

Analysis of The Effect of Economic Growth, Literacy Rate, Life Expectation and Open Unemployment Rate on Poverty in Nias Islands

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Abstract

This study aims to examine and analyze the effect of economic growth, literacy rates, life expectancy rates, and open unemployment rates on poverty in the Nias Islands. The type of data used in this study is a type of quantitative data with secondary data. The objects of this research are four districts and one city in the Nias Islands. This study uses panel data (Pooled Data), which combines Time Series and Cross Section data for 12 years, namely from 2010-2021. The variables used are Economic Growth, Literacy Rate, Life Expectancy Rate, Open Unemployment Rate, and Poverty. The analytical method in this study uses the Fixed Effect Model (FEM), using E-views 10 as an estimation tool. The estimation results show that Economic Growth has a negative and significant effect on Poverty, Literacy Rate has a positive and insignificant effect on Poverty, Life Expectancy has a negative and significant effect on Poverty, Open Unemployment Rate has a positive and significant effect on Poverty. Then there is a relationship between Economic Growth, Literacy Rate, Life Expectancy, and the Open Unemployment Rate with Poverty of 92.17% while the remaining 7.83% is explained by other variables not included in the model.

Keywords life expectancy, literacy rate, poverty, economic growth, and open unemployment rate

INTRODUCTION

Poverty is a fundamental problem faced by developing countries. Nurwati (2008) believes that poverty is a problem that is always faced by humans. The problem of poverty is indeed as old as human life itself, and its impact touches every aspect of human life. In other words, poverty is a global social problem, meaning that poverty has become a global concern and exists in all countries, although the impact of poverty varies.

Indonesia is one of the developing countries that cannot escape the problem of poverty. The problem of poverty experienced by Indonesia is shown by the number of poor people from year to year as presented in the following figure.

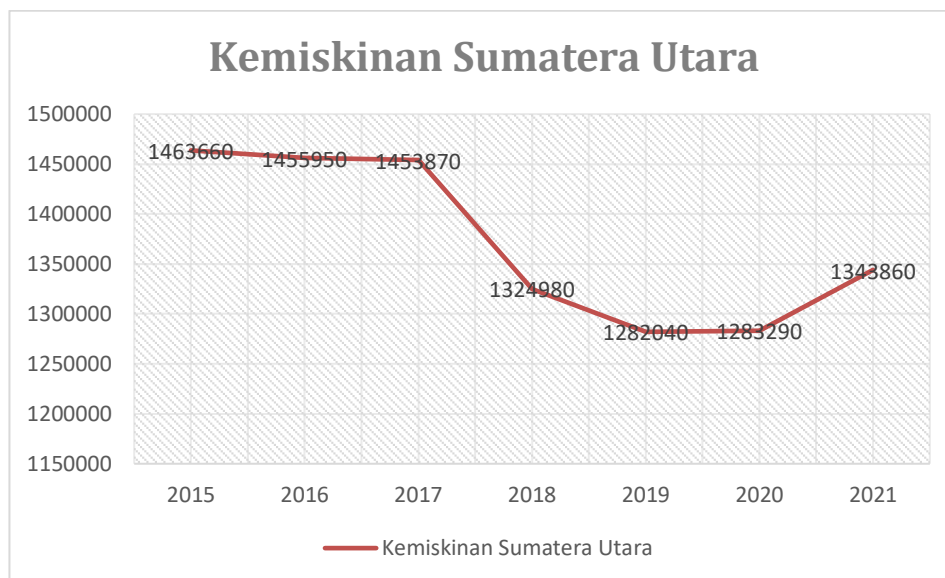


Source: Central Bureau of Statistics

Figure 1.1 Total Poor Population in Indonesia for the 2015-2021 period



Poverty is also a fundamental problem faced by a region. North Sumatra is one of the provinces in Indonesia where the problem of poverty is also experienced by the Province of North Sumatra.



