

The Influence of Infrastructure Development on Economic Growth in the Province Papua Year 2006 – 2020

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Abstract

This study aims to analyze the effect of infrastructure development on economic growth in Papua Province. This study uses secondary data taken from the Central Statistics Agency (BPS) of Papua Province for the period 2006 - 2019. The analytical tools are descriptive and regression using time series data. The results showed that the dependent variable such as the number of educational facilities and health facilities had a positive effect on economic growth in Papua Province. Given the results, the local government should pay more attention to allocating development expenditures for energy, the availability of special electricity infrastructure, the number of Puskesmas and schools to have a significant and positive influence on economic growth in Papua Province.

Keywords

health facilities;
education facilities;
economic growth;
Papua Province



I. Introduction

Indonesia is a developing country not a developed country due to several things such as high population growth rates, high unemployment rates, high poverty rates, uneven quality of education, and uneven infrastructure development. Seeing this situation, regional economic development is the most important part of national economic development. Community welfare is the ultimate goal of economic development. Todaro said that the success of economic development is indicated by 3 main values, namely: the development of the community's ability to meet their basic needs, the increased sense of community self-esteem as human beings, and the increased ability of the community to choose (Arsyad: 1997).

The basic needs that must be met by the community must be supported by adequate infrastructure which will ultimately increase the potential of the region in a sustainable manner. Infrastructure is usually carried out by the government, which can cooperate with business entities in accordance with the Presidential Regulation of the Republic of Indonesia Number 67 of 2005 concerning Cooperation between the Government and Business Entities in the Provision of Infrastructure. Improvements in infrastructure are expected to bring prosperity, independence and accelerate economic development so as to make economic activities more efficient. So, the government is required to complete the facilities and infrastructure to support the economy. With the more complete public facilities, the private sector will be more enthusiastic to invest in the area.

Infrastructure development which is a government asset with a view to providing services to the public. These infrastructures include roads, bridges, landscaping, office buildings, hospitals, and others. The infrastructure development currently being carried out by Indonesia prioritizes increasing connectivity between regions, growth and economic

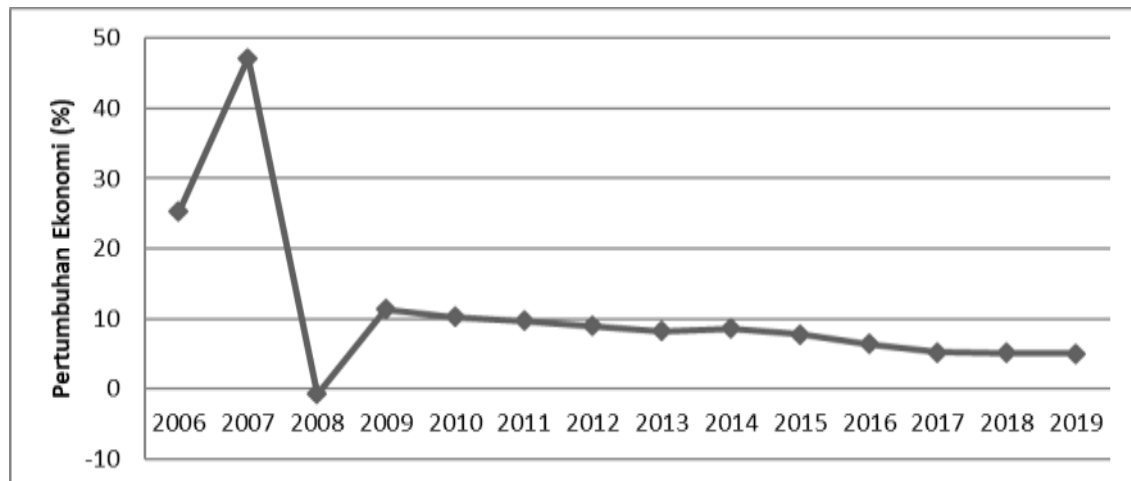
activity. As a result, Indonesia is currently experiencing a slowdown in development and strengthening of human resources as indicated by the low ranking of Indonesia's human development index. According to Arsyad (1997) the availability of infrastructure greatly determines the success of an area in the production process, expanding trade, reducing poverty, overcoming population growth, attracting investment and improving environmental conditions. The fact that the economic growth of a region is closely related to the provision of existing infrastructure in the area indicates that the provision of infrastructure is very necessary to increase regional prosperity.

