

The Effects of Physical Infrastructure Development in Supporting Economic Growth in North Sumatra Province

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ABSTRACT

The development of infrastructure in an area is a very important activity in the context of increasing economic growth. The development of infrastructure such as road, electricity and airport are also the activities that can encourage economic growth. This research was aimed to explain the effect of the construction of road, electricity and airport infrastructure on the economic growth of North Sumatra. This research was conducted by using quantitative research. The data of this study were sourced from BPS North Sumatra and Statistics Main Book starting from 2010-2018. The data was used the time series data with the process of data by using evIEWS 6. The results of this research indicated a positive influence between the development of physical infrastructure such as roads, electricity and airports on the economic growth of North Sumatra.

Keywords: Airport, Economic Growth, Electricity, Infrastructure Roads.

INTRODUCTION

The development in an area or region aims to improve welfare that has a good impact on the area. The development of infrastructure is also a vital development that must be considered to be able to encourage the pace of economic growth. In the study of (Irawan, 2018) said that only infrastructure can increase production. High production will certainly produce a maximum output and will affect economic growth in an area caused by the smooth production process. North Sumatra is one of the areas which is as the object of research. North Sumatra is one of the provinces in Indonesia and it is the fourth largest province which is also nicknamed the metropolitan city. In the book the failure of development by (Caniago, 2001) it is said that residents in big cities will experience a high level of consumerism that will spur economic growth. High levels of consumption must be followed by financial ability to be able to consume. The ability of the community is certainly supported by economic activities that can achieve this. Good economic growth is certainly supported by good infrastructure as well.

North Sumatra with its vast area and abundant natural resources will certainly require adequate infrastructure that can facilitate smooth activities. Infrastructure development can encourage economic growth. In the book of the failure of development by (Caniago, 2001) it is said that the policy of infrastructure development must be clear, that in a certain period of time it will have a real impact on the development of the whole society. (Lestari, 2019) said that increasing infrastructure development would increase economic growth. This is also in line with research (Ma'ruf & Daud, 2013) which says that there is a positive correlation between economic growth and infrastructure variables. Clear infrastructure can have a positive impact on economic

growth. Road, electricity and airport infrastructure also have a positive impact on economic growth in North Sumatra. in his research (Tarigan & syumanjaya 2013) in his research results revealed that the quality of road infrastructure has a positive effect on the system of problems of agricultural products at glare. From the results of research that has been found, the quality of road infrastructure is very positive effect on the system of problems of agricultural products in the glare, if the road infrastructure in Dolok Silau is not considered by the local government it will certainly have an impact on the smooth access in the area, thus economic growth will also become a slowdown in growth.

North Sumatra Province is also famous for its abundant natural resources such as: palm oil, rubber, coffee, vegetables from Berastagi and other natural resources. Ready to consume goods are also half-finished goods that still require further processing to complete the goods that will be distributed to traders or factories. In such a case the role of road infrastructure is to be able to expedite the flow of transportation in distributing the goods, so that it will affect economic growth in North Sumatra.

As we know that electricity infrastructure is also very big influence for economic growth. In the public economy book (Suparmoko, 2002) it is said that electricity is a basic need of the community. In this case, the need for electricity must be balanced with population growth which is increasing every year, because by being able to balance the demand for electricity with the power provided by the government will have a very positive impact on economic growth because there are no obstacles encountered related to the need for power electricity. (Atmaja & Mahalli, 2015) said that electricity infrastructure is an important part in encouraging economic growth that will later provide welfare for the community. (Sumadiasa, Trisnawati, & Wirathi, 2016) in their research results said that electricity infrastructure has a positive and significant influence on the GRDP growth.

GRDP in North Sumatra has increased from year to year, of course this is offset by increased public income. An increase in GRDP certainly there are factors that affect, including road infrastructure, electricity and the airport. The airport is a transportation through air flights. This flight will greatly provide the distance traveled between one region or between regions compared using land transportation. Airport is also one of the factors that can increase economic growth in a region. (Indah & Ma'rif 2014) in the results of his research said that the existence of the Kualanamu airport greatly affects the socio-economic changes and physical changes in the surrounding area. The existence of the Kuala Namu airport which is of an international standard will certainly attract the attention of foreign tourists or even investors to conduct business relations in North Sumatra. In a study (Kameswara, 2017) that airports with international / domestic service scale have a greater influence than airports with only domestic service scales on economic growth.

RESEARCH METHOD

This research was used secondary data, which datas were obtained from the North Sumatra BPS and Statistics Main Book starting from 2010-2018. The research of this study was the influence of infrastructure for economic growth in North Sumatra. The method used in this research was quantitative, namely by analyzing the variables that

enter the object of research, as well as data analysis using time series with data processing using evIEWS application 6.

RESULTS AND DISCUSSION

The Development of GRDP in the Province of North Sumatera

The GRDP that used in this research is based on the business field which tend to the prevailing price to see the extent of increased economic growth in the Province of North Sumatera.

Table 1. North Sumatera's GRDP by Business Field at Current Prices (billion rupiah)

Year	PDRB
2010	331085237,5
2011	353147591,2
2012	375924139,5
2013	398727142,8
2014	419573308,7
2015	440955852,5
2016	463775464,9
2017	487531231,9
2018	512765628

Source: BPS North Sumatera

Based on the data above, it shows that the development of gross regional domestic product (GRDP) per capita in North Sumatera from year to year always increases. This increase was certainly caused by improvements made both from the government sector and the private sector. With the increase in gross regional domestic product (GRDP) both from the government sector and the private sector, naturally the economic growth of North Sumatera will also increase, with the increase will certainly have an impact in improving the welfare of the people in North Sumatera.

