ANALYSIS OF AFFECTING FACTORS HUMAN DEVELOPMENT INDEX IN THE REGION BOLAANG MONGONDOW RAYA

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This study aims to analyze how the influence of the human development index factors in the Bolaang Mongondow Raya area and how big the influence is. The research method used in this study is a panel data analysis model that uses time series data and cross section data by estimating through several steps so as to obtain the right model and estimate. The types of variables are Human Development Index (Y), Gross Regional Domestic Product (X1), Total Population (X2) and Poverty (X3). Research Results (1) The Gross Regional Domestic Product variable has a positive and significant impact on the Human Development Index, meaning that every addition to the value of the Gross Regional Domestic Product will increase the value of the Human Development Index in the Greater Bolaang Mongondow Region. (2) The Population Number variable has a negative but significant effect on the Human Development Index, meaning that every addition to the poverty value will reduce the value of the Human Development Index in the Greater Bolaang Mongondow Area. (3) The poverty variable has a negative but significant effect on the human development index, meaning that every additional poverty value will reduce the value of the Human Development Index in the Bolaang Mongondow Raya area. (4) The variables of Gross Regional Domestic Product, Population, and Poverty have an effect of 91% on the Human Development Index variable in the Greater Bolaang Mongondow Area in 2015-2019 This means that every additional poverty value will reduce the value of the Human Development Index in the Greater Bolaang Mongondow Area. (3) The poverty variable has a negative but significant effect on the human development index, meaning that every additional poverty value will reduce the value of the Human Development Index in the Bolaang Mongondow Raya area. (4) The variables of Gross Regional Domestic Product, Population, and Poverty have an effect of 91% on the Human Development Index variable in the Greater Bolaang Mongondow Area in 2015-2019 This means that every additional poverty value will reduce the value of the Human Development Index in the Greater Bolaang Mongondow Area. (3) The poverty variable has a negative but significant effect on the human development index, meaning that every additional poverty value will reduce the value of the Human Development Index in the Bolaang Mongondow Raya area. (4) The variables of Gross Regional Domestic Product, Population, and Poverty have an effect of 91% on the Human Development Index variable in the Greater Bolaang Mongondow Area in 2015-2019

Keywords: Analysis of Human Development Index Factors.

INTRODUCTION

The human development index (HDI) is an indicator in measuring the success of efforts to build the quality of human life. The human development index can determine the ranking or level of development of a region/country. In Indonesia, HDI is strategic data because apart from being a government benchmark, HDI is also used as one of the determinations of the General Allocation Fund (DAU). The HDI explains how the population can access development outcomes in terms of income, health, education, and so on.

One of the biggest benefits of HDI is the ability of this index to reveal that a country is a region that can do much better at low income levels. The index is also able to reveal that large increases in income or high growth can have little role in the human development framework. This is a trigger for low-income countries/regions to not only focus on development priorities on the aspect of pursuing growth but also pay more attention to aspects of education and health

The area of Bolaang Mongondow Regency has undergone several divisions, namely in 2007 it was divided into

Kotamobagu City and North Bolaang Mongondow Regency, then in 2008 it was divided again into East Bolaang Mongondow Regency and South Bolaang Mongondow Regency. So now from the results of the division, 5 (five) regencies/cities have been established, namely (i) Main Bolaang Mongondow Regency (ii) Kotamobagu City (iii) East Bolaang Mongondow Regency (iv) South Bolaang Mongondow Regency and (v) North Bolaang Mongondow Regency. . Human development after the division made the evaluation and planning of different local government programs need to pay more attention to the development index numberhumans as the main reference for development in every Bolaang Mongondow Raya Regency. The following is the Human Development Index in Bolaang Mongondow Raya:

Table 1.1 Human Development Index in Bolaang Mongondow Raya (%)

