Analysis of the Influence of Education and Health on Economic Growth in Indonesia

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Abstract. The theory of economic growth explains that the factors that influence economic growth are growth in physical capital and growth in human capital. In terms of human resources, economic growth is not only influenced by the quantity of human resources but also by their quality. The quality of human resources is determined by the level of health and education. The higher the level of health and education of a nation's human resources, the better the quality of these resources, so that, the higher the level of economic growth (per capita income) that can be achieved by that nation. This study aims to determine the effect of education and health on economic growth in Indonesia. This study uses data from all provinces in Indonesia. The analytical method used in this research is path analysis using SPSS as a data processing tool. The data used is data from all provinces in Indonesia and uses data from the Central Statistics Agency (BPS). Based on the results of this study it is known that the Education and Health variables have a positive and significant effect on Education and Health.

Keywords: Education, Health, Economic Growth

1. Introduction

Economic growth is a key indicator in a country that significantly affects people's well-being. Economic growth refers to the expansion of economic activities that lead to a rise in the production of goods and services in society, resulting in long-term prosperity for the population. A significant number of Indonesian youths, both those who are not enrolled in school and those who have exceptional academic performance, face obstacles in pursuing further education due to the exorbitant expenses associated with it. Education is a transformative process that empowers individuals to unlock their inherent potential and make meaningful contributions to the global society. Hence, education serves the purpose of harnessing and regulating the already cultivated potential, so enhancing the overall quality of human existence.

If viewed from the consumer side, humans are placed as the final beneficiaries of development results and if viewed from the producer side, they are an important input factor in the production process. An inseparable part of the development of human resources as a subject, as well as an object of development, is the educational process. Human resources are a source of strength or driving force for the development process and people's lives. Education has a reciprocal relationship with the development of various fields (social, economic, political, and cultural). Therefore, education has meaning as a form of investment to create a climate that makes all residents or citizens more productive. Empowerment of human resources, both in terms of development targets and development actors, can be said to be the central point of

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development. One of the supporting aspects of the success of national development is the development of education.

Education is one of the main forms of investment in improving the quality of human resources. Where every expenditure incurred on education is considered as an expenditure whose results are not to be enjoyed now but in the future. In the investment context, education development should receive a larger budget significantly in order to improve the quality of the human resources of the Indonesian population in line with the natural potential in order to be able to produce great products and services. Education strategies and policies pay attention to education, both economic, political, social, and cultural for the Indonesian nation so that Indonesia's HDI rating continues to increase.

In addition, one of the basic needs of society is health. Therefore health is a right for every citizen that is protected by law. An investment in human resources to achieve a prosperous society, namely by improving health services. Public health is very influential toward community welfare, where health indicators are related to poverty. Health is a social welfare factor that the government wants to realize, therefore health is an important concern for the government as a provider of public services.

Indonesia's economic growth in the second quarter of 2021 has risen to 7.07%, as reported by the Central Bureau of Statistics. This indicates that the economic recuperation in surmounting the repercussions of the Covid-19 pandemic has been commendable. The GRDP (Gross Regional Domestic Product) is a useful indicator for assessing the economic progress of a region. The GRDP, or Gross Regional Domestic Product, is an indicator that measures the pace of economic growth. Specifically, GRDP at constant prices examines the year-to-year economic growth.

Economic conditions in Indonesia continue to experience growth which continues to rise.

Table 1. Indonesia's Gross Domestic Product Development

Year	Percentage of Economic Growth (%)
2010	6.22
2011	6.17
2012	6.03
2013	5.56
2014	5.01
2015	4.88
2016	5.03
2017	5.07
2018	5.17
2019	5.02
2020	-2.90
2021	5.00

In general, economic development means a series of efforts in an economy to develop its economy so that infrastructure is more available, education levels are higher and technology is increasing. Economic growth coupled with change is called economic development. Hence, the assessment of a country's economic progress in a given year encompasses not just the output of products and services, but also factors such as advancements in technology, education, and healthcare.

