Analysis of the Relationship between Human Development Index and Regional Development of West Sulawesi Province

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Abstract

This study aims to analyze the relationship between the human development index and the regional development of West Sulawesi Province. This study uses panel data analysis that combines time series-cross section data and uses the Two Stage Least Square (2SLS) method. The type of data in this study is secondary data taken from the Central Statistics Agency (BPS) of West Sulawesi. The variables of the human development index are life expectancy, average length of schooling, expected length of schooling and purchasing power index. While the variables of regional development are poverty, unemployment, regional inequality and GRDP. The results of the analysis using the 2SLS method. In the HDI equation, the PW variable partially has a negative but not significant effect on the HDI for =5%. However, if for =20% PW has a negative and significant effect on HDI. While in the PW equation, the HDI variable partially has a negative but not significant effect on PW for = 5%. The R2 in the HDI equation is 97.5% and the remaining 2.5% which shows that the influence of PW, Life Expectancy, Average Years of Schooling, Expected Years of Schooling, and Purchasing Power Index together have an effect on HDI. While in the PW equation, the determination of R2 is 99.2% and the remaining 0.8% which shows HDI, Poverty Level, Unemployment Rate, Regional Inequality and Gross Regional Domestic Product together affect PW. So, there is a simultaneous relationship between the Human Development Index and Regional Development.

Keywords: Human Development Index, Regional Development, Panel Data

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Introduction

Human development is one indicator for the progress of a country. The state cannot be said to be successful if it is seen from the amount of gross domestic income without an increase in human development. There are many ways to measure the success of human development, one way is by using the human development index or human development index. The human development index is measured through the quality of education, health and economic levels as seen from how much power the community has (Pratiwi 2019).

The United Nations Development Program (UNDP) has published an indicator, namely the human development index to measure the success of development and prosperity of a country/region. HDI is a measure of the welfare rate of a region or country seen from 3 (three) dimensions, namely: life expectancy at birth, expected years of schooling, average length of schooling, and purchasing power (Irmayanti 2017). The benchmark used to see human quality is the human development index whose indicators consist of life expectancy, average length of schooling, long school expectations and purchasing power index (Dewi et al., 2016). Through these indicators, it is hoped that there will be an increase in the quality of human life. This is

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due to the heterogeneity of individuals, geographical disparities and different social conditions of society.

The human development index is one of the indicators used as a measuring tool in monitoring human development, especially in measuring the physical quality of the population in an area. Therefore, HDI is used as a standard for the success of regional development policies and is used as a benchmark for progress in human development (Yuliani & Saragih 2014). Human development is a contributor to the steady progress of regional development and not only contributes to the fundamental goals of development, but can be an important factor in regional development, including: reducing poverty levels, unemployment rates, regional inequality and GRDP (Ranis, 2004). The human development index (HDI) is a combined measuring tool that is affected, such as health indicators that represent life expectancy (AHH), average years of schooling and expected years of schooling which represent education indicators and economic indicators based on people's purchasing power (Kirana et al., 2018).

Economic growth makes income levels high as a condition for meeting basic needs and improving the quality of human capital (Ezkirianto & Alexandi 2013). A stable level of good regional development will have an important effect in increasing human development. Regional development is interpreted as an effort to reduce income inequality, reduce poverty and provide employment and economic growth (Yuliani & Saragih, 2014).

Based on data from the Central Statistics Agency (BPS) that Indonesia's problem is inequality in human development as measured by the HDI. The human development index in Indonesia from year to year has increased by an average of about (0.89 percent). In 2014, Indonesia's human development index was in the medium category and in the high category in 2018 with a figure (71.39 percent) and in 2019 it reached (71.92 percent).

West Sulawesi Province is still categorized as low because it is still ranked 31st with a figure in 2019 of 65.73 out of 34 provinces in Indonesia, the figure is an accumulation of 6 districts in West Sulawesi Province, namely Mamuju Regency, Majene Regency, Polewali Mandar Regency, Central Mamuju Regency, Mamasa Regency, Pasangkayu Regency.