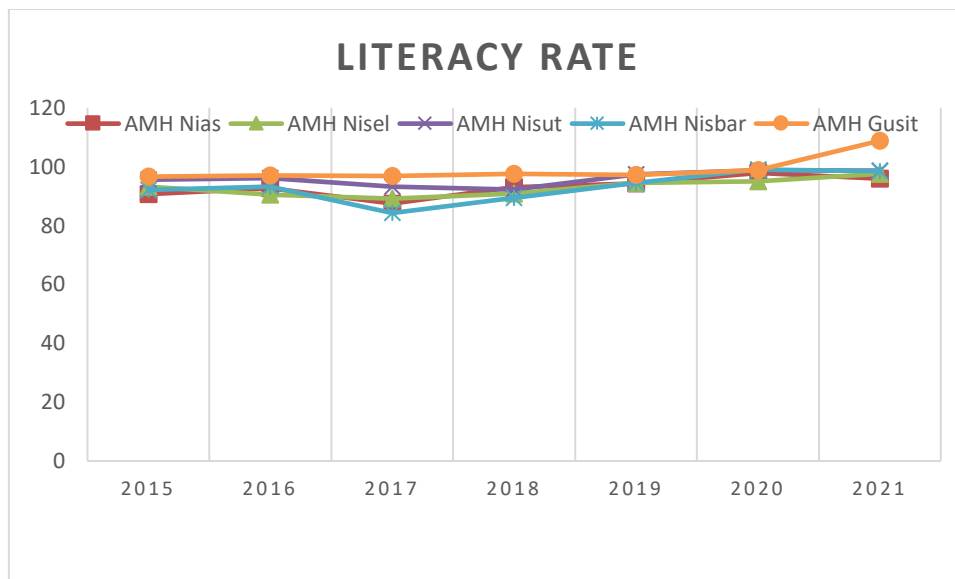
Source: Central Bureau of Statistics

Figure 1.2 Number of Poor Population in North Sumatra Province 2015-2021 Period

From BPS data for 2015-2021 it shows that the number of poor people in North Sumatra Province has decreased from year to year. The highest decline in poverty occurred from 2017 to 2018 of 1,453,870 people, down to 1,324,890 people. When compared with the number of poor people in 2019 of 1,282,040 people, in 2020 the number of poverty has increased by 1,283,290 people. And in 2021 the population will increase again to 1,343,860 people.

In general, economic growth is considered to be able to reduce poverty, but in practice this cannot be done in all regions, because there are differences in each region. Income distribution, population, and urbanization have important links in determining the impact of economic growth and poverty reduction (Hasan and Quibria 2002). According to BPS data, economic growth in 4 districts 1 city in the Nias Islands in 2015-2021 experienced a fluctuating trend as presented in the figure below.

The relationship between economic growth and literacy rates is that the higher the economic growth in an area, the more it will affect the economy of the people in that area which might encourage an increase in people's desire to improve their lives through education. Literacy rate is one of the indicators in reducing the amount of poverty in an area. A high literacy rate indicates the existence of an effective basic education system and/or literacy program that will enable a large proportion of the population to acquire the ability to use the written word in everyday life and continue learning (Statistics Indonesia). According to BPS data, the literacy rate in 4 districts and 1 city in the Nias Islands in 2015-2021 is as follows:

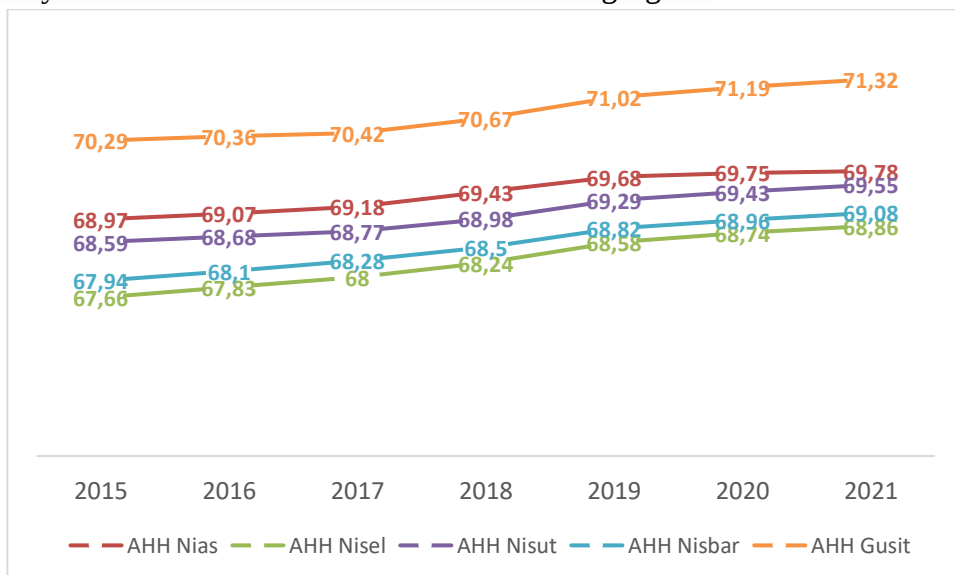


Source: Central Bureau of Statistics

Figure 1.4 Literacy Rate in the Nias Islands for the 2015-2021 period

From the figure above it is known that the lowest literacy rate was found in West Nias Regency, which was 84.22% in 2017, meaning that around 84% of the population of West Nias in 2017 could read and write Latin letters or other letters.