The government has established a rule, as stated in Article 31 of the 1945 Constitution, which ensures that every person has the entitlement to get an education in order to fulfill the nation's values. Law no. 20 of 2003, which pertains to the national education system, explicitly

stipulates in Chapter IV, part 1, article 5, paragraph 1 that every person is entitled to the chance to pursue lifelong education. The literacy rate is a reliable statistic for assessing the equitable distribution of social welfare. Literacy Rate refers to the proportion of individuals aged 15 years and above who possess the ability to read and write.

The government aims to enhance the human development index in the health sector by ensuring the provision of sufficient health facilities and workers. Hence, health facility providers and health professionals are crucial factors that need to be taken into account. The Life Expectancy Rate is the technique employed to assess the government's efficacy in enhancing the well-being of the populace and advancing public health. A low life expectancy in an area suggests that health development has not been effective, while a high average healthy life expectancy shows successful health development in that area.

2 Literature Review

Development is a complex process that involves significant transformations in social structure, attitudes of individuals, and national institutions. It also entails rapid economic growth, reduction of inequality, and elimination of absolute poverty. Development can be seen as a process of learning and improvement (Todaro and Smith, 2006).

The idea of government spending, as proposed by Sukirno in 2000. To attain a flourishing society, the government implements many economic development initiatives. The execution of development projects by the government necessitates a significant amount of funding. Government expenditure is a reflection of the various commodities and services produced to cater to the needs of the public, and it involves the decision-making process of the government. Economic growth refers to the gradual transformation of a nation's economy towards a more sustainable condition. During a specific timeframe. Economic growth can be seen as the progression of augmenting gross national product or real national income. According to Sukirno (2000), economic growth is observed.

Nations that prioritize education for their citizens will yield favorable economic development. Hence, allocating resources towards enhancing education will result in increased national income and substantial economic growth. Poverty can be diminished by making investments in a balanced manner, ensuring that even low-income groups receive adequate funding (Mankiw, 2004).

Economic growth is believed by most economists to be an appropriate indicator in describing the progress of a country's development. Likewise, his ability to describe the increase in people's welfare through increasing national production and the main thing is increasing income. In fact, the process of economic growth occurring in the world shows that high economic growth is not always accompanied by an even portion of income among economic actors (Arsyad, 2010).

According to Tjiptoherijanto, health affects economic growth in several ways, for example improving one's health will lead to an increase in labor participation which then contributes to economic growth, or improving health will cause an increase in population which will bring the level of labor force participation.

Education and health are fundamental development goals. Health is well-being and education is essential to lead a fulfilling and worthwhile life. Both are important things to form broader human capabilities which are at the core of the meaning of development (Todaro & Smith, 2006).

Conceptual Framework

The theory of economic growth explains that the factors that influence economic growth are the growth of physical capital, growth of human capital, and technological progress. In terms of human capital, economic growth is influenced not only by the quantity of human resources but also by their quality. The quality of human resources is determined by the level of health and education. The higher the level of health and education of a nation's human resources, the better the quality of these resources, so the higher the level of economic growth (per capita income) that can be achieved by that nation. Diagrammatically, the research conceptual framework can be described as follows:

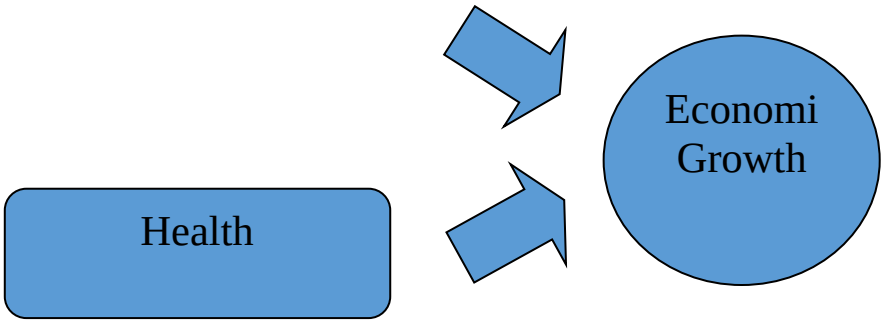

Fig 1. Conceptual Framework

3 Research Methods

3.1 Method of collecting data

The data used is secondary data, with data collection techniques through library research activities from the central statistical agency per province.