Infrastructure development is the driving force of economic growth. From the allocation of public and private financing, infrastructure is seen as the locomotive of national and regional development. Macroeconomically, the availability of infrastructure services affects the marginal productivity of private capital, while in the context of microeconomics, the availability of infrastructure services affects the reduction of production costs. Infrastructure also has an important effect on improving the quality of life and human welfare, among others, in increasing consumption values, increasing labor productivity and access to employment, as well as increasing real prosperity and realizing macroeconomic stabilization, namely fiscal sustainability, developing credit markets, and their impact on the economy labor market.

For the sake of the availability of adequate infrastructure which will later improve the welfare of the people of the Papua Province, a consistent and comprehensive development is needed in all regions of the Papua Province. The development of the Papua Province is still divided into several concentrations, in the coastal areas the development is concentrated because the coastal areas optimize the marine potential, while the mountainous areas are still constrained because the center of the agricultural sector. In order to change this situation, the people asked the local government to improve infrastructure in the Papua Province (World Bank, 2009a).

The existence of equitable distribution of infrastructure development, adequate facilities will be able to add to a better and more advanced economy. According to Harrod-Domar, every economy can set aside a certain proportion of its national income if only to replace damaged capital goods. Papua Province which is very large and has various variations of economic development will surely face challenges and obstacles such as lack of infrastructure, high construction costs, low population density and extreme cultural diversity.

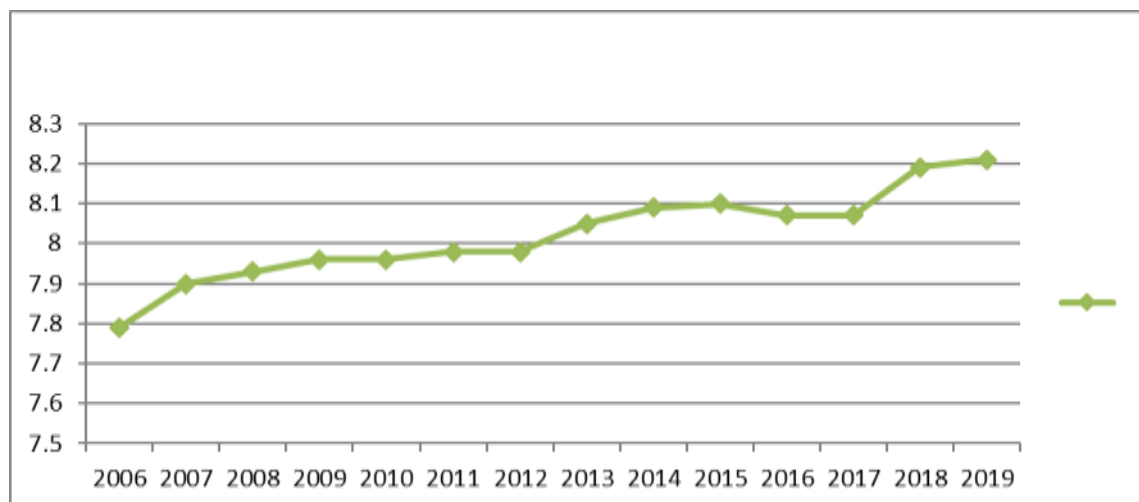
The Central Bureau of Statistics of Papua Province noted the effects of infrastructure development carried out by the Papua provincial government. From 2006 to 2019 Papua's economic growth rate has always been below the national average. Based on BPS data, the Papua province's economic growth is only 7.08% of the economic growth of each province in Indonesia, this makes the Papua province the lowest in Indonesia as shown in Figure 1 below. Figure 1 below shows that Papua Province tends to experience economic growth conditions that tend to decline from year to year



Source: Central Bureau of Statistics of Papua Province, 2006-2019

Figure 1. Papua Province Economic Growth Rate

Economic growth can also be seen from improvements in education infrastructure. The important role of education in developing capacities such as training skills and experience, expertise for the whole community in absorbing modern technology in order to create sustainable growth and development (Todaro, 2003). The development of educational infrastructure development during 2011-2018 shows that many developments have taken place, for example school buildings scattered throughout coastal and mountainous areas. The construction of the tallest school building in 2018 can be seen from Figure 2 below.