The human development index in West Sulawesi Province along with the existing 6 regencies shows development and improvement which tends to increase every year in 2010-2019. The human development index at the national level has increased during the 2017-2018 period. There are 3 (three) provinces with the fastest development progress, namely, Papua Province (1.64 percent), West Sulawesi Province (1.24 percent), and West Papua Province (1.19 percent). Progress from Papua Province is driven by the education dimension, in West Papua it is driven by the decent standard of living dimension, while in West Sulawesi it is driven by the improvement of the education dimension and decent living standard.

The concept of development is the continuous improvement of society towards a good life. Comparison of development is not only seen from per capita income, but must also look at the increase in income distribution, the declining poverty rate and the decrease in the unemployment rate (Kartono & Nurcholis 2016).

Economic growth is a process of increasing output per capita which is one indicator of the success of development continuously in the long term (Prihastuti, 2018). The economic performance of West Sulawesi in 2010-2014 tends to decline (table 1.4). In 2011-2013 economic growth decreased from (10.73%) to (6.94%) in 2013, then increased again to (8.73%) in 2014. During this period the average growth of West Sulawesi amounted to (8.91%), which is above the national average (5.9%).

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Another factor influencing regional development is the level of poverty. The percentage of poor people in West Sulawesi Province in 2010 to 2019 fluctuated. If an area has a high unemployment rate, it will hinder the achievement of development goals. People's income is not maximized so that people's purchasing power decreases, education and health are basic needs to improve human quality, in this case an increase in the human development index (Baeti, 2013).

A small amount of income (poverty) including the problems of low living standards, poor health and services, low levels of public education, inadequate housing, resulting in low human resources and high unemployment. The level of standard of living in a country/region is measured by one of them Gross National Product (GNP) per capita, poverty level, and welfare level (Widodo et al., 2012).

The amount of poverty can be measured with or without reference to the poverty line which is called absolute poverty, while the concept whose measurement is not based on the poverty line is called relative poverty (Todaro & Smith, 2010). The term gender is used to identify the differences between men and women from the socio-cultural and gender aspects. This does not look at the biological type in equality and does not make it a means of discriminating against one party because it is biological in balance (Syamsiah, 2014). Based on this, gender is divided into two meanings. The first is defined as "sex or gender" which is more commonly known as "gender by nature". The second is defined as “gender” culturally and psychologically. From this second understanding what is meant by gender.

The emergence of poverty is lack of income and assets (lack of income and assets) to meet basic needs such as food, drink, housing, clothing, health, and education. As well as the lack of jobs that are closely related to poverty and inadequate education and health. The benchmark for poverty is not only the lack of food needs and low income, but seeing the three indicators as fair before the law and so on (Dewi et al. 2016).

When macroeconomics occur, unemployment becomes one of the causes because these factors directly affect and the most severe, some people lose their jobs resulting in lower standards of living and psychological (Ningrum et al., 2020). Inequality of development between regions is an aspect that generally occurs in an area. The inequality that occurs is due to differences in the content of natural resources and differences in demographic conditions in each region. Regional development disparities always appear and tend to widen. The relationship between unemployment and economic growth is very close. If a working community can be categorized as affluent or has high welfare, unemployment will automatically reduce the welfare of a society and affect the human development index (Hendri et al., 2019).

West Sulawesi is currently still dependent on sectors that rely on natural resources, such as: plantations, agriculture, forestry and fisheries. (323,280 people). service sector employing (205,574 people). The lowest number of workers is in the industrial sector (90,541 people) which is the largest labor absorbing sector in West Sulawesi.

Myrdal, Dudley and Seers, have a tendency that development emphasizes more on social aspects, namely reducing poverty, unemployment and inequality in income distribution (Hasan & Azis, 2011). Based on this statement, the development of economic areas should be aimed at expanding or increasing employment opportunities and equitable distribution of income, so the formulation of the problem in this study is how big is the relationship between the human development index and regional development

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Methods

The design of this research was carried out with a simultaneous model of the equation of the human development index and regional development. Simultaneous testing was carried out using the Two Stage Least Square (2sls) method. The type of data used in this study is secondary data obtained from the Central Statistics Agency (BPS) in West Sulawesi Province and 6 districts in West Sulawesi Province. There are two variables used in this study, namely endogenous variables and exogenous variables. The Human Development and Regional Development Index are endogenous variables, while life expectancy, average length of schooling, expected years of schooling, purchasing power index, poverty rate, unemployment rate, regional inequality and GRDP are exogenous variables. The time series data in this study is the research time period, which is 10 years (2010-2019) in 6 (six) districts.

