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Analysis Of The Influence Of The Number Of Industrial Companies, The Number Labor, Total Production Of Quick/Mining And Area Plantation And Fishery Area On GRDP Aceh Province

Anastasya Salsabilah[1],Naurah Zahwa[2]

[1,2]Student, Samudra University

Abstract— GRDP (Gross Regional Domestic Product) is one of the important indicators to determine the economic condition of a region in a certain period. GRDP growth and increase is an indicator of the success of regional development which can be categorized into various economic sectors, namely: Agriculture, Mining and excavation, Electricity, gas and clean water, processing industry, hotels and restaurants, commercial buildings, transportation and communications. , leasing and corporate services, finance, and other service sectors. From the results of the analysis obtained from the Gross Regional Domestic Product data based on data from the province of Aceh with 23 districts/cities, it can be concluded that the multiple linear regression model for analyzing economic growth in Aceh Province is = 4.413, 570 + 0.044$X3$ +ε. From the results of the analysis.

Keywords— Economic Sectors, GRDP , Aceh.

I. INTRODUCTION

Regional development as an integral part of national development is a process planned changes in an effort to achieve goals and objectives to improve community welfare which involves all existing activities through community support in various sectors. Regional development must be in accordance with the conditions potential and aspirations of the growing and developing community. When implementation of priority regional development is not in accordance with the potential possessed by each region, the utilization of existing resources becomes less than optimal. This situation can resulting in a slow process of economic growth in the area concerned (Prishardoyo, 2008).

In the process of economic growth in an area can be seen by using the rate of increase in GRDP (Gross Regional Domestic Product), where the level of The development of GRDP per capita achieved by the community is often a measure of success a region in achieving the ideals of creating economic development. GDP (Gross Regional Domestic Product) is one of the important indicators to determine the condition economy in an area in a certain period (Romi, 2018). Growth and an increase in GRDP is an indicator of the success of regional development that can be categorized into various economic sectors namely: Agriculture, Mining and quarrying, Electricity, gas and clean water, Processing industry, hotels and restaurants, buildings trade, transport and communications, leasing and corporate services, finance, and other service sectors.

The purpose of this study is to determine the magnitude of the influence of the number of industrial companies, number of workers, production of excavation/mining and area plantations and fisheries to the GRDP (Gross Regional Domestic Product) in Aceh Province.

Corresponding Author: Naurah Zahwa

II. Literature Review

A. Multiple linear regression

Regression analysis forms a straight line equation (linear) and uses the equation is to estimate the value of a dependent variable (Y) if the value of the independent variable (X) associated with it has been determined. Multiple linear regression analysis is a regression analysis in which the dependent variable Y is determined by at least two independent variable X and each variable X and variable Y only has the power of one (linear). In general, the regression equation where the dependent variable (Y) is a value that predictable, then the equation:Differential Equation.

Regression equation of two independent variables:

$\hat{Y} = \alpha + b_1X_1 + b_2X_2$

Regression equation of three independent variables:

$\hat{Y} = \alpha + b_1X_1 + b_2X_2 + b_3X_3$

Regression equation for k independent variables:

$\hat{Y} = \alpha + b_1X_1 + b_2X_2 + b_3X_3 + \cdots + b_kX_k$

III. Results And Discussion

With secondary data obtained from the Central Statistics Agency (BPS) of East Java, it will be analyzed how the relationship between the variable Gross Regional Domestic Product (Y), with the Total Industrial Company (X_1), Number of Labor (X_2), , and Fishery and Plantation Area(X_3) as the data in table I below.

