life expectancy, level of education, and a decent life (Subri, 2014). Increasing human development shows that there is an increase in the quality of life and welfare which is getting better, so that the poverty rate can be reduced. A low HDI will have an impact on low work productivity in society. This can lead to low income, so that the low income received will lead to increased poverty (Prasetyoningrum & Sukmawati, 2018).

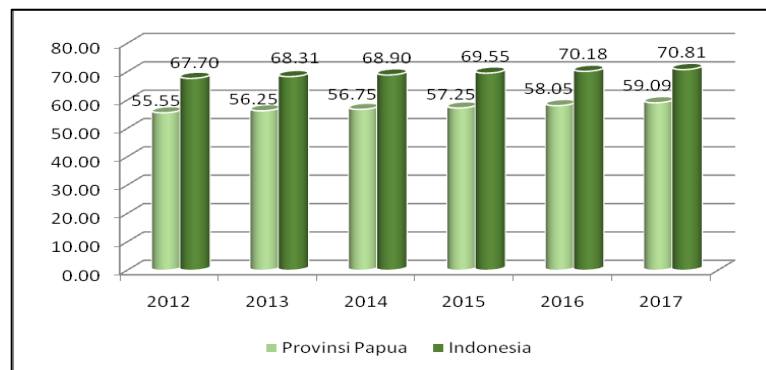


Figure 4. Papua Province and National HDI for 2012-2017
Source: Processed BPS Papua Province data, 2020

Based on this figure, the Papua Province HDI is still below the National HDI every year. Even though the HDI increased every year from 2012 to 2017, it has not been able to outperform the National HDI. The HDI for Papua Province is still categorized as low HDI (low HDI) because the HDI score is still less than 60 each year. While the National HDI has reached the high HDI category in 2017 where the numbers are between 70 and 80. The low HDI in Papua can be caused by the low quality of human resources because it is influenced by a low level of education, so that the level of productivity is low and causes an inability to achieve high income.

In addition, the population is still the root cause of poverty, especially for developing countries. The continuous and uncontrolled increase in population will result in problems in meeting the needs of the population due to the limited availability of food and the fulfillment of various goods and services. This can have an impact on increasing poverty and triggering underdevelopment that can occur (Irawan & Suparmoko, 2008)

Population growth can also encourage development activities that occur in an area through an increase in population. This will be able to move and encourage economic activity because of the increasing demand for fulfillment of needs in the form of consumption materials and various types of goods and services. This increase can expand the market and be able to increase the number of workers so that unemployment can be reduced and poverty can decrease (Todaro & Smith, 2014).

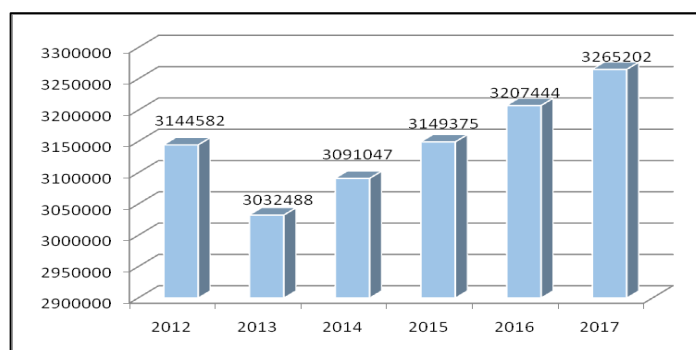


Figure 5. Total Population of Papua Province in 2012-2017
Source: Processed BPS Papua Province data, 2020

Based on figure 5, the population in the province of Papua in 2013 decreased to 3,032,488 people and experienced an increase in population each year to reach 3,265,202 people. The continuously increasing population is also due to the high birth rate. Even though the level of working age in the province of Papua is also high as the population increases every year, the poverty rate is still high in the province. Based on the problems that have been raised against this background, the researcher has an interest in conducting research on the relationship between economic growth, the Human Development Index, population and poverty levels in Papua.

This research takes the time period from 2012 to 2017, and the hypothesis in this study are:

H1: The economic growth variable has a significant influence on poverty

H2: The HDI variable has a significant influence on poverty

H3: Population has a significant effect on poverty

2. RESEARCH METHOD

This study utilizes secondary data obtained from the Central Bureau of Statistics (BPS) for the period 2012-2017. The choice of a fixed effect model for panel data analysis was based on preliminary tests, including the Chow test and Hausman test, to ensure the robustness and appropriateness of the model for this study. Detailed steps and rationales for these tests are provided in the methodology section. The research to be analyzed uses panel data, which is a combination of time series data and cross-sectional data. The research to be conducted consisted of a cross section, namely 29 regencies/cities and a time series, namely the period from 2012 to 2017. Secondary data was obtained from BPS Papua Province which included economic growth data in the form of ADHK GRDP, HDI data, population data, data poverty in the form of the percentage of poor people.