This study aims to see the relationship between the human development index and regional development. Then 2 (two) equations are used as follows:

$IPMit = \beta 10 + \beta 12PW + y11AHH + y12RLS + y13HLS + y14DBt + uit$.....(1)

β_{it}	=	Constant / Provincial Interception
PW	=	Regional Development
AHH	=	Health Index / Life Expectancy (measured from the average year a person has taken)
RLS	=	Poverty Level (measured by basic food needs)
HLS	=	Open Unemployment Rate (measured by the percentage of the number of unemployed against the number of labor force)
DB	=	Regional Inequality

$PW_{it} = \beta_{20} + \beta_{21}IPM_{it} + y_{23}TK + y_{24}TP + y_{25}KW + y_{26}\ PDRB + u_{it}$.....(2)

β_{it}	=	Constant / Provincial Interception
PW	=	Regional Development
TK	=	Poverty Level (measured by basic food needs)
TP	=	Open Unemployment Rate (measured by the percentage of the number of unemployed against the number of labor force)
KW	=	Regional Inequality
PDRB	=	Gross Regional Domestic Product 2010-2019
u	=	Error term

Results and Discussion

Before conducting the 2SLS test, it is necessary to estimate the model to choose the best model so that maximum results can be obtained in this study. There are 3 choices of models to choose, namely the Common Effect Model (CEM), Fixed Effect Model (FEM) and Random Effect Model (REM) analyzed using Eviews 10. Based on the results of Cross Section Random 0.0000 < 0.05, which means FEM was selected based on Hausman test. So in this study, FEM is used in estimating the equation of the Human Development Index. While the results obtained Both 0.0000 <0.05, which means that REM is selected based on the Lagrange Multiplier Test. So in this study, REM is used in estimating the regional development equation.

Table 1. Test t Equation Human development index

Variables	t-statistics
C	3.052778
PW	-1.330689

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AHH	-0.291412
RLS	8.789132
HLS	8.686073
DB	1.583637

The results of the hypothesis test can be concluded as follows, the Regional Development Variable (PW) has a tcount of -1.330689. The value of ttable with df=0.025;53 is 1.99834 for = 5%. Thus, it can be concluded that tcount < ttable so that the Regional Development variable (PW) partially has a negative but not significant effect on the Human Development Index (IPM) for = 5%. However, if for = 20% Regional Development (PW) it has a negative and significant effect on the Human Development Index (IPM).

Table 2. Test t Regional Development Equation 2020

Variables	t-statistics
C	0.513390
IPM	-0.402495
TK	-0.820703
TP	0.559765
KW	-0.000704
PDRB	72.18822

The results of the hypothesis test can be concluded as follows, the Human Development Index (HDI) variable has a tcount of -0.402495. The value of t table with df = 0.025; 53 is 1.99834 for = 5%. Thus, it can be concluded that tcount < ttable so that the Human Development Index (IPM) variable partially has a negative but not significant effect on Regional Development (PW) for = 5%.

Table 3. Test F Equation Human development index

F-statistic	231.2425
Prob(F-statistic)	0.000000

Based on the F test analyzed using Eviews 10 it was seen that $F_{calculated}$ 231.2425 with a significance value of 0.000000. The value of F_{table} df = 6;58 is 2.26. Thus it can be concluded that $F_{calculates}$ 231.2425 > F_{table} 2.26 and significance value of 0.000000 < 0.5. So that Regional Development, Life Expectancy, Average Length of School, Old School Expectation, and Purchasing Power Index together affect the Human Development Index.

Table 4. Test F Regional Development Equation

F-statistic	1479.380
Prob(F-statistic)	0.000000

Based on the F test analyzed using Eviews 10 it was seen that $F_{calculated}$ 1479.380 with a significance value of 0.000000. The value of F_{table} df = 6;58 is 2.26. Thus, it can be concluded that $F_{calculates}$ 1479,380 > F_{table} 2.26 and significance values of 0.000000 < 0.5. So that the Human Development Index, Poverty Rate, Unemployment Rate, Regional Inequality, and Gross Regional Domestic Product together affect Regional Development.