Road Infrastructure

Road conditions that will be examined in this research are the roads that fall into the category of good and moderate which are classified in the length of Regency/City roads according to road surface conditions. Roads are one of the vital infrastructures that people use in carrying out activities. Roads in good condition will certainly provide easy access for people who carry out activities from one place to another or from the district to the urban areas. In such an economic activity the contribution of good access to be able to carry out the process of moving goods in which there will be a transaction process carried out by traders who will later distribute their products to the market or to the company, of course in this case good road conditions will greatly facilitate the production process both between districts and from districts to urban centers. Good road access and smooth production will certainly have a positive impact on economic growth.

Table 2. Length of Regency / City Roads According to Road Conditions (km)

Year	Good/Average
2010	1704,63
2011	2021,08
2012	1713,26
2013	1833,77
2014	1806,37
2015	2237,79
2016	2142,48
2017	2464,02
2018	2437,57

Source: North Sumatra BPS and Statistics Main Book

The data above shows the condition of the roads in North Sumatra from 2010-2018 experienced an increase and a decrease that was not so significant that was analyzed based on good and medium categories. Improved road conditions will certainly contribute well to the North Sumatra production process. A smooth production process will be very good for the economy of citizens, so that it will have a positive impact on the economic growth of North Sumatra. Negative impacts certainly also exist if the condition of the road is damaged so that it will slow down the production process which will later have a negative impact on economic growth, but such a matter must certainly be considered by the government of North Sumatra, because if that happens it will have a negative impact on economic growth. In this study there is a positive relationship between the road infrastructure and the economic growth of North Sumatra but it is not significant at 0.07.

Electricity Infrastructure

Nowadays, it cannot be denied that electricity is a basic need for some groups or even in all circles. Electricity is also an energy that has a very large role in life. A life that is more colorful when there is electricity which transmits it through its energy, which gives light to all levels of society. In the economy of a region or country will be greatly influenced by the presence of electricity. Adequate electricity will affect the production process in places that carry out the production process. If we remember again in this country or even in North Sumatra, there have been rotating power outages, of course this will greatly slow down the economic process which will have an impact on the amount of production which will also be very bad for North Sumatra's economic growth. Because when that happens, many economic activities will stop and of course it will also have an impact on the decline in North Sumatra's economic growth. However, with adequate electrical energy that can meet the needs of the community, it will certainly be very good for economic growth, especially now that it has entered the era of technology 4.0, of course the need for electrical energy will increase. In this case, the government should be aware of this incident so that the government can increase electrical energy to meet community needs. This study found a positive relationship between electricity infrastructure and economic growth with a significance of 0.00.

Table 3. Lots of Electric Energy that Produced and Purchased from Other Units (gwh)

Year	Electricity
2010	7481,55
2011	8199,27
2012	9334,94
2013	9307,64
2014	9604,60
2015	10196,74
2016	11135,96
2017	11744,69
2018	12441,94

Source: BPS North Sumatra

Based on the data presented above it is known that there is an increase from year to year on electricity production. If we compare it with population growth which also has increased from year to year, of course the consumption of electricity will also increase. Based on these data, the government has been able to meet the people's needs for electricity in North Sumatra. This electrical energy is one of the supporting factors in people's economic activities. Of course, this will be very good for the economic growth in North Sumatra if it always experiences an increase. Electricity infrastructure has a positive and significant relationship to North Sumatra's economic growth.

Airport Infrastructure

The airport is one of the supporting infrastructures for the economic growth of North Sumatra. If we look at the distance from a flight with land transportation, of course the time needed will be less so that players engaged in industry or business have enough time to be able to do more with their work which will greatly affect income. Income that has increased will have a good impact on the welfare of the community. Airport infrastructure has a positive relationship to economic growth, but not significant, namely 0.90.

Table 4. Number of International Flights Through Kuala Namu Airport (times)

Year	Arrival (times)
2010	6177
2011	7408
2012	7715
2013	9098
2014	8125
2015	7062
2016	6667
2017	8112
2018	8595

Source: BPS North Sumatra

Based on the data above, it can be seen that the arrival of international flights through Kuala Namu Airport has increased and decreased, as measured by the number of flight

arrivals to North Sumatra from 2010-2018. This aviation relationship is positive for North Sumatra's economic growth, but it is not significant, namely 0.90.

The Analysis of Data

Table 5. The Variable of Processing Data from Eviews 6

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	9342980	4020641	2.323754	0.0266
JALAN	17765.80	9572.604	1.855901	0.0727
LISTRIK	34715.36	1910.312	18.17261	0.0000
BANDARA3	228.3201	1918.617	0.119002	0.9060

Source: Eviews 6

Based on the table above, it is known that the probability value of the road variable shows a positive relationship to economic growth but not significant to economic growth, the probability of electricity shows a positive relationship to economic growth and is significant to economic growth while the probability of the airport also has a positive relationship to growth. economy but not significant to economic growth.

CONCLUSIONS

Based on the results of data analysis that has already obtained and statistical data testing, it is known that road infrastructure has a positive effect for economic growth in North Sumatra, but not significantly, electricity infrastructure has a positive and significant impact on economic growth in North Sumatra, while infrastructure The airport has a positive effect on North Sumatra's economic growth, but not significantly.

These variables are of course vital infrastructure that must be of good quality to be able to increase activities in North Sumatra. Smooth economic activity will certainly have a positive impact on economic growth. In this study several variables have not significantly influenced North Sumatra's GRDP despite having a positive influence on economic growth. In this case, it means that there is still a need to increase the quality of some of the existing infrastructure.

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