The method used in conducting the analysis is a quantitative analysis method and uses multiple linear regression methods. In processing, the analysis uses the EVIEWS9 program as an analysis tool. The documentation method is a method for collecting data needed for research. The documentation method is a method in which data is collected through books, journals, literature and other appropriate publications.

The poverty rate is the dependent variable and the independent variables are economic growth, HDI and population. Poverty is an indicator to be able to determine poverty in a region or country in a concrete way, namely by using the poverty rate. The definition of poverty is the number of people whose income is below the poverty line. GRDP is the addition of value to the gross to the overall results of goods and services by a region within a certain country that occurs due to economic activity within a certain period of time. GRDP that is used to be able to determine economic growth as a whole economic growth every year is to use GRDP at constant (real) prices.

HDI can be used as a step to calculate success in implementing efforts to build and have a quality life within a certain period of time. HDI consists of three main indicators, namely life expectancy, level of education, and a decent standard of living. Population has a definition, namely every person who lives in Indonesia for a period of 6 months or more or has lived for less than a period of 6 months but has the aim of living in Indonesia. The equation of the analysis model in this study is as follows:

$$Povit = a + \beta_1 (Gro)_{it} + \beta_2 (HDI)_{it} + \beta_3 (TP)_{it} + e$$

Where as:

Pov = Poverty

a = Constanta

$\beta_1, \beta_2, \beta_3$ = Regression coefficient

Gro = Economic growth

HDI = Human Development Index

TP = Total population

3. RESULTS AND DISCUSSION

3.1. RESULTS

Descriptive Statistics

The results of data processing in this study produce the values listed in Table 2 as follows:

Table 2. Variable Descriptive Statistics

	Poverty	Growth	HDI	TP
Means	30.66155	7.380057	54.10126	11.38494
Median	32.44000	7.025000	53.53500	11.44500
Maximum	47.52000	17.02000	79.23000	12.59000
Minimum	10.20000	-5.820000	23.07000	9.730000
std. Dev.	9.799485	2.976428	11.92706	0.697157
Skewness	-0.547385	-0.145054	-0.066766	-0.542871
kurtosis	2.161638	7.213852	2.554668	2.657243
Observations	174	174	174	174

Source: Processed data, 2020

Based on the table 2, it shows descriptive statistics for each variable which includes the dependent variable, namely the poverty rate and the independent variables, namely economic growth, HDI, and the population of Papua during the period 2012 to 2017. The average poverty rate across the sampled districts in Papua Province from 2012 to 2017 is 30.66%. The statistical analysis reveals that both HDI and population size have a significant negative impact on poverty levels, indicating that improvements in human development and managing population growth could be effective strategies for poverty reduction. Conversely, economic growth, while negatively correlated with poverty, does not show a statistically significant impact, suggesting that other factors may mediate this relationship. The highest poverty rate occurred in Deiyai in 2017, namely 47.52%. Meanwhile, the highest poverty rate in Merauke in 2014 was 10.20%.

The average independent variable of economic growth through ADKH GRDP rate is 7.38% with the highest ADHK GRDP rate in 2012 in Lanny Jaya which is 17.02%. Meanwhile, the lowest ADHK GRDP rate occurred in 2012 in Mimika, namely -5.82%. Another independent variable is HDI with an average of 54.10. The highest HDI was Jayapura City in 2017 of 79.23 and the lowest HDI was Nduga Regency in 2012 of 23.07. The independent variable of population has an average of 11.38. The highest number of residents was in 2017 in Jayapura City with a total of 293,690 people. While the lowest population was in 2012 in Supiori Regency with a total of 16,894 people.

Model Selection

The first test was carried out, namely the Chow test regression analysis using panel data. The test is to be able to determine the best model between Common Effect and Fixed Effect. Based on the table 3 below, the results of the test show that the Chi square cross-section probability is smaller than alpha, which is 0.0000. Then the conclusion that can be obtained from the test is that H_0 is rejected and H_a is accepted, so the model chosen is the Fixed Effect. Because the selected model is the Fixed Effect Model, the Hausman Test must be carried out.