Year	BOLMONG	Kotamobagu	BOLMUT	BOLTIM	BOLSEL
2010	62.75	67.89	61.34	60.04	59.77
2011	63.16	68.57	62.11	60.93	60.47
2012	63.78	69.31	62.88	61.93	61.48
2013	64.16	69.86	63.67	62.64	62.84
2014	64.53	70.46	64.24	63.12	63.57
2015	65.03	70.70	64.46	63.81	63.72
2016	65.73	71.68	65.16	64.44	63.92
2017	66.08	72.00	65.60	64.73	64.05
2018	66.91	72.55	66.32	65.21	64.49
2019	67.82	73.22	66.91	68.08	65.28

Source: Central Bureau of Statistics Bolaang Mongondow, 2021

Based on table 1.1 shows the Human Development Index data in the Greater Bolaang Mongondow (Bolaang Mongondow, Kotamobagu City, North Bolaang Mongondow, East Bolaang Mongondow and South Bolaang Mongondow) which all increase from year to year. It can be seen from 2010-2019 that the Human Development Index (HDI) in Bolaang Mongondow increased by 5.07%, Kotamobagu City increased by 5.33%, North Bolaang Mongondow increased 5.57%, East Bolaang Mongondow increased 8.04% and Bolaang Mongondow South added 5.51%. This means that from 2010-2019 East Boalaang Mongondow has the most increase in the Human Development Index, while Bolaang Mongondow has the least increase in the Human Development Index. Factors that can affect the human development index include regional gross domestic product, population and poverty.

Table 1.1.1 GRDP, Population and Poverty Level in Bolang Mongondow

Year	GRDP (Rp)	Total Population (Soul)	Poverty level (%)
2010	3,218,539.42	214.299	20.8
2011	3,306,235.53	218,075	18.6
2012	3,473,725.14	221.869	17.1
2013	3,705,497.65	225,768	20.2
2014	3,911.380.42	229,604	19.8
2015	4,139,099.71	233.189	20.04
2016	4,413,199.24	236,893	19.55
2017	4,707,458,71	240,505	19.05
2018	5,060,106,71	244.185	18.49
2019	5,444,314.30	247,811	18.3

Source: Central Bureau of Statistics Bolaang Mongondow, 2021

Based on table 1.1.1 shows data on GRDP, Population and Poverty Levels in Bolaang Mongondow. It can be seen that GRDP during 2010 to 2019 has increased from year to year with the population increasing from 2010 to 2018 but in 2019 it experienced a decline while for poverty it rose and fell from 2010 to 2014 after that it increased until 2019.

Table 1.1.2 GRDP, Population and Poverty Levels in Kotamobagu

Year	DP (Rp)	Total Population (Soul)	Poverty level (%)
2010	1,339,171.39	107,459	8.1
2011	1,426,088,68	110,212	7.2
2012	1,525,280,22	112,394	6.6
2013	1,632,889,15	114.779	6.9
2014	1,742,349.03	117,019	6.76
2015	1,855,963.46	119,427	6.95
2016	1,979,106.07	121,699	7.24
2017	2,113,409.26	124.372	7.28
2018	2,254.152.50	125,800	7.49
2019	2,392,383.37	123,653	7.31

Source: Central Bureau of Statistics Bolaang Mongondow, 2021

Based on table 1.1.2 shows data on GRDP, Total Population and Poverty Levels in Kotamobagu. It can be seen that GRDP during 2010 to 2019 has increased from year to year with the population increasing from 2010 to 2018 but in 2019 it experienced a decline while for poverty it rose and fell from 2010 to 2014 after that it increased until 2019.

Table 1.1.3 GRDP, Population and Poverty Levels in North Bolaang Mongondow

Year	GRDP (Rp)	Total Population (Soul)	Poverty level (%)
2010	968,405.42	70,902	7.2
2011	1.020.031.38	71,982	6.4
2012	1,090,624.74	73.120	5.9
2013	1,168,294.64	74.237	7.2
2014	1,247,860,30	75,290	7
2015	1,320,203.25	76,331	7.38
2016	1,401,509.76	77.383	7.22
2017	1,489,523,40	78.437	6.95
2018	1,581,646.56	79,366	6.84
2019	1,679,213.97	80,313	6.77

Source: Central Bureau of Statistics Bolaang Mongondow, 2021

Based on table 1.1.3 shows data on GRDP, Population and Poverty Levels in North Bolaang Mongondow. It can be seen that the GRDP during 2010 to 2019 has increased from year to year with the population increasing from year to year, while for poverty the highest peak was in 2015 which was 7.38% and after that it experienced a decline in the poverty rate until 2019.

