Available online at : https://talenta.usu.ac.id/jomas/
Journal Of Management Analytical and Solution (JoMAS)
ISSN (Online) 2776-6276

Analysis of The Influence of Education, Health, And Internet User on Economic Growth With Labor Productivity as an Intervening Variable In Indonesia

Dewi Ratna Sari Simatupang[1] , Yola Anggia[2] , Raina Linda Sari[3], Inggrita Gusti Sari Nasution[4]*

[1,2,3,4]Departement of Economic Development, Faculty Economics and Business, Universitas Sumatera Utara,Medan, 20115, Indonesia

ARTICLE INFORMATION

Received : August 7, 2023
Revised : August 30, 2023
Available online : September 1, 2023

KEYWORDS

Labor Productivity, Path Analysis, Panels, Internet

CORESPONDENCE

Phone 082161187007
E-Mail : dewiratnasarisimatupang@usu.ac.id

A B S T R A C T

This study aims to see whether the Labor Productivity variable is able to become an intervening variable between the Education, Health and Internet Users variable on Indonesia's Economic Growth in the 2015-2019 period. The method used is Path Analysis using the Eviews program. The data used is in the form of panels consisting of 34 provinces in Indonesia over a period of 5 (five) years. For model selection using the Chow Test and Hausman Test and from the two tests the Fixed Effect Model was selected. For the value of the Education Variable, the average length of school data is used; the health variable uses life expectancy data and vaternet uses internet user data. Theresults of this study indicate that the Labor Productivity variable is not an intervening variable between the Education, Health, Internet variableand the Economic Growth variable as seen from the Sobel Test results which have a value of less than 1.96 at α=5%. The direct effect of the Education variable on Labor Productivity is negative and not significant. The direct effect of the Health variable on Labor Productivity is negative and significant. The direct effect of the Internet variable on Labor Productivity is positive and not significant. The direct effect of the Education variable on Economic Growth is negative and significant. The direct effect of the Health variable on Economic Growth is positive and not significant. The direct effect of Internet variable on economic growth is positive and significant. The direct effect of the Labor Productivity variable on Economic Growth is negative and not significant.

INTRODUCTION

Since the purpose of economic development is primarily to improve peoples well-being it requires economic growth and equal distribution of income. Productivity and economic growth are two inseparable key indicators underpinning the success of economic development. Productivity improvement is a basic condition for national economic growth and development.

Economists generally give the same meaning to economic growth and development. Economists define economic growth or development as an increase in GDP/GDP. Economic growth in its broadest sense is used to refer to growth in developed countries. On the other hand economic growth indicates growth in developing countries. Atheory of economic growth has been proposed for consideration by economists (Arsyad 1992: 39).

Economic growth is the change in economic activity that occurs each year (Sukirno 2016). Economic growth is one of the main areas of focus for a countrys economy especially in the long run. Syaputra (2017) stated that the process of economic growth is a long-term process of per capita growth when the per capita income of people in aparticular region increases. The theory does not take into account whether the increase in economic growth rate is higher or lower than the population growth rate (Arsyad 2016). In other words a countrys economic growth is a function of productivity

DOI : 10.32734

gains which are reflected in growth in GNP. One of the SDGs like economic growth is the Sustainable Development Goals. 8 is inclusive and sustainable economic growth that supports a full and productive workforce and decent work.

Every country wants stable economic growth and annual growth is defined by GDP growth and productivity. In 2021 Indonesias economy increased by 369 percent from the result recorded in 2020 which showed a growth of 207 percent (BPS 2021). One indicator of economic growth is manpower. Qualified teachers can speed up the countrys development process by competing with developed countries and on the contrary the progress being recorded in the countrys development and the creation of new job opportunities will automatically create job opportunities. into the labor force and at the same time reduce unemployment (Indriani 2016). In neoclassical economic growth theory, economic growth depends on the development of factors of production, namely: capital, labor, and technology (Sukirno, 2001). The larger the labor force, the higher the population growth rate, the greater the national income, and the higher the economic growth (Todaro, 2006). Based on Susenas BPS data, the number of workers working in Indonesiais 94.17% and 5.83% of the population is unemployed (Susenas, 2022).