The second test was carried out, namely the Hausman test was conducted to select the best model between the fixed effect model and the random effect model. If the probability value is from alpha, it will reject H_0 . Based on the tests conducted, it is known that the probability of a random cross section is less than alpha, namely 0.0026. So the conclusion is that H_a is accepted and H_0 is rejected, so the model used in this research is the Fixed Effect model.

Regression Equation

After obtaining the best regression and estimating the data, we obtained the results of an equation which illustrates the relationship between economic growth, HDI and population to the poverty rate in Papua in the 2012-2017 period. Here is the form of the equation:

$$\text{Pov} = 235.3361 - 0.075568 \text{ Gro} - 0.859371 \text{ HDI} - 13.84494 \text{ LOGTP}$$

From the regression equation, the variable coefficient of economic growth is 0.075568 and has a negative relationship to the poverty rate. For every 1% increase in economic growth, the poverty rate will decrease by 0.07%. The HDI variable has a negative relationship to the poverty rate, which is equal to 0.859371, so that every time there is an increase in HDI of 1%, the poverty rate decreases by 0.85%. The regression coefficient of the population variable is 13.84494 and has a negative relationship to the poverty rate, so that every time there is an increase in the population of 1%, the poverty rate will decrease by 13.84%.

3.2. DISCUSSION

First, the Coefficient of Determination (R^2) is used to be able to find out through measurement to find out to what extent the regression model is able to explain or explain its dependencies. Based on the results of the analysis, it is known that the adjusted R-squared is worth 0.973966. This means that 97.39% of the dependent variable, namely the poverty rate in Papua Province, can be explained by each of the independent variables, namely economic growth, HDI, and population. While the remaining 2.61% can be explained through other variables outside the model or other factors.

Second, the F statistical test. The test is conducted in order to determine whether the overall independent has a simultaneous effect on the dependent variable. The effect of economic growth, HDI, and population on the poverty rate in Papua Province 2012-2017 is that the calculated F value is 209.7774 and the probability F is 0.000000, where the probability value of F is less than alpha. The conclusion obtained is that all the independent variables, namely economic growth, HDI, and population simultaneously have a significant effect on the level of poverty as the dependent variable.

Third, statistical test t. The test was conducted to determine whether the independent variables consisting of economic growth, HDI and population have an effect on the poverty rate as the dependent variable. Based on these tests with the Fixed Effect model used, it was obtained that the independent variables were as many as two variables that had a significant influence on the dependent variable, namely HDI and population. However, economic growth does not significantly affect the dependent variable. Based on the table 6 below, it shows that economic growth has a large probability value of alpha, namely 0.1972, so that it can be concluded that the economic growth variable does not significantly influence the poverty rate. Based on the table, the probability value of the HDI variable is smaller than alpha, which is 0.0000. then it can be concluded that HDI has a significant influence on poverty. While the population variable has a probability of less than alpha, which is 0.0075, so the conclusion is that the population has a significant influence on poverty.

Table 3. Statistical Test t

Variable	coefficient	T-Statistics	Prob	Significance
Gro	-0.075568	-1.295547	0.1972	Not significant
HDI	-0.859371	-5.934725	0.0000	Significant
TP	-13.84494	-2.710412	0.0075	Significant

Source: Processed data, 2020

The results of the research using the regression equation model with the Fixed Effect Model approach show that the value of the economic growth coefficient is -0.075568 . That is, if economic growth increases by 1%, the poverty rate will decrease by 0.075568% . While the probability of economic growth is 0.1972 , which means that the value of the large probability of alpha is 0.1972 , so that economic growth has no effect on poverty. The results of this study are not in accordance with Kuznet's opinion that there is a strong correlation between economic growth and poverty. An area will experience an increase in the early stages of development and will experience a decrease in the poverty rate in the final stages of development. The conclusion obtained is that economic growth has a negative influence on poverty levels. If economic growth increases, the poverty rate will decrease and vice versa (Tambunan & Sikumbang, 2011). However, in reality this growth has not been able to overcome the problem of poverty. This is due to inequality that occurs in society, especially in terms of equity and income distribution. An increase in GRDP can indeed increase economic growth in a region. The results of this study are also inconsistent with Purnama's research (2017) that economic growth has a negative and significant effect on poverty. This is due to the problem of unequal distribution of income in society, resulting in disparities in economic terms in the community in a region. Even if there is an increase or decrease in the economic growth of a region, it will not affect the level of poverty in that region. The Effect of the Human Development Index on Poverty Rates in Papua Province in 2012-2017