The higher the life expectancy of the community, the lower the number of poor people will be. This is proven by the longer a person's age indicates that a person is able to make ends meet, is able to pay for his own treatment when he experiences a decline in health. Life expectancy is the average age that a person can reach from birth. According to BPS data, life expectancy for 2015-2021 can be seen in the following figure:



Source: Central Bureau of Statistics

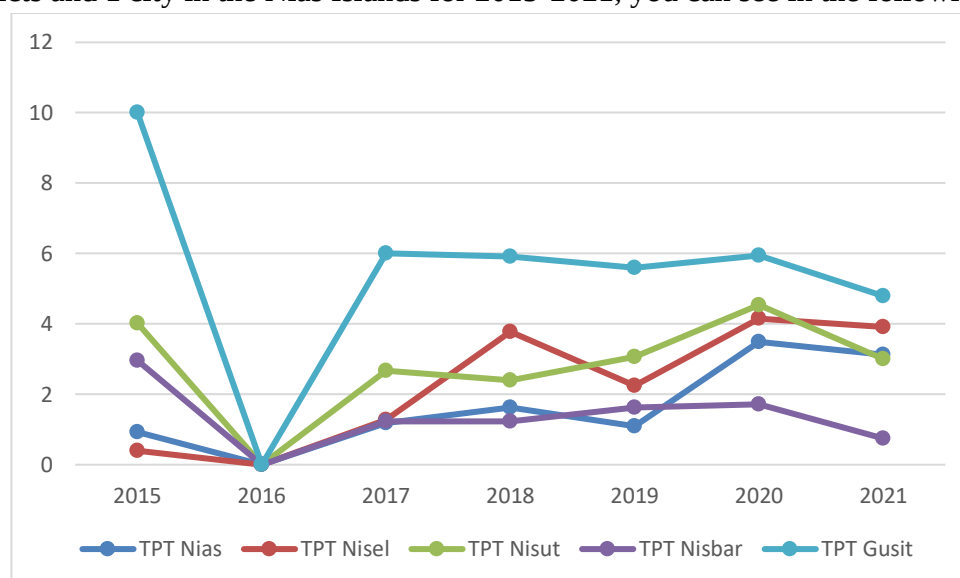
Figure 1.5 Life Expectancy in the Nias Islands for the 2015-2021 period



From the above data it is clear that life expectancy in 4 districts 1 city in the Nias Islands has increased every year, and among the regencies and cities in the Nias islands the life expectancy in Gunungsitoli City is still quite high at around 71.19 years when compared to other districts who are still under 70 years old.

The open unemployment rate has an influence on poverty. Unemployment can reduce people's income which in turn reduces the level of prosperity that a person has achieved, this can increase the chances of being trapped in poverty because they have no income.

The Open Unemployment Rate is the percentage of the number of unemployed to the total labor force (Central Bureau of Statistics). For data on the Open Unemployment Rate in 4 districts and 1 city in the Nias Islands for 2015-2021, you can see in the following figure:



Source: Central Bureau of Statistics

Figure 1.6 Open Unemployment Rate in Nias Islands for the 2015-2021 period

From the above data it is known that the highest open unemployment rate occurred in 2015 in Gunungsitoli City, which was 10%. When compared to other districts, the city of Gunungsitoli still has a high open unemployment rate every year.

METHOD

Research Scope

The research was carried out in 4 regencies and 1 city in the Nias Islands, and the time of the research was carried out from 2010 to 2021. The entire data used in this research is secondary data obtained from the results of systematic recording in the form of time series and cross section data. Source of data obtained from BPS publication results.

Types and Sources of Data

The type of data in this study is secondary data in the form of time series and cross section data. The data used is in the period 2010-2021 (12 years). The data collected is secondary data sourced from the Central Bureau of Statistics and other sources, namely

journals and the results of previous studies. Other data that supports this research, from library book sources and also websites.

Operational Definition

In this study there is one dependent variable, namely Poverty and four independent variables, namely Economic Growth, Literacy Rate, Life Expectancy Rate, and Open Unemployment Rate. The operational definitions and measurement methods for each variable will be explained as follows:

Poverty

Poverty is the inability of a person to fulfill his life needs both the needs of clothing, food and shelter. The data used in this study is data on the number of poor people as measured in units of people.