Another important indicator is education. Education is one of the main capital that is important to carry out sustainable development. With quality human capital, economic performance is believed to be better (Lubis, 2014). Education can increase the productivity of a person's work, which will increase his income. This increase in income also affects the national income of the country concerned, which will then increase the income and living standards of low income people. (Darmawan, 2022). The implication is that withhigher education, the more qualified human life will be. About the national economy, the higher the quality of life of a nation, the higher the growth rate and welfare of the nation. The higher the level of education of the workforce, the higher the productivity and thus the higher the economic growth of a country.

The Human Development Index (HDI) of the knowledge dimension in Indonesia shows progress in 2020. This is reflected in the improvement of Old School Expectations (HLS) and Average Length of Schooling (RLS). The Central Statistics Agency (BPS) noted that the HLS of seven-year- old children in Indonesia was 12.98 years, growing 0.23% compared to 2019. Indonesia's HLS growth slowed compared to the previous year due to the Covid-19 pandemic. Meanwhile, the RLS of the population aged 25 years and over in Indonesia reached 8.48 years, growing 1.68% compared to 2019. Like HLS, Indonesia's HLS growth in 2020 slowed down compared to the previous year of 2.08% (BPS, 2020).

Another indicator that is no less important is technology. Solow (1956) mentioned that in addition to the level of education, one of the factors influencing economic growth is technological progress. Technological advances affect periodic changes in output. Technological growth can leadto an increase in output per labor because technology can be seen from capital per effective labor. The use of the internet is one of the most frequently used technological developments. There are 204.7 million internet users in the country as of January 2022. This number has increased slightly by 1.03% compared to the previous year. In January 2021, the number of internet users in Indonesia was recorded at 202.6 million. (We are Social, 2022).

Health economics is the application of economic theories, concepts, and methodologies to the healthcare industry, according to Mils and Gilson (1990) and Dimas (2010). As a result, health economics is closely related to a number of factors, including the distribution of resources among various health efforts, the quantity of resources used in healthcare, the organization and financing of various health services, the effectiveness of resource distribution and use, and the effects of efforts at prevention, treatment, and healthrestoration on individuals and communities.

AHH, or life expectancy, is a measure used t assess how well the government is doing in enhancing both the general welfare and the level of health of the populace. The term "life expectancy" refers to the average lifetime that a person experiences under the conditions of mortality that are prevalent in his or her community. The success of health builders in a region is more strongly indicated by a high AHH than by a low Life Expectancy, which is a sign that health development has not been successful in that area.

Adam Smith claimed that the most fundamentalsetting for a community's production activities is itsnatural resources. The "maximum limit" for the expansion of an economy is the amount of natural resources that are readily available. In other words, if these resources have not yet been fully employed, the population and the stock of existing capital both contribute to the expansion of output. However, if all of those natural resources are used up, the growth in output will end. When there is economic growth, (physical) capital will start toaccumulate.

In Solow's Theory, it is also said that advances in the field of technology are included as exogenous factors. The impact of these technological advances can create sustainable economic growth by optimizing labor efficiency.

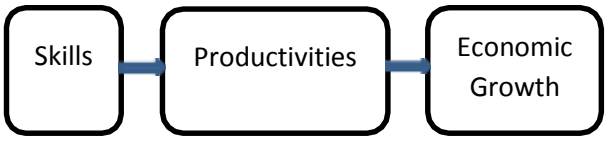
DOI : 10.32734

Only in steady-state conditions, the high level of savings also leads to a high rate of growth. When the economy is in a steady-state position, the growth of output per worker depends only on technological advances. Labor Productivity. Schultz pioneered the theoretical seeds of the relationship between education and productivity. His research analyses why after World War II Germany and Japan recovered fantastically from large-scale destruction. In contrast to the two countries the United Kingdom still rationalized food long after the war. His conclusions from Schultz's research are:

1. Education, which can make people productive
2. Health, availability of good health services

So according to Schultz accelerated recovery from the destruction of the German and Japanese states because the population was healthy and educated. This thought was one of his main contributions which came to be called the Theory of Human Capital and inspired many works in international development in the 1980s. In its development, Schultz pointed out that the development of the education sector by positioning people as a focus in development has contributed directly to a country's economic growth. This can be achieved through an increase in the skills and production capabilities of the workforce. This production capability is known as the concept of productivity.