The results of the research with the regression equation model of the Fixed Effect Model (FEM) approach, it is known that the coefficient value of the Human Development Index (HDI) is -0.859371 . If the HDI increases by 1%, the poverty rate will decrease by 0.859371% . While the probability value of economic growth is equal to 0.0000 , which means that the probability value is less than alpha, namely 0.0000 , then HDI has a negative and significant influence on poverty. The results of this study are in accordance with Subri's theory (2014) which suggests HDI is defined as an indicator that is usually used in measuring important aspects of the quality of human development in a region. Human development aims to improve the quality of life and people's welfare, so as to reduce poverty. An increase in productivity in the community can increase income and fulfill daily needs, so that it also affects poverty reduction. The results of this study are also in accordance with Prasetyoningrum and Sukmawati's research (2018) that HDI has a negative and significant effect on the poverty rate. This shows that an increase in the HDI can improve the quality of life and people's welfare, so that increasing people's income through increasing productivity can reduce poverty. Increased human development as measured through HDI can make people earn better income, education levels, health, and so on than before.

Based on the results of the study using the FEM approach regression equation, it is known that the coefficient value of the population is -13.84494 . That is, if the population increases by 1%, the poverty rate will decrease by 13.84494% . While the probability value of the population is 0.0075 so that it is obtained that the value of the probability is less than alpha, namely 0.0075 , then the population has a negative and significant influence on poverty. The results of the research conducted are in accordance with Todaro and Smith's (2014) which states that population growth is able to encourage development activities in a region because an increase in population will increase the demand for various types of goods and services so as to be able to drive economic activity in the region. An increase in the demand for goods and services can expand the market and be able to increase the workforce so that unemployment can be reduced and poverty can be reduced. These results are also in accordance with Silastri's et al. (2017) which states that population has a negative and significant effect on poverty. This shows that the number of population is seen as a trigger for development.

The existence of production activities because people buy and consume the goods that have been produced. With an increase in consumption, businesses can develop to be more productive, which can have an impact on improving the economy. This can also encourage the availability of labor, especially for the population of productive age because it is considered more capable of encouraging an increase in production factors and can improve people's welfare to fulfill their daily needs so as to reduce poverty.

4. CONCLUSION

Based on the results that have been obtained and the previous discussion, several conclusions can be drawn from the research that has been done. First, economic growth has no effect on the level of poverty in Papua. This is indicated by a greater probability than alpha, which is 0.1972. The results of this study are not in accordance with Kuznet's theory in Tambunan and Sikumbang (2011) which suggests that there is a strong correlation between economic growth and poverty levels. This is due to the problem of distribution of income which is still uneven in society, resulting in disparities in terms of the economy in the people of Papua Province. Even though there has been an increase or decrease in economic growth in Papua. Second, the HDI has a negative and significant influence on the poverty rate in Papua Province. This can be seen from the probability value less than alpha, which is 0.0000 and a coefficient value of -0.859371. This can be proven from the increase in HDI from year to year. If there is an increase in the HDI of 1%, the poverty rate will decrease by 0.85%. Third, the population has a negative and significant effect on the level of poverty in Papua. This can be seen from the probability that is less than alpha, which is 0.0000. This is due to the high percentage of Labor Force Participation Rate (TPAK) every year when compared to the total population of the people of Papua. This of course can reduce poverty with high labor force participation.

Based on the overall discussion and research conclusions, there are several suggestions that can be given to several parties. First, local governments should pay attention to the distribution of income in the implementation of development so that economic growth can be expected by all levels of society. The government must ensure that economic growth can be enjoyed and felt, especially for people with low incomes. In addition, the government must make efforts to increase economic growth through GRDP by relying on every potential that exists in each region in Papua Province. Second, the government must further improve the quality of human development, especially in the field of education. The government can improve the quality of education by providing adequate facilities to encourage education, providing scholarships to outstanding students, building a level of public awareness of the importance of education, especially people in areas where education levels are still low compared to other regions in Papua Province. Third, local governments must also provide adequate health facilities, such as facilitating hospitals and health centers, medical personnel, drug supplies and medical equipment, and pay more attention to the health of their people, especially in areas that are still remote and difficult to reach in Papua Province. Besides that, the local government must also make efforts to make the people in Papua Province aware of the importance of maintaining health and implementing healthy living in their daily lives. This can encourage the level of community productivity so that they are able to obtain maximum income and will reduce poverty.

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