Economic growth

Economic Growth is an increase in the production of goods and services from year to year. The data used in this study is economic growth as measured by percent.

Literacy Rate

Literacy rate is the ratio of the population aged 15 years and over who has the ability to understand reading and writing. The data used in this study is the literacy rate as measured by percentage.

Analysis Model

Descriptive Statistical Analysis Method

Data analysis was carried out using descriptive statistical analysis methods, namely by collecting, processing, and interpreting the data obtained so as to provide correct and complete information for solving the problems encountered. Descriptive statistics provide an overview or description of each variable seen from the average value (mean), standard deviation, variance, maximum, minimum, sum, range, kurtosis, and skewness (Ghozali, 2013). The results of the average value (mean) show an overview of the data without showing differences from one another in the data set. The results of the standard deviation, variance, maximum, and minimum will show the results of the analysis of the dispersion of each variable. While the results of skewness and kurtosis will show how the variables are distributed. The results of the variance and standard deviation will show the variable's deviation from the average value.

Determination of the Estimation Model between the Common Effect Model (CEM), Fixed Effect Model (FEM) and Random Effect Model (REM) with the Chow Test, Hausman Test



In determining the use of the three panel regression estimation methods, several tests are used which method is good for data processing, namely by using the Chow Test, Housman Test and Lagrange Multiplier Test.

Chow Test (FEM Vs CEM)

Test Chow done with criteria testing:

H0 = CEM

H1 = _ FEM

Decision in test chow:

FEM selected if the value is Cross-Section Chi Square < 0.05, refuse H 0

CEM selected If mark Cross-Section Chi Square > 0.05, accept H 0

RESULTS AND DISCUSSION

Descriptive statistics

This study uses secondary data. The secondary data used was obtained from the Central Statistics Agency of North Sumatra in 2010-2021. Using data on economic growth, literacy rates, life expectancy rates, open unemployment rates, and poverty in 4 districts and 1 city in the Nias Islands. The data used for this study is panel data, which is a combination of time series data from 2010-2021 and cross sections taken from 4 districts and 1 city in the Nias Islands.

Table 4.2 Descriptive Statistics

	POVERTY	GROWTH	AMH	ahh	TPT
Means	35228.67	4.810667	92.26950	68.82300	3.088667
Median	33295.00	5.035000	93.04000	68.75500	2.690000
Maximum	60100.00	6.980000	108.7600	71.32000	1000000
Minimum	21750.00	0.380000	78.94000	66.82000	0.150000
std. Dev.	12742.22	1.590195	5.246438	1.113059	2.250481

Source: E-views (Data processed)

Based on table 4.2 above, the highest Poverty variable value is 60,100 people, namely South Nias Regency in 2010. The lowest Poverty variable value is 21,750 people, namely West Nias Regency in 2021. The average value of the Poverty variable is 35,228 people, and the median value of the variable Poverty is 33,295 people. The highest Economic Growth variable value was 6.98%, namely Nias Regency in 2011. The lowest Economic Growth variable value is 0.38%, namely Gunungsitoli City in 2020. The average value of the Economic Growth variable is 4.81%, and the median value of the Economic Growth variable is 5.03%. The highest literacy rate variable value is 108.76%, namely Gunungsitoli City in 2021. The lowest literacy rate variable value is 78.94%, namely South Nias Regency in 2014. The average value of the literacy rate variable is 68.82%, and the median value of the Literacy Rate variable is 68.75%. The highest life expectancy variable value is 71.32 years, namely Gunungsitoli City in 2021. The lowest life expectancy variable value is 66.82 years,

namely South Nias Regency in 2010. The average value of the life expectancy variable is 68.82 years, and The median value of the variable Life Expectancy is 68.75 years.

The variable value of the highest Open Unemployment Rate was 10%, namely Gunungsitoli City in 2015. The lowest variable value was 0.15%, namely Nias Regency in 2012. The average value of the Open Unemployment Rate variable was 3.08%, and the median value of the Open Unemployment Rate Variable by 2.69%.

Panel Data Model Estimation

The panel data regression model estimation method is carried out through three approaches, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). Of the three models, the best model will be used in the analysis. To find out the best model, the Chow test and Hausman test were carried out.