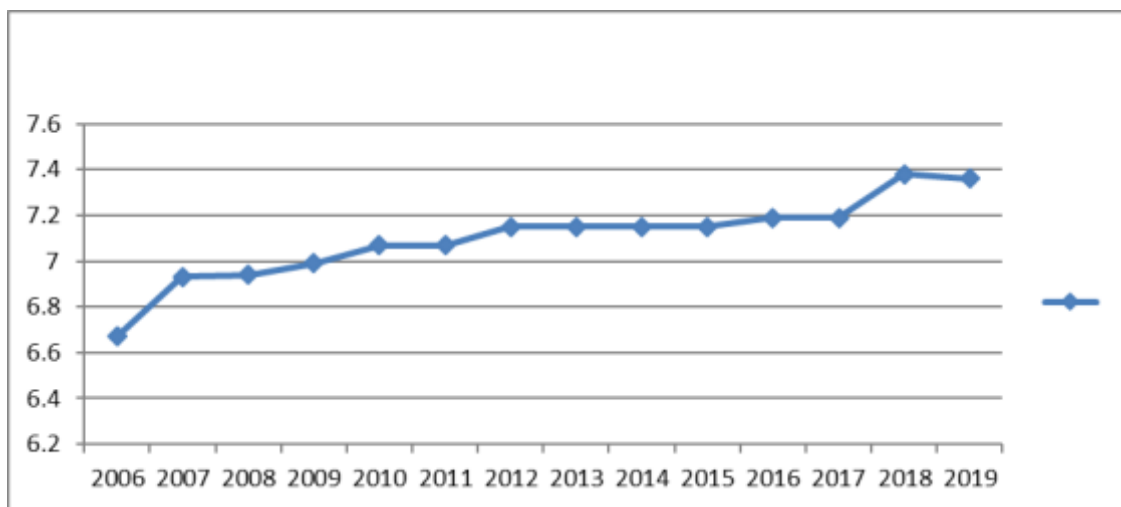
Source: Central Bureau of Statistics of Papua Province, 2006-2019

Figure 2. Growth Rate of Education Facilities in Papua Province

Community productivity will decrease if public health is low, and will affect economic growth. Various efforts have been made by the government in improving public health, starting with improving health infrastructure in various areas in Papua Province, which are located on the coast and also in the mountains, these efforts are carried out in order to make it easier for people to enjoy these facilities at affordable prices. (World Bank, 2009b).

Based on Figure 3 below, in 2018 the health infrastructure (Puskesmas) experienced a very high increase, which means that the local government has paid more attention to the addition of health infrastructure in Papua Province.

This condition shows that the government's program to accelerate the development of health infrastructure has not been maximally carried out, especially in areas where transportation access is difficult. The minimum number of hospitals and the lack of health workers must be prioritized for development so that people can get health services that are easily accessible at affordable costs. If seen, Papua Province has health facilities that tend to increase, namely sub-health centers with inadequate medical equipment so that more complete health facilities are needed, such as hospitals with complete medical equipment.



Source: Central Bureau of Statistics of Papua Province, 2006-2019

Figure 3. Growth Rate of Health Facilities in Papua Province

Efforts to improve the condition of infrastructure should be able to provide jobs for the community, so that later it will encourage per capita income, but in fact Papua Province has low quality human resources due to low education and expertise, and also the skills of the work carried out are those that do not require skills high, for example, farmers. This has an impact on the income received by the community is also relatively small. Infrastructure has an important role in increasing economic growth, where high economic growth is always found in areas with sufficient infrastructure availability. With the various phenomena described above, the authors are interested in carrying out further research on the influence of infrastructure development on economic growth in Papua Province in 2006 - 2019.