Table 1.1.4 GRDP, Population and Poverty Levels in East Bolaang Mongondow

Year	GRDP (Rp)	Total Population (Soul)	Poverty level (%)
2010	1,113,867.43	63.913	5
2011	1,179,723.92	64,884	4.5
2012	1,257,668,12	65,922	4.1
2013	1,341,909.53	66,790	4.6
2014	1,435,603.24	67,824	4.49
2015	1,528,600,34	68,692	4.73
2016	1,613,813.50	69,716	4.69
2017	1,706,002,12	70,610	4.37
2018	1,792,386.87	71.477	4.29
2019	1,878,469.77	72,408	4.41

Source: Central Bureau of Statistics Bolaang Mongondow, 2021

Based on table 1.1.4 shows data on GRDP, Population and Poverty Levels in East Bolaang Mongondow. It can be seen that GRDP during 2010 to 2019 has increased from year to year in line with the population which has increased from year to year, while the poverty rate in 2010 was the highest at 5% and the lowest in 2012 was 4.1%.

Table 1.1.5 GRDP, Population and Poverty Levels in South Bolaang Mongondow

Year	GRDP (Rp)	Total Population (Soul)	Poverty level (%)
2010	753.907.10	57,180	10.7
2011	795,897.06	58,328	9.6
2012	851.326.59	59,294	9.4
2013	912,717.47	60,220	9.2
2014	980.918.83	61.177	9.21
2015	1,039,393.72	62.222	9.4
2016	1,103,135.65	63.207	9.35
2017	1,171,958,58	64,171	9.05
2018	1,248,799.33	65.127	8.82
2019	1,328,571.46	66.071	8.74

Source: Central Bureau of Statistics Bolaang Mongondow, 2021

Based on table 1.1.5 shows data on GRDP, Population and Poverty Levels in South Bolaang Mongondow. It can be seen that the GRDP during 2010 to 2019 has increased from year to year with the population increasing from 2010 to 2019 while the highest poverty rate in 2010 was 10.7% and the lowest was in 2019 with a poverty rate of 8.74%. .

RESEARCH METHOD

The analytical method used in this study is a panel data analysis model that uses time series data and cross section data by estimating through several steps so as to obtain the right model and estimate. The panel data regression model in this study is as follows:

$$IPM_{it} = a + b_1 PDRB_{it} + b_2 JP_{it} + b_3 TK_{it} + it$$

RESULTS AND DISCUSSION

Panel Data Model Selection

There are several tests to determine which panel data regression model is the best, whether CEM, FEM or REM. The following are the tests carried out for the selection of the panel data regression model.

Chow test

Chow test is used to determine which model is better to use, namely between CEM or FEM.

Table 4.1 Chow Test Output

Test cross-section fixed effects

Effects Test	Statistics	df	Prob.
Cross-section F	49.590342	(4.42)	0.0000
Cross-section Chi-square	87.223694	4	0.0000

Source: Processed Results

Based on Table 4.1, it is found that the p-value in Cross-section F is 0.0000 where the p-value is less than the value of the significance level ($a = 0.05$), so H1 is accepted. This means that the better model to use is FEM.

Hausman test

The Hausman test is used to determine which model is better to use, namely between REM or FEM.

Table 4.2 Hausman uji test output

Test cross-section random effects

Test Summary	Chi-Sq. Statistics	Chi-Sq. df	Prob.
Random cross-section	26.117353	3	0.0000

Source: Processed Results

Based on Table 4.2, the p-value in Cross-section F is 0.0000 where the p-value is smaller than the significance level value ($a = 0.05$), so H1 is accepted. This means that the better model to use is FEM.