Chow test

The Chow Test was carried out with the aim of comparing or choosing which model is the best between the Common Effect Model and the Fixed Effect Model, this can be seen in table 4.3 below:

Table 4.3 Chow test

Redundant Fixed Effects Tests

Pool: DATA_PANEL

Test cross-section fixed effects

Effect Test	Statistics	df	Prob.
Cross-section F	106.233713	(4.51)	0.0000
Chi-square cross-sections	134.007321	4	0.0000

Source: E-views (Data processed)

Probability value (Prob.) for Cross-section F. If the value is > 0.05 then the selected model is the Common Effects model, but if the value is < 0.05 then the selected model is Fixed Effects. The table shows that the Prob. The cross-section F is 0.0000 with a value < 0.05 so it can be concluded that the fixed effects model is more appropriate, so accept H1, namely the fixed effects model is more appropriate than the common effect model.

Hausman test

The Hausman test was carried out with the aim of comparing/choosing which method is best used between the fixed effect model or the random effect model, this can be seen in Table 4.4 below:



Table 4.4 Hausman Test
 Correlated Random Effects - Hausman Test
 Pool: DATA_PANEL
 Test cross-section random effects

Test Summary	Chi-Sq. Statistics	Chi-Sq. df	Prob.
Random cross-sections	424.9 34851	4	0.0 000

Source: E-views (Data processed)

Probability value (Prob.) *Cross-section random*. If the value is > 0.05 then the selected model is *Random Effect*, but if < 0.05 then the selected model is *Fixed Effect*. In table 4.4 it can be seen that the Prob. *Cross-section random* of 0.0000 whose value is < 0.05 so it can be concluded that the *Fixed Effect Model* is more appropriate than the *Random Effect Model*.

Based on the results of the *chow test* and the *Hausman test*, it can be concluded that the best model for estimating the effect of economic growth, literacy rate, life expectancy rate, and open unemployment rate on total poverty in 4 districts 1 city in the Nias Islands is the *Fixed Effect Model*.

Detection of Deviations from Classical Assumptions

Normality Detection

Normality test aims to test whether the residual value in the regression model has a normal distribution or not.

The hypothesis used is:

H0 : Data is normally distributed

H1 : The data is not normally distributed

If the results of Prob. JB > 0.05 , then H0 is rejected

If the results of Prob. JB < 0.05 , then H0 is accepted

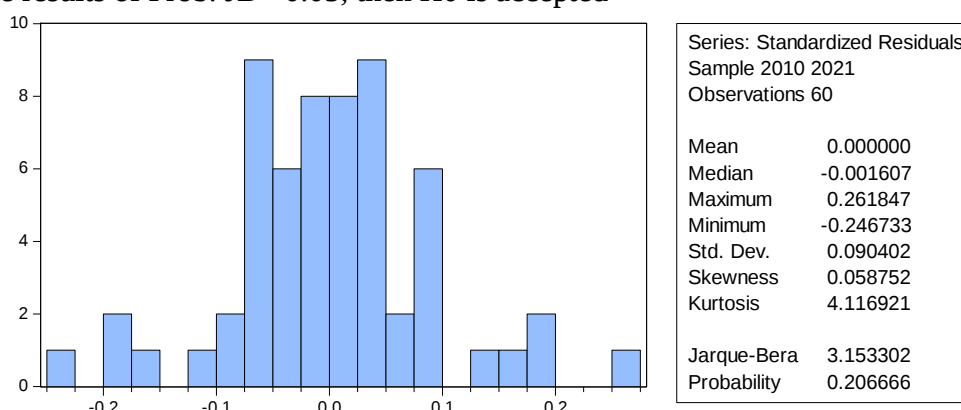


Figure 4.7 Normality Detection

Based on the normality detection result image above, the results show that the probability value is 0.206666 which is more than $\alpha = 5\%$ or 0.05, which means that the data is normally distributed.

Analysis of the Effect of Literacy Rate on Poverty

Based on the results of the regression shows that the coefficient value of the Literacy Rate is 0.007 with a probability of 0.153. Probability > 0.05 means Literacy Rate has no significant effect on Poverty. The regression coefficient value of 0.007 indicates that if the Literacy Rate in 4 Regencies and 1 City in the Nias Islands increases by 1% then Poverty will increase by 0.007%.

The results of this study have a positive influence indicating that in the Nias Islands literacy rates only guarantee the continuity of knowledge of reading, writing and arithmetic but do not change the perspective in looking for work, even though literacy rates increase, poverty also increases. The high literacy rate in the Nias island community also does not guarantee escape from poverty, this is indicated by the Nias island community preferring to work outside the Nias islands (migratory) because they think that if they live and settle in the Nias islands there is nothing to develop and develop. exercise to increase revenue. The people of the Nias Islands also prefer to go abroad because they are attracted to the wages offered in the overseas areas.