II. Review of Literature

2.1. Economic Growth

Economic growth is one indicator of the success of development in an economy. The progress of an economy is determined by the amount of growth indicated by changes in national output. Economic growth is a process of changing economic conditions that occur in a country on an ongoing basis to get to a state that is considered better for a certain period of time. Some economists think that the concept of high and sustainable economic growth is the main condition or a must for the continuity of economic development and improving the welfare of the people in a country. (Basmar et al, 2021).

Economic growth is generally defined as the development of activities in the economy that causes goods and services produced in society to increase and the prosperity of society increases. (Sukirno, 2015). Economic growth is a continuous process of increasing per capita output in the long run. Economic growth can be measured by an increase in Gross Domestic Product (GDP) or Gross Regional Domestic Product (PDRB), where an increase in GDP or GRDP is considered as a measure of economic growth regardless of whether the increase is greater or less than the population growth rate or whether changes in structure economy happens or not (Suriani, et al., 2019). The GRDP used in this study is GRDP at constant prices, to determine economic growth from year to year. (Hakim et al, 2021)

Economic growth is still an important goal in a country's economy, especially for developing countries like Indonesia. Economic growth must also be followed by positive changes in the context of improving the welfare and prosperity of the people who are mandated by the 1945 Constitution. Therefore, economic development is still the focus of development in Indonesia and is an indication of the success of development. Economic growth is a process of increasing the production capacity of an economy that is realized in the form of an increase in national and regional income. Kuznets in Jhingan (2012) defines economic growth as a long-term increase in a country's ability to provide more and more economic goods to its population. (Magdalena, 2020)

The economy in Indonesia is never separated from development. Regional economic development is a process where local governments and their communities manage existing resources and form a partnership pattern between local governments and the private sector to create new jobs and stimulate the development of economic growth in the region (Purba et al, 2021).

According to Smith in Boediono (2012:14) "the demand for human labor is the same as the demand for other goods, regulating the production of labor; it will speed up production if it is too slow and stop if it is too fast". Infrastructure development is very necessary in the process of economic growth because it can encourage economic growth, thereby creating new jobs, reducing poverty levels, and increasing per capita income. Infrastructure plays a very important role in the economic growth of a region. Good infrastructure development will ensure efficiency, facilitate the movement of goods and services, and increase the added value of the economy (Prasetyo and Firdaus 2009). The availability of infrastructure is one of the factors driving regional productivity. (Panjaitan et al, 2019).

Economic development cannot be separated from economic growth, where economic development encourages economic growth and vice versa, economic growth facilitates the process of economic development. In economic development, the community acts as the main actor and the government becomes the guide and supporter of the course of economic development (Nainggolan et al, 2021).

Economic growth is one of the important goals that must be achieved in any planned economic policy. High economic growth is expected to be accompanied by equitable development, so that it will be able to improve the welfare and quality of life of the community. In carrying out development, regions should pay more attention to the advantages and characteristics of each region. Community participation in the region in development will be able to increase per capita income which will later encourage an increase in people's purchasing power so that people will have the ability to meet the needs of a decent life. An increase in per capita income will encourage economic activity, due to increased demand as a result of an increase in people's purchasing power, and in the end will increase economic growth. (Tarmizi, B, H, 2013).

Economic growth is the process of changing the economic conditions of a country on an ongoing basis towards a better state over a certain period. Economic growth can also be interpreted as a process of increasing the production capacity of an economy which is manifested in the form of an increase in national income. Their economic growth is an indication of the success of economic development. (Son, 2018).

The economic growth of a country can be measured by comparing, for example, the national size, Gross National Product (GNP), the current year with the previous year. According to (Putra, 2018) the factors that influence economic growth, namely:

1. Factors of Human Resources (HR). Similar to the development process, economic growth is also influenced by human resources.
2. Factors Natural Resources (SDA). Most developing countries rely on natural resources in carrying out their development process.
3. Science and Technology Factors. The rapid development of science and technology encourages the acceleration of the development process, the change in work patterns that originally used human hands are replaced by sophisticated machines which have an impact on aspects of efficiency, quality and quantity of a series of economic development activities carried out and ultimately result in accelerated growth rates. economy.
4. Cultural Factors. Having a separate impact on economic development is carried out, this factor can function as a generator or driver of the development process but can also be an obstacle to development.
5. Capital Resources. Human capital resources are needed to process natural resources and improve the quality of science and technology.