Table I. Grdp Data, Number Of Industrial Companies, Manpower, And Fishery Areas

And Plantations Of Aceh Province In 2019

2019					
NO	District/City	GRDP (billion)	Amount Company Industry	Total Power Work (Person)	Fishery Area and plantations (ha)
1.	Simelue		1		
2.	Aceh Singkil		6		
3.	Aceh Selatan		0		
4.	Aceh Tenggara		0		
5.	Aceh Timur		0		
6.	Aceh Tengah		0		
7.	Aceh Barat		2		
8.	Aceh Besar		11		
9.	Pidie		1		
10.	Bireun		4		
11.	Aceh Utara		5		

12.	Aceh Barat Daya		1		
13.	Gayo Lues		1		
14.	Aceh Tamiang		10		
15.	Nagan Raya		7		
16.	Aceh Jaya		0		
17.	Bener Meriah		0		
18.	Pidie Jaya		2		
19.	Banda Aceh		1		
20.	Sabang		2		
21.	Langsa		4		
22.	Lhokseumawe		3		
23.	Subulussalam		3		

After collecting data, the next step is to test assumptions classical which is the classical assumption test consists of normality test, linearity test, test heteroscedasticity, multicollinearity test, and autocorrelation test.

a). normality test

The normality test was carried out with the aim of knowing whether the residuals studied were normally distributed or not by using analysis using statistical tests that Shapiro-Wilk test analysis. Which is where the test uses the Shapiro Wilk Test

intended for data <50 samples and is used to determine the distribution of data random a small sample. The decision making is based on the hypothesis and the following criteria:

Hypothesis statement:

H_0 : Data follow normal distribution

H_1: Data do not follow normal distribution

Decision making criteria:

- H_0 accepted if the value of significance (Sig.) > 0.05 which can be interpreted that the data is normally distributed
- H_1 rejected if the value of significance (Sig.) < 0.05 which can be interpreted that the data are not normally distributed. Which in this case is the assumption accepted.

Table II. Shapiro-Wilk Test Normality Test Results

Tests of Normality

	Shapiro-Wilk		
	Statistic	df	Sig
Total Industrial	.82	23	.05
Total Labor	.69	23	.07
Fishery Area and Mining	.960	23	.471
GRDP	.88	23	.10

a. Lilliefors Significance Correction
*. This is a lower bound of the true significance.

Based on Table II the results of the normality test using the Shapiro Wilk Test obtained that the significance value (Sig.) of each variable 0.05 which can be concluded that each variable is normally distributed, which means that there are no outliers in the data.

b). Llinearity Test

The linearity test was carried out to determine the relationship between the variables has a linear relationship which in this case the linearity test of the regression line can be seen based on the test results with SPSS in Table III which can then be interpreted based on the following hypotheses and criteria.

Hypothesis statement:

H_0: Linear regression model

H_1: Non-linear regression model

Decision making criteria:

- The decision-making criteria using the coefficient of significance(Sig.) by means of "If the value of Sig. on Deviation from Linearity > 0.05 then accepted,opposite rejected".

Table III. Linearitas *Anova Test*

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
PDRB * Jum Perusahaan Industri	Between Groups	(Combined)	2.689E8	9	2.988E7	1.248	.347
		Linearity	4.042E7	1	4.042E7	1.688	.216
		Deviation from Linearity	2.285E8	8	2.856E7	1.193	.373
	Within Groups		3.113E8	13	2.395E7		
	Total		5.802E8	22			

Based on Table III the results of the ANOVA Test linearity test, the significance value of is obtained (Sig.) on Deviation from Linearity for the variable Number of Industrial Companies (X_1), Amount Labor (X_2), and Area of Fisheries and Plantation (X_3) > 0.05 which is the assumption from H_0 accepted for the three independent variables as well as the regression model on

the independent variable is linear.

c). Heteroscedasticity Test

Heteroscedasticity test is used to determine whether there is residual variance which is not constant (changes) systematically in line with changing variables free. In this study, the heteroscedasticity test was carried out using Spearman's rho test which will be shown in table IV which can then be analyzed interpretation based on the following hypotheses and criteria.

Hypothesis statement:

H_0: There is no systematic relationship between the explanatory variables and the value of absolute of the Residual.