Panel Data Regression Analysis Results

Based on the results of the estimation of the regression model and the selection of panel data above, the results of the panel data regression analysis use the Fixed Effects Model (FEM) model. The estimated output using FEM is presented in the table below.

Table 4.3 Output estimation of FEM

Total panels (balanced) observations: 50

Variable	Coefficient	Std. Error	t-Statistics	Prob.
C	66.43071	10.93296	6.076185	0.0000
GDP	4.74E-06	1.90E-06	2.500519	**0.0164
JP	-7.61E-05	0.000127	-0.600965	*0.0511
kindergarten	-0.209796	0.270450	-0.775729	**0.0423

Cross-section fixed (dummy variables)

R-squared	0.906027	Durbin-Watson stat	0.308663
Adjusted R-squared	0.890365	F-statistics	57.84821
		Prob(F-statistic)	0.000000

Note: * = 0.10, ** = 0.05, *** = 0.01

Source: Processed Results

Based on the output results in Table 4.3, the estimation equation for the CEM model is obtained as follows.

HDI = 0 4.74E-06PDRB − 7.6E-05JP − 0.209796TK

Based on the model equation above, it can be seen that:

1. The Value of the Variable Constant Coefficient of Gross Regional Domestic Product is **4.74E-06**, this means that for every addition to the value of the Gross Regional Domestic Product, the value of the Human Development Index in the Greater Bolaang Mongondow Area will increase by **4.74E-06.**
2. The Value of the Constant Coefficient of Population is -7.6E-05, this means that for every addition to the value of the population, the value of the human development index in the Greater Bolaang Mongondow area will decrease by -7.6E-05.
3. The Poverty Constant Coefficient Value is -0.209796, This means that for every addition to the value of Poverty, the HDI value in the Greater Bolaang Mongondow area will decrease by as much as possibler -0.209796.

Classic assumption test

A good model must also comply with the classical assumption test criteria, so that the resulting predictions are better. The classical assumption test carried out in this study are:

Normality test

Normality test aims to test whether in the regression model the dependent and independent variables are normally distributed or not. A regression model is said to be good if it has a normal or near normal data distribution.
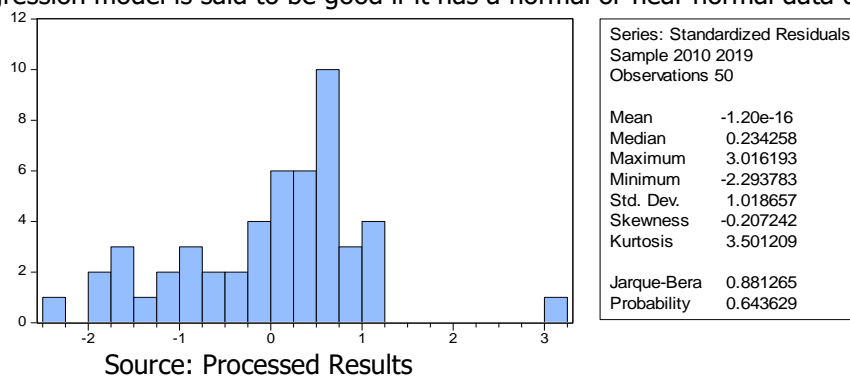

Source: Processed Results

Figure 4.1 Normality Test

Based on Figure 1 above, the calculated Jurque-Beta probability value is greater than 0.05 (0.644 > 0.05), so it can be concluded that the residuals are normally distributed.

Multicollinearity Test

Multicollinearity Aims to test whether there is a high or perfect correlation between the independent variables contained in the regression model. A good regression model should not have a correlation between the independent variables.

Table 4.4 Multicollinearity Test

	GDP	JP	kindergarten
GDP	1.0000000	0.758209	0.627669
JP	0.758209	1.0000000	0.691275
kindergarten	0.627669	0.691275	1.0000000

Source: Processed Results

From table 4.4 above, it can be seen that the correlation coefficient value of the Independent variable is below 0.80. Thus the data from these two independent variables does not have a multicollinearity problem.