The results of this study have no significant effect, indicating that to avoid poverty it is not enough to have the ability to read and write. Reading and writing skills that are not accompanied by skills and productivity will not be able to increase productivity. High productivity can increase welfare which is able to release from the bondage of poverty.

The results of this study are in accordance with research conducted by Anggadini Fima (2019), examining the effect of life expectancy, literacy rates, open unemployment rates and per capita gross regional domestic income on poverty in districts/cities in Central Sulawesi province which states that literacy is correlated positive and not significant to poverty in Central Sulawesi.

Analysis of the Effect of Life Expectancy on Poverty

Based on the results of the regression shows that the coefficient value of Life Expectancy is -0.151 with a probability of 0.001. Probability < 0.05 means Life Expectancy has a significant effect on Poverty. The regression coefficient value is -0.151 indicating that if the life expectancy in 4 districts and 1 city in the Nias Islands increases by 1% then poverty will decrease by 0.151%.

The results of this study are in accordance with research conducted by Dores Edi (2014), examining the effect of literacy rates and life expectancy on the number of poor people in the province of West Sumatra which states that life expectancy has a negative and significant effect on the number of poor people in the province of West Sumatra.



Analysis of the Effect of Open Unemployment Rate on Poverty

Based on the regression results show that the coefficient value of the Open Unemployment Rate is 0.012 with a probability of 0.199. Probability > 0.05 means that the Open Unemployment Rate has no significant effect on Poverty. The regression coefficient value of 0.012 indicates that if the Open Unemployment Rate in 4 Regencies and 1 City in the Nias Islands increases by 1% then Poverty will increase by 0.012%.

The results of this study have no significant effect, indicating that the Open Unemployment Rate occurs not only because a person is unable to compete for a job but rather the choice of each person who chooses not to work for reasons of job opportunities that exist but are not in accordance with someone's scientific discipline. Both the job and the job are low relative to their level of education and these people act this way because they have other resources to solve their financial problems.

The results of this study are in accordance with research conducted by Mukhtar, S., Saptono, A., Arifin, AS (2019), examining the Analysis of the Effect of the Human Development Index and the Open Unemployment Rate on Poverty in Indonesia which states that the open unemployment rate has an effect and is not significant on poverty in Indonesia.

The results of this study indicate that of the 4 districts in the Nias Islands, West Nias District is the District with the highest number of poor people. This is caused by the lack of human resources in managing existing resources in West Nias Regency. Guidance and empowerment for farmers and fishermen were not carried out. Health services, minimal quality of education, limited access to roads and bridges are also factors in increasing poverty in West Nias. Nias Regency is one of the 4 regencies in the Nias Islands which can be said to be more advanced. It is evident that the poor population in Nias Regency is the lowest when compared to other districts, namely 19,771 index. Access to goods and services from Nias district to the center of Gunungsitoli City, supported by good road access, makes Nias district more efficient in carrying out commodity trading activities.

When compared with Nias Regency, Gunungsitoli City is the only area in the Nias Islands that has the least amount of poverty. Even though it was only inaugurated on November 26, 2008, the city of Gunungsitoli is experiencing very fast development. The economy is moving so fast because it is supported by sea and air access which is close to the center of Gunungsitoli city. Access to roads and bridges in the Gunungsitoli city area is good enough to allow agricultural and fishery commodities to be traded directly in the market. Health facilities in the form of a Regional General Hospital and Community Health Center located in Gunungsitoli City also add to their advantages compared to other districts in the Nias archipelago.

The results of this study are also different from other studies because the basis for the problem of poverty in the Nias archipelago as a whole is the lack of human resources capable of managing natural resources and the commodities of the Nias islands are goods that have added value.

CONCLUSION

Based on the results of the analysis and discussion that has been carried out, the following conclusions are obtained:

1. The test results show that economic growth has a negative and significant effect on poverty in 4 districts and 1 city in the Nias Islands for the 2010-2021 period
2. The test results show that literacy rates have a positive and insignificant effect on poverty in 4 districts and 1 city in the Nias Islands for the 2010-2021 period
3. The test results show that literacy rates have a negative and significant effect on poverty in 4 districts and 1 city in the Nias Islands for the 2010-2021 period
4. The test results show that the Open Unemployment Rate has a positive and significant effect on Poverty in 4 Regencies and 1 City in the Nias Islands for the 2010-2021 Period.

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