3.2 Data analysis method

The panel data regression method has various advantages in comparison to time series or cross-section data, including: Panel data, which combines time series data and cross-sectional data, allows for a larger amount of data and hence increases the degrees of freedom. Integrating data from time series and cross-section sources can effectively address issues that develop due to difficulties in eliminating variables (Widarjono, 2009). Cross-sectional data refers to observational data collected on multiple research subjects simultaneously, typically within a single year. Time series data refers to observational data collected on a single research topic over a specific time period, such as a span of nine years. Panel data refers to the analysis of observations collected at multiple time points for a group of participants.

$$Y = \beta_0 + \beta_1 (RLS) + \beta_2 (AHH) + \varepsilon it$$

$$; i = 1,2,.....N ; t = 1,2,. , T$$

Information:

Y	= Economic Growth
β_0	= constant
β_1, β_2, β_3	= Partial regression coefficient
RLS	= Average Years of Schooling
AHH	=Life expectancy
N	= number of observations (data cross section)
Q	= amount of time (time series data)
N x T	= number of panel data
ε	= term error

4 Results and Discussion

4.1 Analysis Results

Table 2. Chow Test Results

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	463.424830	(33,270)	0.0000
Cross-section Chi-square	1240.594646	33	0.0000

The results of the Chow test in Table 2 indicate that the fixed effect estimating approach outperforms the common effect estimation method. This is because the probability value of 0.000 is smaller than 0.05, which leads to the rejection of the null hypothesis (H0). Moreover, the outcomes of the Hausman test may be found in table 3 below:

Table 3. Chow Test Results

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	6.350496	2	0.0418

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
EDUCATION	109703.5...	75393.146...	186526962...	0.0120
HEALTH	-13538.8...	15240.687...	130453699...	0.0117

Based on the results of the Hausman test, the best estimation method between fixed effects and random effects is the Fixed Effect Model. This is because the probability value of 0.0418 is smaller than 0.05 or rejects H0. This shows that the Ficed effect model is better than the Random Effect Model.

Multicollinearity Test

This multicollinearity test is carried out to find out that there is no very strong relationship or there is no perfect linear relationship or it can also be said that the independent variables are not related to each other. The method of testing is to compare the correlation values obtained from panel regression calculations, if the correlation values between variables are <0.8 then multicollinearity does not occur.

Table 4. Multicollinearity Test

Education	**Health**
1.000000	0.449954
0.44954	1.000000

The table below displays the results of the multicollinearity test, including the test results for each independent variable that has a correlation coefficient less than 0.8. The test findings indicate the absence of multicollinearity among the independent variables.

Regression Equation

The regression equation is used to determine the relationship between the independent variables and the dependent variable. Using the help of Eviews, the regression model is obtained as shown in the table:

Table 5. Regression Equation Results

Dependent Variable: ECONOMI GROWTH
Method: Panel Least Squares
Date: 10/20/22 Time: 19:49
Sample: 2013 2021
Periods included: 9
Cross-sections included: 34
Total panel (balanced) observations: 306

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	325418.5	1183748.	0.274905	0.7836
EDUCATION	109703.6	25374.24	4.323424	0.0000
HEALTH	-13538.81	19772.24	-0.684738	0.4941

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.986381	Mean dependent var	290802.2
Adjusted R-squared	0.984615	S.D. dependent var	412540.0
S.E. of regression	51169.43	Akaike info criterion	24.63380
Sum squared resid	7.07E+11	Schwarz criterion	25.07187
Log likelihood	-3732.972	Hannan-Quinn criter.	24.80900
F-statistic	558.7110	Durbin-Watson stat	0.219717
Prob(F-statistic)	0.000000		

The regression equation obtained based on Table 5 is as follows:

Economic Growth = 325418.5 + 109703.6 Education – 13538.81 Health.