Heteroscedasticity Test

Symptoms of heteroscedasticity will appear if the confounding variable has a different variant from another observation. If the variance does not change then it is called homoscedasticity and if not it is called heteroscedasticity.

Table 4.5 Heteroscedasticity Test

Total panels (balanced) observations: 50

Variable	Coefficient	Std. Error	t-Statistics	Prob.
C	23.64245	7.908074	2.989660	0.0047
HDI	-0.145604	0.081422	-1.788271	***0.0811
GDP	3.35E-06	1.07E-06	3.126695	***0.0532
JP	-0.000180	6.71E-05	-2.684478	***0.0504
kindergarten	0.010782	0.143728	0.075018	***0.9406

Note: * = 0.10, ** = 0.05, *** = 0.01
Source: Processed Results

Based on table 4.5 above, the probability value of all independent variables is greater than 0.01, so it can be concluded that there is no heteroscedasticity.

Autocorrelation Test

In this study, the autocorrelation test was carried out using the Durbin-Watson test, the decision making whether there was autocorrelation can be seen from the following conditions (Santoso, 2012)

1. DW numbers below -02 have a positive autocorrelation
2. DW numbers between -2 to +2 there is no autocorrelation
3. Dw numbers above +2 have negative autocorrelation

The DW statistic in this study was 0.308. By looking at the DW statistics, the results do not occur autocorrelation.

Statistic test

Statistical tests were conducted to measure the accuracy of the regression function in estimating its actual value. Statistical tests were carried out with the coefficient of determination (R^2), simultaneous regression coefficient testing (F test), and individual regression coefficient testing (T test).

Test – T (Partial Significance Test)

T test is used to determine how far one independent variable individually can explain the dependent variable.

Based on Table 4.3 it can be seen that:

1. The Gross Regional Domestic Product variable has a significant effect on the Human Development Index in the Greater Bolaang Mongondow Area, because the p-velue is smaller than the Sig level. 0.05. So it can be concluded that H0 is accepted and H1 is rejected.
2. The population variable has a significant effect on the Human Development Index in the Greater Bolaang Mongondow area, because the p-velue is greater than the level of Sig. 0.10. So it can be concluded that H0 is accepted and H1 is rejected.
3. The Poverty variable has a significant effect on the Human Development Index in the Greater Bolaang Mongondow Area, because the p-velue is smaller than the Sig level. 0.05. So it can be concluded that H0 is accepted and H1 is rejected.

Test – F (Simultaneous Significance Test)

The F test is used to determine whether the independent variables jointly significantly affect the dependent variable. Based on Table 3, the p-value (0.000) is less than the significance level value ($α=0.05$), so H0 is accepted. This means that the independent variables jointly affect the dependent variable.

R2 . Determination Test

The coefficient of determination or commonly denoted R2 is used to measure how much the independent variables are able to explain the dependent variable.

Based on Table 3, the R-squared value is 0.906027. This means that the Gross Regional Domestic Product, Population, and Poverty variables are able to explain the variable Human Development Index in the Greater Bolaang Mongondow Area of 91%, so it can be said that 91% of the Human Development Index in the Greater Bolaang Mongondow Region can be explained by the model, while 9 % is explained by other factors not included in the model.

DISCUSSION

After testing the hypothesis and estimation on the model, it will be studied further on the effect of Gross Regional Domestic Product, Population, Poverty on the Human Development Index in the Greater Bolaang Mongondow Area. Below are the test results of each independent variable on the Human Development Index in the Greater Bolaang Mongondow Area 2015-2019:

Economic growth is expressed by Gross Regional Domestic Income (GRDP) per capita because it shows the average level of individual income. A good level of education can lead to better sanitation conditions for all family members and more nutritious food. In addition, government spending on education and health expands public access to adequate education and health services. Local government spending on education and health provides public access to facilities for meeting basic needs for human development. Good levels of education and health can improve the quality of human capital. Thus, these two factors have a positive effect on human development. The Gross Regional Domestic Product variable has a positive and significant impact on the Human Development Index in the Greater Bolaang Mongondow Region 2015-2019. So it can be concluded that, if the increase in the value of the Gross Regional Domestic Product can increase the Human Development Index in the Greater Bolaang Mongondow Region 2015-2019. This shows that the level of GRDP per capita in the Bolaang Mongondow Raya area also affects the Human Development Index. The higher the expenditure of the population, the better the level of satisfaction of the basic needs of the population. This encourages increased consumption for education and health, which affects a region's human development index. if the increase in the value of the Gross Regional Domestic Product can increase the Human Development Index in the Greater Bolaang Mongondow Region 2015-2019. This shows that the level of GRDP per capita in the Bolaang Mongondow Raya area also affects the Human Development Index. The higher the expenditure of the population, the better the level of satisfaction of the basic needs of the population. This encourages increased consumption for education and health, which affects a region's human development index. if the increase in the value of the Gross Regional Domestic Product can increase the Human

Development Index in the Greater Bolaang Mongondow Region 2015-2019. This shows that the level of GRDP per capita in the Bolaang Mongondow Raya area also affects the Human Development Index. The higher the expenditure of the population, the better the level of satisfaction of the basic needs of the population. This encourages increased consumption for education and health, which affects a region's human development index.

Residents are all people who are domiciled in the geographical area of the Republic of Indonesia for 6 months or more and those who are domiciled for less than 6 months with the aim of settling. The population that increases every year will have positive and negative impacts. Positive impact, the increasing population will increase the number of workers who can increase production. If this growth is balanced with education, training and work experience, the skills of the population. The increase in production will be faster than the increase in labor. Population growth will encourage economic growth. Negative impact, a country is said to be facing the problem of overpopulation if the population is much larger than the available production factors. As a result, the marginal production of the population is low. Thus, excessive population will lead to a decline in the prosperity of society. The population variable has a negative and significant effect on the Human Development Index in the Greater Bolaang Mongondow Area 2015-2019, meaning that if the number of residents increases in value it will reduce the Human Development Index in the Greater Bolaang Mongondow Region 2015-2019. This illustrates that the population in the Bolaang Mongondow Raya area is still classified as not prosperous in terms of:health, education and living standards. If the welfare of the population decreases, the HDI will decrease, this occurs because the less prosperous population has limitations in accessing their needs, including in meeting the needs in the fields of education and health.

Poverty is a condition where a decent life is not achieved with an income of USD 1.00/day (World Bank). Poverty is a condition in which a person does not have enough income, mainly to buy basic necessities such as clothing, food, and housing. Then it is concluded that the poor are people who have an average per capita expenditure per month below the poverty line. The poverty variable has a negative and significant effect on the Human Development Index in the Greater Bolaang Mongondow Region 2015-2019, meaning that if poverty increases in value, it will reduce the Human Development Index in the Greater Bolaang Mongondow Region 2015-2019. This illustrates that the poverty rate in the Bolaang Monggondow Raya area in 2015-2019 is very high. If the number of poor people in an area is high, then the need for education and welfare will decrease.

CONCLUSION

Based on the results of the tests that have been carried out, it can be concluded as follows: (1) The Gross Regional Domestic Product variable has a positive and significant influence on the Human Development Index in the Greater Bolaang Mongondow Region. This explains that, every addition to the value of the Gross Regional Domestic Product will increase the value of the Human Development Index in the Greater Bolaang Mongondow Region in 2015-2019. (2) The Variable Population has a negative but significant effect on the Human Development Index in the Greater Bolaang Mongondow Area. This means, if every increase in the value of the population will reduce the value of the Human Development Index in the Greater Bolaang Mongondow area in 2015-2019. (3) The variable of poverty has a negative but significant effect on the human development index in the Bolaang Mongondow Raya area. This means that every additional poverty value will reduce the value of the Human Development Index in the Greater Bolaang Mongondow Area in 2015-2019.

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