Figure 1.1 The Effect of Education Growth According to Schultz



Source : Researcher's Processed Product, 2022

Schultz argues that neo-classical economists only analyse explicitly human capital. Schultz teaches the idea of educational capital to improve the quality of human resources through knowledge and skills to increase productivity, specifically related to the investments made in education. Schultz discusses human capital investment and the relationship of education to economic growth, and stipulates that education consists of 2 (two) dimensions:

1. Consumption activities that are direct expenditures for education costs
2. Investment is an expenditure that expects a return in the form of income that

will be obtained in the future which leads to the formation of human capital. Human capital can be transformed into human capital through the effective input of educational, health, and moral values.

METHOD

The focus of this research location is Indonesia, and Indonesian data to be obtained from the Central Statistics Agency. The research period was taken from 2015 to 2019. The data collection technique is to use secondary data. The secondary data used are books, and journals.

The Eviews program was employed as the analysis tool in this study's path analysis of the data. Four steps make up the stages of analysis in this study:

Model of Decomposition of Causal Influences between Variable

A decomposition model is a model that emphasizes influences that are causality between variables, both direct and indirect influences within the framework Skills Productivities Economic Growth of path analysis. Calculations using path analysis with a model of decomposition of causal influencesbetween variables can be distinguished into three asfollows:

1. Direct causal Effect is the influence of one free variable on a bound variable without going through another variable:

a) a) The effect of the Education variable (PDDK) on labor Productivity (PTK).

PDDK → PTK = P PTK PDDK

b) The effect of the Health Variable (KES) on labor Productivity (PTK).

KES → PTK = P PTK KES

c) The effect of the variable number of Internet Users (INT) on labor productivity (PTK).

INT → PTK = P PTK INT

d) The effect of education variable (PDKK) on variable economic growth (PE)

PDDK → PE = P PE PDDK

e) The effect of health variable (KES) on variable economic growth (PE)

KES → PE= P PE KES

f) The effect of variable number of internet users (INT) on variable economic growth (PE)

INT → PE = P PE INT

DOI : 10.32734

2. Indirect Causal Effect is the influence of one free variable on bound variables through other variables contained in one model of causality being analysed.

a) The effect of Education variable (PDDK) on Economic Growth variable (PE) through labor activity variable (PTK)

PDDK → PTK→ PE = (P PTK PDDK) (PE PTK)

The effect of Health variable (KES) on Economic Growth variable(PE) through labor activity variable (PTK).

KES → PTK → PE = (P PTK KES) (PE PTK)

b) The effect of the variable number of internet users (INT) on Economic Growth variable (PE) through labor activity variable (PTK).

INT → PTK → PE = (P PTK INT) (PE PTK)

3. Total Causal Effect or Total Causal Influence is the sum of direct causal influences and indirect influences.

a) The effect of Education variable (PDDK) on Economic Growth (PE) through labor activity variable (PTK).

PDDK → PTK → PE = (PTK PDDK) + (PE PTK)

b) The effect of health variable (KES) on Economic Growth (PE) through labor activity variable (PTK).
KES → PTK → PE = (PTK KES) + (PE PTK)

c) The effect of the variable number of internet users (INT) on economic growth variable (PE) through labor activity variable (PTK).

INT → PTK → PE = (PTK INT) + (PE PTK)

Coefficient of Determination (R^2)

The degree to which the model can account for the variance in dependent values is fundamentally measured by the coefficient of determination (R2). The coefficient of determination has a value between 0 and 1. A low R2 value indicates that the independent variable's capacity to adequately represent the variance of the dependent variable is very low. A value near one, in accordance with Imam Ghozali (2014:97), indicates that an independent variable almost entirely suffices to forecast the variance of a dependent variable.

$$\mathbf{KD} = r^2 \; x \; \mathbf{100}\%$$

Information :

KD : Coefficient of Determination
r : Coefficient of Correlation

T-statistical test

The degree to which the model can account for the variance in dependent values is fundamentally measured by the coefficient of determination (R2). The coefficient of determination has a value between 0 and 1. A low R2 value indicates that the independent variable's capacity to adequately represent the variance of the dependent variable is very low. A value near one, in accordance with Imam Ghozali (2014:97), indicates that an independent variable almost entirely suffices to forecast the variance of a dependent variable.