According to Muta'ali (2015), there are several benefits of economic growth analysis, including:

1. To measure economic progress as a result of national development.
2. Develop a typology of regional economic development.
3. As a basis for making projections or estimates of regional revenues for sectoral and regional development planning;
4. Knowing the sources of economic growth
5. As a basis for formulating investment needs kebutuhan
6. As a basis for making business forecasts and regional economic targets

Economic growth can be the result of the formation of economic development. Therefore, economic growth will never run if it is not based on economic development. Humans are one of the main factors determining the direction of national development because humans influence and are influenced by science and technology. Economic productivity can only be formed by skilled humans in managing and managing resources. Resources that are used appropriately and according to plan can realize prosperous development (Damanik et al, 2021).

Growth Economics and economic development, in the end the terms will often be used interchangeably. However, in general the two terms are often interpreted differently. Most economic literature defines economic growth as a quantitative measure that describes the development of an economy in a given year when compared to the previous year. This development is always expressed in the form of a percentage change in national income in a given year compared to the previous year. You must have heard or read in the newspaper a news story that basically said: "In 2005 the growth of a country (eg Indonesia) reached 5 percent". (Sukirno, 2006).

According to Rostow, there are three main sectors that are a buffer in undergoing this transition period, namely:

1. The agricultural sector is a growing sector and meets the basic needs of the population, including urban residents who do not work in the agricultural sector.
2. The export sector is the main sector and can be encouraged to increase the country's purchasing power for capital goods.
3. Social infrastructure has become a concern of the government in the country as a social overhead to move on to a further stage of progress.

2.2. Infrastructure

Infrastructure is a facility that allows economic and market activities, such as transportation, communication and distribution networks, water utilities, waterways, and energy supply systems (Todaro, 2011: 82). Stone in Prasetyo (2009:225) defines "infrastructure as physical facilities needed by public agencies for government functions in the provision of water, electricity, waste disposal, transportation to facilitate economic and social goals".

Infrastructure development is evidence of the development of an area/region. The main reason that is very important in infrastructure development according to economic integration is that the availability of infrastructure affects investment and trade activities. The nature and type of infrastructure required by an area is influenced by the natural characteristics and distribution patterns of the population that are typical of the area. Infrastructure is not only needed to increase competitiveness in order to encourage more investment, production and trade activities, but also to accelerate equitable development so that poverty and unemployment rates can be reduced (Atmaja & Mahali, 2015)

Development in Papua Province often experiences delays in its progress and does not comply with a predetermined schedule. This is due to the ever-changing weather (rain), different terrain conditions or land contours in the field, the presence of materials that are difficult to obtain and security that is not conducive. In addition, there are other problems, namely the difficulty of land acquisition. Land acquisition is quite crucial, so it requires a sociological and cultural approach with local indigenous community leaders. Currently, development in Papua Province has progressed compared to previous years because several traditional leaders in certain areas have agreed to work together to build a better Papua.

After looking at the existing phenomena, the hypotheses raised are:

1. Infrastructure development in the form of health facilities affects the economic growth of Papua Province
2. Infrastructure development in the form of educational facilities affects the economic growth of Papua Province

III. Research Methods

The type of data used in this study is secondary data. This secondary data is time series data (periodic data) with a period of 2006-2019 which was obtained from the Central Statistics Agency (BPS) of Papua Province. The data needed in this study include: 1) Economic Growth Data in Papua Province, 2) Infrastructure Development Data in Papua Province. The method used in this research data collection is through documentation. Documentation is a method of collecting data based on documents, literature studies, scientific journals, and other written reports related to infrastructure development and economic growth. The data analysis technique is descriptive analysis and multiple linear regression analysis with the ordinary least square model, where the functions are as follows:

$$\text{Economic Growth} = Y (\text{infrastructure development})$$

Then the functional is transformed into a regression model as follows:

$$Y = a + b_1X_1 + b_2X_2$$

Where:

- y = Economic growth (%)
- α = constant
- X_1 = Education (Number of Schools) (%)
- X_2 = Health (Number of Health Facilities) (%)
- et = error term

IV. Results and Discussion

4.1. Classic Assumption Test

The use of the Ordinary Least Square (OLS) assumption in estimating a multiple regression requires the fulfillment of several assumptions, namely the classical assumption: Gauss-Markov (Ariefianto, 2012). Classical assumptions in this study include autocorrelation, multicollinearity, data normality, and heteroscedasticity.

a. Normality Test

Data normality is related to the distribution of a data. Data that has a normal distribution means data whose distribution is perfectly symmetrical. The results of the Eviews application show that in this study all data are normally distributed by meeting the criteria. If the probability is greater than 5% (not significant) then the data is normally distributed.

b. Multicollinearity Test

Multicollinearity Test aims to test whether the regression model found a high or perfect correlation between the independent variables. If there is a perfect multicollinearity between independent variables X 's, then the regression coefficient of variable X cannot be determined and the standard error value becomes infinity. If the multicollinearity between X 's variables is not perfect but high, then the X regression coefficient can be determined, but it has a high standard error value which means the regression coefficient value cannot be estimated correctly (Ghozali, 2013: 77).

Table 1. Multicollinearity Test

Variable	X_1	X_2
X_1	1	0.5395752904324845
X_2	0.5395752904324845	1

Source: Processed Results

The results of the multicollinearity test showed that there was no high correlation value between the independent variables not exceeding 0.90 (Ghozali, 2013:83) so that it was concluded that there was no multicollinearity between the independent variables.

c. Autocorrelation Test

Autocorrelation test to determine whether there is a correlation of variables in the prediction model with changes in time. The Durbin-Watson value in the table is 1.563429. This value means that there is no autocorrelation in this regression model.

d. Hypothesis testing

Based on the results of hypothesis testing conducted for this study, the following results were obtained:

Table 2. Hypothesis Test Results

Test Type	Model	df	F	Sig.
F Uji test	Regression	2	3,795	.04b
	Residual	14		
	Total	16		
t test	Variable	Unstandardized	t	Sig.
	(Constant)	567,654	4.022	.001
	Educational Facilities (X ₁)	257,879	-3,894	.002
	Health Facilities (X ₂)	9,531	3,264	.000
R Square (R ²)		Adjusted R Square (Adj. R ²)		
Coefficient of Determination	0.687	0.543		

Source: Data processed, 2021

The coefficient of determination shows the proportion of variation in the dependent variable (y) which can be explained by variations in the independent variable (x). The value of R² always lies between 0 and 1. R² is a measure of model fit (model fit). The value of R² is 0.687, thus the variation in the variable Educational Facilities and Medical facility explains 68.7% of the variation in Papua's economic growth, the remaining 31.3% is explained by other variables outside the model.

Based on the results of the F statistical test as a simultaneous test in table 2 above, it can be seen that the value of sig. of 0.04 where this value is smaller than the error level (error) of 0.05 so it can be concluded that the variable number of health facilities (X₁) and educational facilities (X₂) simultaneously affects the variable economic growth of Papua Province (Y).

Likewise, the t statistical test or partial test produces the data in table 4, while from these results it can be concluded as follows:

1. Educational facilities variable (X₁) obtained a t-stat value of -3,894 with sig value. of 0.002, which means that the Education facilities variable (X₁) has a negative and significant effect on the economic growth of Papua Province
2. Health facilities variable (X₂) obtained a t-stat value of -0.231 with a sig value. of 0.003 which means that the Health facilities variable (X₂) has a negative and significant effect on the economic growth of Papua Province

4.2. The Effect of Educational Facilities (X₁) on Economic Growth (Y)

The results of the partial test (t test), that the existence of educational facilities (X₁) obtained a t-count value of -3.894 with a probability of 0.002. That is, the variable education facilities have a significant effect on the economic growth of Papua Province. Judging from the sign of the coefficient that is positive (+), it means that there is a positive

relationship between educational facilities and economic growth. This indicates that: (1) a positive sign in the coefficient indicates a positive relationship between education and economic growth, (2) The more educational facilities, the more economic growth will be.

