Analysis of the influence of ring road infrastructure development on economic growth in the coastal area of Tarakan City

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Abstract. Road infrastructure as an important access in the development of an area. The increasing number of residents around the coast of Tarakan City has made the city government contribute to the construction of a ring road on the north coast to the east coast of Tarakan City, with the hope of providing equitable development for the people. The variables used in the study were road infrastructure development and the community’s economy, with respondents from people in coastal areas using ring road access. The method used is simple regression analysis. The results of this study provide an explanation that the construction of road access has not had a positive impact on the community's economy, this can be seen by the value obtained of 0.3%. So that it explains that the road infrastructure that has been made by the government has not been able to increase the economic income of the community. This is because what people need is transportation that can transport goods and people so that it can increase people’s income.

1. Introduction
Community needs to get access to roads is the main thing in coastal areas such as the construction of road infrastructure, the increase of this development results in the potential for variables that can result in an increase or decrease in the economy of community coastal region, especially the impact on community income. to know this will test the measurement of the impact that occurs from infrastructure improvements, especially road infrastructure. Where not always areas that already have roads as access will be affected resulting in and potentially affecting such factors around the coastal area. Increasing the variables to be the main focus in this study is expected from the results of this study to get a picture that will be conveyed to stakeholders in the city of Tarakan to be reviewed, whether the improvement of this road will facilitate the facilities and infrastructure of the coastal area, especially in the city of Tarakan has an important role in improving the economy in the North Kalimantan region. Many marine products traversed or use road infrastructure dominated by population income can be in the form of fish catches from fishermen and from seaweed farmers who will daily use access roads to deliver sea products to be distributed to distributors in the City of Tarakan. This is in accordance with the potential area of the city of Tarakan mostly surrounded by the sea. While the second position is occupied by farmers. The economic growth in the City of Tarakan is due to: The location of the City of Tarakan is quite strategic, namely the busy transit island for traffic, sea and air. Tarakan City has a very unique and interesting Goegrafi Location. With this in mind, various companies emerged that chose Tarakan City as the business area to be run and various companies that peddled business.
Tarakan Island is located 3°.19’-3°.20’ North Latitude and 117°.34’-117°.38’ East Longitude [1]. The development of an area can be seen from the geographical location where the island is located. Islands surrounded by the sea have the potential to develop areas to maximize natural resources, especially coastal areas [1]

1.1. Aim
The aim of this research is:
1. Analysis to determine the effect of the development of road infrastructure on the economic development of the community in the coastal area of the Tarakan city
2. identification will be carried out to determine the coefficient variables that affect the economy of the community in the coastal area of the Tarakan city

1.2. Benefits of Research
The results of this study are expected to be useful as input to the Government in developing development planning policies, especially in the field of road infrastructure in order to improve the economy of coastal communities. In addition, the results of this research are expected to be one of the empirical studies that can enrich the treasury of science, especially in the field of Civil Engineering in Transportation.

2. Literature Review
2.1. Definition of Infrastructure
[2] define infrastructure as “those Services derived from the set of public work traditionally supported by the public sector to enhance private sector production and to allow for household consumption”. [3] defining infrastructure is not only limited to the economic point of view but also the defense and sustainability of the government. [4] The calculation provides an estimation on the cost per project and
per sector, and then of the cumulative cost at the national, sub-regional, and regional levels. The annual average costs per year are derived from the estimated total cost for the period.

2.2. Road infrastructure
Road infrastructure is a land transportation infrastructure that covers all parts of the road, including complementary buildings and equipment intended for traffic that is on the surface of the land, below the land surface and/or water, and above the water surface, except railroad tracks, lorries, and cable road [5]. Among all transportation facilities, roads are the most crucial to rural development [6]. This may suggest that access to infrastructure and markets allows households to better smooth consumption [7].