Table 5. Test F Human Development Index

R-squared	0.979253
Adjusted R-squared	0.975019

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Based on Table 5 above analyzed by Eviews 10, adjusted *R Squared* values of 0.975019 are based on the influence of Regional Development, Life Expectancy, Average Length of School, Old School Expectation, and Purchasing Power together affect the Human Development Index. 97.5% and the remaining 2.5% is influenced by other factors. So it can be concluded that Regional Development (PW), Life Expectancy (AHH), Average Length of School (RLS), Old School Expectation (HLS), and Purchasing Power (DB) jointly affect the Human Development Index (HDI).

Table 6. Test F Regional Development Equation

R-squared	0.992720
Adjusted R-squared	0.992046

Based on Table 4.26 analyzed by Eviews 10, *adjusted R Squared* values of 0.9920460 which are based on the influence of human development index, poverty rate, unemployment rate, regional inequality, and gross regional domestic product together affect regional development by 99.2% and the remaining 0.8% influenced by other factors. So it can be concluded that the Human Development Index (HDI), Poverty Rate (TK), Unemployment Rate (TP), Regional Inequality (KW), and Gross Regional Domestic Product (PDRB) jointly affect Regional Development (PW).

Based on the results of the analysis using the 2SLS method. In the Human Development Index equation, the regional development variable (PW) partially has a negative but not significant effect on the human development index (IPM) for = 5%. However, if = 20% regional development (PW) has a negative and significant effect on the human development index (IPM). While in the Regional Development equation, the variable human development index (IPM) partially has a negative but not significant effect on regional development (PW) for = 5%. The value of the coefficient of determination (R2) in the human development index equation is 97.5% and the remaining 2.5% which shows that the influence of Regional Development, Life Expectancy, Average Length of Schooling, Expectation of Long Schools, and Purchasing Power Index together -equally influential on the Human Development Index. While in the Regional Development equation, it is known that the coefficient of determination (R2) is 99.2% and the rest is 0.8% which shows the Human Development Index, Poverty Level, Unemployment Rate, Regional Inequality and Gross Regional Domestic Product together have an effect on Regional Development.

This is in line with research (Soemartini, 2016) the method used is two stage least square. The data used is data on GDP, economic growth, exports, imports, unemployment rate and population density in Indonesia with a period of 2000-2013. With $\alpha = 0.05$ resulted that economic growth and other variables affected the PDRB, with R^2= 99.8% and PDRB and other variables also affected economic growth with R^2= 93.6% significantly. So the two variables between GDP and economic growth have a simultaneous relationship.

The research (Arba et al., 2021) discusses the application of dynamic panel data simultaneous equation models for modeling economic growth and human development indices in Central Java. The study also identified factors affecting economic growth and human development index in Central Java in 2010-2018 using the Arelanno-Bond Generalized Method Of Moment (GMM) method. The results of this study are the PDRB equation model and the HDI equation model. In the equation of economic growth significant variables have an effect on HDI and local government spending, while in the HDI equation model significant variables have an effect on GDP and old school expectations.

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While the study conducted (Bekti et al. 2014) analyzed to get a simultaneous model between PDRB and poverty. The method used is two stage least square (2sls). The data came from 33 provinces in Indonesia in 2010. The result of this study is that significant variables affecting GDP are poverty, exports, imports with α = 5%. While the variable that affects poverty is the number of people. But with α = 25% there is a simultaneous relationship between PDRB and poverty

Conclusion

Based on the results of simultaneous analysis using 2SLS estimation and discussion of data interpretation, the authors obtain conclusions that can be drawn from research on the Analysis of the Relationship between Human Development Index and Regional Development of West Sulawesi Province in 2010-2019 as follows: The simultaneous model gives the results that the Human Development Index equation on the coefficient of determination R2 = 97.5% which indicates that the influence of the Regional Development variables, Life Expectancy, Average Years of Schooling, Expected Length of Schooling, and Purchasing Power Index together affect the Human Development Index. While in the Regional Development equation, the coefficient of R2 = 99.2% which shows the Human Development Index, Poverty Level, Unemployment Rate, Regional Inequality and Gross Regional Domestic Product together have an effect on Regional Development. So, there is a simultaneous relationship between the Human Development Index and Regional Development.

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