H_1: There is a systematic relationship between the explanatory variables and the absolute value of the residual.

Decision making criteria:

- If the significance value or Sig. (2-tailed) > 0.05 then it can be said that no there is a heteroscedasticity problem in which the assumption of H_0 is accepted. However, if the value of significance (Sig) (2-tailed) is smaller than the value of 0.05 then it can be said that there is heteroscedasticity problem in which in this case the assumption of H_1 is accepted.

Table IV. Heteroskedastisitas *Spearman's Rho Test Test*

Correlations

			Jum Perusahaan Industri	Jum Tenaga Kerja	Luas Area Perikanan dan Pertambangan	Unstandardized Residual
Spearman's rho	Jum Perusahaan Industri	Correlation Coefficient	1.000	.857**	-.046	.002
		Sig. (2-tailed)	.	.000	.836	.995
		N	23	23	23	23
	Jum Tenaga Kerja	Correlation Coefficient	.857**	1.000	.086	-.004
		Sig. (2-tailed)	.000	.	.697	.986
		N	23	23	23	23
	Luas Area Perikanan dan Pertambangan	Correlation Coefficient	-.046	.086	1.000	.045
		Sig. (2-tailed)	.836	.697	.	.837
		N	23	23	23	23
	Unstandardized Residual	Correlation Coefficient	.002	-.004	.045	1.000
		Sig. (2-tailed)	.995	.986	.837	.
		N	23	23	23	23

**. Correlation is significant at the 0.01 level (2-tailed).

Based on Table IV Heteroscedasticity Test Results using Spearman's Rho test variable value X_1 (Number of Industrial Companies) = 0.995, X_2 (Number of Labor) = 0.986, X_3 (Fisery & Mining Area) = 0.837. Because value overall of these variables > 0.05 then the hypothesis H0 is accepted. Which means that there is no systematic relationship between X_1, X_2, and X_3 with the absolute value of the residual.

d). Multicollinearity Test

The multicollinearity test was carried out to see if the model regression found a very strong correlation between the dependent variables. Regression model should be there is no very high correlation between the independent variables. In this study, in detecting multicollinearity can be seen from calculating the value of variance inflation factors (VIF) in table 3.5 can then be interpreted based on hypotheses and criteria following.

Hypothesis statement:

H_0: There is no multicollinearity in the regression model

H_1: There is multicollinearity in the regression model

Decision making criteria:

- If the value of VIF < 10.00 then the assumption accepted. However, if the VIF value is > 10.00 then the assumption rejected and accepted.

Table V. Multicollinearity Test

Coefficients[a]

Model		Collinearity Tolerance	VI
1	(Constant)		
	Jum Perusahaan Industri	.58	1.725
	Jum Tenaga Kerja	.47	2.110
	Luas Area Perikanan dan Pertambangan	.758	1.320

a. Dependent Variable: GRDP

Based on table 3.5 above the value of Collinearity Statistics VIF Number of Companies Industry (X_1), Number of Labor (X_2), and Area of Fisheries and Plantation (X_3) >10.00 so that H0 is accepted which means that there is no multicollinearity in the model regression on variables X_1, X_2, X_3.

e). Autocorrelation Test

In autocorrelation testing is carried out to determine the correlation in each data for all variables simultaneously (together) in one period. In this test carried out using the Durbin Watson Test by looking at table 3.6 which shows can then be interpreted based on the following hypotheses and criteria.

Hypothesis statement:

H_0: There is no autocorrelation in the data

H_1: There is autocorrelation in the data

Decision making criteria:

- If d (Durbin Waston) < from dL or > 4- dL then the hypothesis H0 is rejected, which means there is autocorrelation.
- If d (Durbin Watson) lies between dU and (4-dU), then hypothesis H0 is accepted, which means there is no autocorrelation
- If d (Durbin Watson) lies between dL and dU or between (4-dU) and (4-dL), so it does not come to a definite conclusion.