2.3. Effect of Road Infrastructure on Economic Benefits
Infrastructure as an input influences aggregate output and is also a possible source in increasing the limits of technological progress derived from the emergence of externalities in infrastructure development [8]. Infrastructure externalities affect production activities by providing accessibility, convenience and the possibility of production activities becoming more productive. This externality is called positive externality. Therefore, there is a simplification of the problem regarding positive externalities caused by infrastructure into the production function. When new infrastructure is installed, especially new transport infrastructure which changes patterns of accessibility within the city, land markets respond. But where redevelopment rather than new development is undertaken, those increases in land value frequently accrue directly to the existing property holders who benefit from the new infrastructure investment [9]. Aside from the effects of infrastructure development on aggregate income growth, another strand of recent literature has examined its effects on income inequality [10].

3. Research Method
The design of this study outlines the impact of road infrastructure development on economic development in the east coast area of Tarakan City. In this study, using a mix method or a mixed method, according to [11] the method intended that the data obtained from through the quantitative approach instrument in this case secondary data with quantitative descriptive analysis models and then the tendency of the findings of the approach is then followed up with qualitative methods namely in-depth interviews. In this study two types of data will be used, namely primary data sources and secondary data sources.

3.1. Operational definitions of variables and indicators
[12] states the operational definition is the determination of the construct so that it becomes a variable that can be measured. The operational definition is as follows:

a. Road infrastructure
Land transportation attributes, among others:
1. Road infrastructure
2. Bridge infrastructure
3. Transportation facilities
b. Community economy
The Community economic attributes can be measured by:
1. Business capital costs
2. number of businesses and assets
3. Income and savings

3.2. Population and Sample
The population taken from the study are all people of the east coast region, especially the ring road that conducts business activities along the road. Determination of the sample of 35 respondents because it is considered sufficient to represent the population and according to the above calculation, namely the entrepreneur. The sample of respondents was carried out using a purposive sampling technique. This
means choosing a sample that has economic business. The sample was chosen based on the criteria of having a trade service business, a small industrial business, a transportation service business, a seaweed farmer business and have a permanent home.

3.3. Data Types and Sources
The type used in this research is subject data. According to [12] Subject data is a type of research data in the form of opinions, attitudes, experiences or characteristics of a person or group of people who are subject to research. The data used are the results of respondents' answers to questions raised by researchers to respondents in the form of interviews, both orally and in writing. In data collection, the required data sources are as follows: [13] Primary Data and Secondary Data. Primary data was directly obtained by researchers through a field study in the form of a collection of questionnaire filling results conducted by 35 respondents who were perpetrators of trading/service activities. Secondary data obtained from data that has been available in government offices and books/journals, and conducting interviews with residents on the coast.

3.4. Data analysis method
Research conducted in this case the data is seen in the questionnaire filled out by the respondent. The questionnaire is qualitative in nature which is then quantified by giving a score (value) using a Likert scale, which is as follows: Strongly agree to be given a value (5), Agree to be given a value (4), Simply agree to be given a value (3), Disagree to be given a value (2) and Strongly disagree with a grade (1). As for knowing the relationship of the variables that have a relationship, then testing the hypothesis with statistical calculations. The method of data analysis uses simple linear regression analysis Data analysis is done by statistically testing the variables with software. The analysis is expected to be used to find out how much influence the dependent variable is with the independent variable. So, a simple regression analysis is used when the number of independent variables is at least 2. So, the regression model in this study is:

\[ Y = a + bX \]  

Information = Y: Community economy, X: Road Infrastructure Development, a: Constant value, b: Regression coefficient

4. Results And Discussion
4.1. Development of Economic Growth in the Tarakan City
This study uses per capita gross regional domestic product based on constant prices to see the extent of economic growth in Tarakan City, because gross regional domestic product based on constant prices is used to determine real economic growth from year to year or economic growth that is not influenced by factors price. In this way, gross regional domestic product shows the extent to which economic activity can result in an increase in income or the welfare of the community in a certain period. Economic growth in the Tarakan City over the last 9 years in the period 2010 to 2019. Gross regional domestic product at constant prices according to the field of business has increased every year. The highest increase in economic growth in the Tarakan City occurred in 2019, amounting to 21.99% [14].