However, it is not clear which factor emerged first, whether the development of education led to economic growth or the other way around. Educational growth affects economic growth and vice versa, economic growth affects educational growth (Bowles and Gintis 1976, Adiwikarta 1988, Saripudin 2005). In our development policy, we use the assumption that the success of development in the economic sector can be used for development in other fields, including education.

According to Lise Pranessy, the theory of human capital which is the actualization of Abraham Maslow's motivational theory can be applied with the condition that there are high-tech resources efficiently and human resources that can utilize existing technology. This theory believes that investment in education is an investment in increasing the productivity of society. Investment in education is absolutely necessary, so the government must be able to build a good education facility and system. The government's budget allocation for education is a tangible manifestation of investment to increase community productivity. Development expenditures in the development sector can be allocated for the provision of educational infrastructure and providing education services to the entire community equally. In relation to the general (national) economy, the higher the quality of life of a nation, the higher the level of growth and welfare of that nation. The higher the quality of life / investment in high quality human resources will also have implications for the level of national economic growth. In addition, educational facilities are very important for the achievement of national education goals. Therefore, the construction of schools from the elementary, junior high, and general high schools needs attention from the local government. With the availability of school infrastructure, it is hoped that a quality next generation will be born. The higher the quality of life / investment in high quality human resources will also have implications for the level of national economic growth. In addition, educational facilities are very important for the achievement of national education goals. Therefore, the construction of schools from the elementary, junior high, and general high schools needs attention from the local government. With the availability of school infrastructure, it is hoped that a quality next generation will be born. The higher the quality of life / investment in high quality human resources will also have implications for the level of national economic growth. In addition, educational facilities are very important for the achievement of national education goals. Therefore, the construction of schools from the elementary, junior high, and general high schools needs attention from the local government. With the availability of school infrastructure, it is hoped that a quality next generation will be born. public secondary schools need to get the attention of the local government. With the availability of school infrastructure, it is hoped that a quality next generation will be born. public secondary schools need to get the attention of the local government. With the availability of school infrastructure, it is hoped that a quality next generation will be born.

4.3. Effect of Health Facilities (X_1) on Economic Growth (Y)

The results of the partial test (t-test), that the existence of health facilities (X_2) obtained a t-count value of -3.264 with a probability of 0.000. This means that the health facility variable has a significant effect on the economic growth of the Papua Province. Judging from the sign of the coefficient that is positive (+), it means that there is a positive relationship between health facilities and economic growth.

Health is one of the requirements for the community to carry out activities, especially economic activities. Public health must be supported by the provision of health facilities, for example in the form of health centers that are easily accessible throughout the Papua region. The puskesmas variable with a coefficient of 9.531 means that every 1% increase in the number of health facilities will increase economic growth by 9.531%. This means that development in the health sector greatly affects the output produced. Wahyuni (2009) stated that the results of his research show that infrastructure facilities in the form of health have the greatest level of elasticity in influencing economic productivity.

Health is also the most basic need for every community, without public health it cannot produce a productivity for the region. The economic activity of a country will run if there is health insurance for every resident. Related to the theory of human capital, human capital plays a significant role, even more important than technological factors in spurring economic growth (Setiawan, 2006).

V. Conclusion

Based on the results of research on the influence of infrastructure on economic growth in Papua Province for the period 2006 - 2019, the following results were obtained:

1. From the results of simultaneous calculations, it is known that Education and Health Facilities together have a significant effect on economic growth in Papua Province.
2. In the partial test, Educational Facilities and Health Facilities have a significant positive effect on economic growth.

Suggestion

1. The role of the government is very much needed in the development of the number of school infrastructure for education, for example building more schools and evenly distributed throughout Papua Province
2. It is hoped that regional governments can allocate regional expenditures proportionally between routine consumptive spending and development expenditures that are more aimed at improving people's welfare.

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