Table VI. Autocorrelation Test

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.359[a]	.129	-.009	5158.32457	1.917

a. Predictors: (Constant), Luas Area Perikanan dan Pertambangan, Jum Perusahaan Industri, Jum Tenaga Kerja

b. Dependent Variable: PDRB

Based on Table VI. the Durbin-Watson value is equal to d = 1.917 then This value will be compared with the value of the Durbin-Waatson table at the level significance of 0.05 with a comparison (k;n) for k is the number of independent variables (independent variable) and n is the number of samples. It is known that k=3 and n=23. So found the value of dL = 1.053 and = 1.660. Durbin Watson value (d) = 1.917 more greater than dL and less than (4-dU) = 2,340. So as the basis for taking the decision in the Durbin Watson test above, it can be concluded that there is no problem or signs of autocorrelation. Thus, multiple linear regression analysis for the test. The research hypothesis above can be carried out to the stage of multiple regression analysis test or advanced.

f). Multiple Linear Regression Analysis

The data analysis method used in this study is linear regression multiple. Multiple regression analysis was used to determine the effect of the variable independent (X) on the dependent variable (Y) for the change of each increase or decrease in the independent variable which will affect the dependent variable. Regression equation in this study are as follows.

$$Y = \alpha + b_{1x1} + b_{2x2} + b_{3x3}$$

Where :

Y = Gross Regional Domestic Product

X_1 = Number of Industrial Companies

X_2 = Number of Workers

X3 = Fishery Area and

Plantation

a = Constant Coefficient

b_1,b_2,b_3 = Regression Coefficient

Table VII. Multiple Linear Regression Nalysis

Coefficient		
Variabel Bebas	Unstandardized	
	B	Sig
(Constant)	4413.57	.014
Jum Perusahaan Industri	702.55	.141
Jum Tenaga Keria	-	.337
Luas Area Perikanan dan	.060	.044

Based on the table above, the value in column B which states coefficient of each independent variable, while for the column Sig. state that whether each variable can be included in the multiple linear regression model. Hypothesis testing is carried out to see the variables to be entered into a multiple linear regression model.

Hypothesis:

H_0: There is no significant effect between the independent variable and the variable bound.

H_1: There is a significant effect between the independent variable and the dependent variable.

Decision making criteria:

- If the value of Sig < 0.05 then rejected. However, if the value of Sig. > 0.05 then accepted.

Based on Table 3.7 obtained significant values for each variable, namely:

sig value. for the industrial company variable (X_1), and labor (X_2) is > 0.05, where the assumption of H0 is accepted which means that there is no significant effect significantly between the independent variable and the dependent variable. As for the X3 variable with value Sig. <0.05 then for the X_3 variable the hypothesis H0 is rejected, which is the X3 . variable significant effect on the GRDP variable (Y) so that it is included in the model multiple linear regression.

Then the regression model is;

$$Y= 4413{,}570 + 0.044X_3 + \varepsilon$$

From the model obtained:

1. The constant of 4413,570 states that if the fishery area and plantations (X_3) is worth = 0 then the GRDP of Aceh Province is 4413.570 billion rupiah.
2. The regression coefficient for X3 of 0.044 is positive, meaning that the addition of the total area of fishery and plantation land of 0.044 hectares will be increase the value of the GRDP of Aceh Province by 0.044 billion rupiah, as well as otherwise.

IV. END

B. Conclusion

From the results of the analysis obtained from the Gross Regional Domestic Product data based on data from the province of aceh with 23 regencies/cities, conclusions can be drawn that the multiple linear regression model to analyze economic growth in Aceh Province, namely = 4413,570 + 0.044*X*3 + . From the results of the analysis, it is obtained that positive effect of the variable Area of Fisheries and plantations (X3) on the value of GRDP in Aceh Province there will be an increase in the number of fishery and plantation areas of 0.044 hectares will increase the value of the GRDP of Aceh Province by 0.044 billion rupiah.

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