4.2. Development of Road Infrastructure in Tarakan City
Roads are one of the important infrastructures in land transportation. This is because of the strategic function it has, namely as a liaison between one region with other regions. Roads as a link between production centers and marketing, are very useful to improve the economy of a region. Road length data is presented by province, construction authority, surface type and road conditions. The road is very closely related to economic growth because the existence of a factor of production road will continue to run and can improve a good economy. The length of roads in Tarakan City in 2018 is 330,078 meters. Specifically according to road conditions, 55.03 percent are in good condition; 17.91 percent in moderate condition; 9.56 percent in damaged condition; and 17.49 percent are in a heavily damaged
condition [14]. With an increase in road conditions that occur from year to year, production activities will increase so that it gives an influence on economic growth in the Tarakan City.

4.3. Statistical Analysis Results
After processing the data from the questionnaire so that the output of Ms Excel is as follows:

| Table. 1 Regression Statistics |
|---|---|
| Regression Statistics | |
| Multiple R | 0.0538 |
| R Square | 0.003 |
| Adjusted R Square | -0.0273 |
| Standard Error | 2.032 |
| Observations | 35 |

The coefficient of the results of the Regression Statistics proves that the variable road infrastructure capability (X) in influencing the community economic variable (Y) is obtained R-Square 0.003 which means that the value of the effect of the construction of roads on the coast that has been built has a very small effect on the economy of coastal communities east in the city of Tarakan. This will be followed by making a model on Result of Anova.

| Table. 2 Result of Anova |
|---|---|---|---|---|
| Regression | df | SS | MS | F |
| Regression | 1 | 0.396 | 0.396 | 0.096 | 0.759 |
| Residual | 33 | 136.290 | 4.13 | |
| Total | 34 | 136.686 | |

The regression model test shows a significance F of 0.759 where the value is greater than 0.05 (alpha) so that the resulting model is inadequate. This model will be presented in the form of a simple regression in the arrangement of coefficients.

| Table. 3 Result Coefficients |
|---|---|---|---|---|
| Coefficients | Standard Error | t Stat | P-value | Lower 95% |
| Intercept | 19.384 | 3.485 | 5.562 | 3.51E-06 | 12.294 |
| Infrastruktur (X) | 0.052 | 0.167 | 0.309 | 0.759 | -0.288 |

Regression Equation \( Y = a + bX \); So from the calculations obtained the following model \( Y = 19.38 + 0.05X \). With this equation, it is obtained a constant of 19.38, meaning that the variable coefficient value is 19.38 plus a regression coefficient of X of 0.05, which states that each additional 1 unit value for variable X, the participation value increases by 0.05. The results of this study indicate that road construction carried out by the government has not been able to increase community income in coastal areas. From data processing, it is known that the relationship between variables only produces a value of 0.003 and the linear regression model shows that the model is inadequate. The results of this study can be an input that there are other variables that can support the economy of coastal communities besides infrastructure, for example mass transportation.
Table. 4 Result population level

|            | Lower 95.0% | Upper 95.0% |
|------------|-------------|-------------|
| Intercept  | 12,294      | 26,474      |
| Infrastruktur (X) | -0.288      | 0.391       |

Based on this, the Excel output shows that with a confidence level of 95%, the regression coefficient for road infrastructure is 0.05, in fact at the population level it will range between (-0.288) to (0.39).

5. Conclusion
The magnitude of the ability of the road infrastructure variable (X) in influencing the economic variables of the community (Y) of 0.3%. The regression model $Y = 19.38 + 0.05X$ is made inadequate and cannot be used. Road infrastructure development must be adjusted to activities that support the improvement of the people's economy, The government must provide public transportation to help transport people and sea products. Existing road access is less than the maximum because the distance between houses is far from the main road.

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