The equation above can be read as (1) The regression coefficient b1 is 109703.6, indicating that there is a positive relationship between education and economic growth. Specifically, for each increase in education, there will be a corresponding increase in the percentage of economic growth. Assuming all other variables remain constant, a rise in education will lead to a corresponding increase of 109703.6 units in economic growth. (2) The regression coefficient b2 is -13538.81, indicating that there is a negative relationship between health and economic growth. Specifically, for every decrease in health, there will be an increase in the percentage of economic growth. If there is a decrease in health, economic growth will increase by 13538.81 units, providing all other factors remain constant.

T test

T test is used to determine whether each independent variable partially has a significant effect on the dependent variable. The education variable has a computed probability of 0.0000, which is less than 0.05. Consequently, the outcomes are statistically significant, leading to the rejection of the null hypothesis (H0) and acceptance of the alternative hypothesis (H1). Consequently, the education variable exerts a substantial impact on the economic growth of Indonesia. The variable Health has a computed probability of 0.4941, which is greater than 0.05. Consequently, the outcome lacks statistical significance, indicating acceptance of the null hypothesis (H0) and rejection of the alternative hypothesis (H1). Consequently, the health variable does not exert a substantial impact on the economic growth of Indonesia.

F Test (Simultaneous)

The F test is employed to determine if the independent variables of education, health, and per capita income collectively exert a statistically significant influence on the dependent variable, gini. Hypothesis testing is conducted using the F test, wherein the estimated F regression analysis findings are compared to the Ftable value or the probability of F at a significance level of 5% or 0.05 is compared. There is a statistical F_{value} of 0.000000 <0.05. This means that education and health variables have a significant effect on economic growth in Indonesia.

Determination Coefficient Test

The purpose of testing the coefficient of determination is to assess the extent to which poverty can be accounted for by education and health characteristics. The data reveals a coefficient of determination of 0.984615 for this model, indicating that approximately 98.46% of the economic growth in Indonesia can be accounted for by fluctuations in education and health per capita. Approximately 1.54% of the variance can be attributed to external variables that are not addressed in this study.

5 Discussion

The analysis findings indicate that the level of education and health have a substantial impact on Indonesia's economic growth. This is evident in the outcomes of statistical tests conducted both individually (statistical t-test) and collectively (statistical F-test).

The partial results, obtained using a statistical t-test and a statistical F-test, indicate that the education variable has a calculated probability of 0.0000, which is less than the significance level of 0.05. Consequently, the outcomes are statistically significant, leading to the rejection of the null hypothesis (H0) and acceptance of the alternative hypothesis (H1). Consequently, the education variable exerts a substantial impact on the economic growth of Indonesia. Meanwhile, the Health variable has a computed probability of 0.4941, which is greater than the significance level of 0.05. Consequently, the outcome lacks statistical significance, indicating acceptance of the null hypothesis (H0) and rejection of the alternative hypothesis (H1). Consequently, the health variable does not exert a substantial influence on the economic growth of Indonesia.

Subsequently, a robust public health system will efficiently carry out its tasks and enhance productivity, thereby stimulating economic growth in Indonesia through per-capita GRDP and Constant Price GRDP. There has been a rise in economic growth from 2013 to 2021. Similarly, there have been notable advancements in education and healthcare in Indonesia.

6 Conclusion

The findings of this study indicate that education and health levels have a substantial impact on economic growth in Indonesia. This is evident in the outcomes of statistical tests conducted both individually (statistical t-test) and collectively (statistical F-test).

- The education variable has a probability of 0.0000, which is less than 0.05. Therefore, the obtained data are statistically significant, leading to the rejection of the null hypothesis (H0) and acceptance of the alternative hypothesis (H1). Consequently, the education variable exerts a substantial impact on the economic growth of Indonesia.
- The variable Health has a computed probability of 0.4941, which is greater than the significance level of 0.05. Consequently, the outcome lacks statistical significance, indicating the acceptance of the null hypothesis (H0) and the rejection of the alternative hypothesis (H1). Consequently, the health variable does not exert a substantial influence on the economic growth of Indonesia.
- The statistical F value is less than 0.05, specifically 0.000000. Education and health variables exert a substantial impact on the economic growth of Indonesia.

7 Suggestion

It is recommended that the government continue to encourage economic growth in one way, one of which is by building and developing education and health so that the quality of human resources can increase which will provide maximum results in the future.

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