F-statistical test

used to compare the meaning of independent (free) and dependent (bound) variables together. Making judgments based on the probability of significance requires that:

- H0 be rejected and H1 be accepted if the significant value of F 0.05. This indicates that every free variable significantly affects a boundvariable.
- If F > 0.05 has a significant value, H0 and H1 are allowed. In other words, none of the free variables significantly affect the bound variable.

RESULTS AND DISCUSSION

In this study, there are 2 (two) sub-structural equations, that is:

1. Sub Structural Equation 1 :

PTK = α0 + α1 PDDK + α2 Kes + α3 Int + e1

2. Sub Structural Equation 2 :

PE = β0 + β 1 PDDK + β 2 Kes + β 3 Int + β4+e2

Sub Sctructural Equation 1

Panel data were employed in this study, hence panel data regression principles were followed throughout each stage of analysis. Regressing usingthe FEM model is the initial stage. The processing process using Eviews can be seen below:

DOI : 10.32734

Sub Sctructural Equation 1

Panel data were employed in this study, hence panel data regression principles were followed throughout each stage of analysis. Regressing using the FEM model is the initial stage. The processing process using Eviews can be seen below:

Variable	Coefficient	Std. Eror	t-Statistic	Prob
Log (PDDK)	-0.543224	0.615841	-0.882085	0.3795
Log (KES)	-0.012892	0.0044785	-2.694095	0.0081
Log (INT)	0.181287	0.048326	3.751342	0.0003

Source : Output Eviews, 2022

While regression using REM, the results are as follows: Random Effect Model.

Variable	Coefficient	Std. Eror	t-Statistic	Prob
Log (PDDK)	1.992711	0.701782	2.839502	0.0051
Log (KES)	-0.015587	0.027223	-0.572547	0.5678
Log (INT)	0.076241	0.092364	0.825441	0.4104

Source : Output Eviews, 2022

1. Structural Model Selection 1

There are 3 (three) ways to choose a model in paneldata regression analysis, that is Chow Test, Hausman Test, and LM Test.

Chow Test

Table 4.3 Chow Sub Structure Test Results 1

Effect Test	Statistic	df	Prob
Cross-Section F	326.555808	33,117	0.0000

Source : Output Eviews, 2022

When the probability of Cross Section F is 0,0000 0,05, the Fixed Effect Model (FEM) is the model ofchoice.

Hausman Test

Table 4.4 Hausman Sub Structure Results 1

Effect Test	Statistic	df	Prob
Cross-Section F	14.891444	3	0.0019

Source : Output Eviews, 2022

When the Cros section's random probability value is between 0.0019 and 0.05, the fixed-effect model (FEM) is chosen. The Fixed Effect Model (FEM) was chosen for the Sub Structure 1 equation where the dependent variable is Labor Productivity based on the findings of the Chow Test and Hausman Test.

Test Classical Assumptions

The selected model is exempt from the traditional assumption test because it is a FEM (Fixed Effect Model).

Structural Equation 2

The analysis step on structural equation 2 is the same as structural equation 1. Before choosing a model, estimation is carried out using FEM and REM.

Table 1.3 FEM Sub Structure 2

Variable	Coefficient	Std. Eror	t-Statistic	Prob
Log (PDDK)	-13.15181	4.095762	-3.211077	0.0017
Log (KES)	0.016150	0.052368	0.308395	0.7583
Log (INT)	0.731873	0.239496	3.055892	0.0028
Log (PTK)	0.053212	0.262037	0.203070	0.8394

Source : Output Eviews, 2022

Here are the results of regression using REM.

Table 1.4 REM Structure 2

Variable	Coefficient	Std. Eror	t-Statistic	Prob
Log (PDDK)	2.897299	2.412565	-3.211077	0.0017
Log (KES)	0.224056	0.269743	0.308395	0.7583
Log (INT)	-0.394985	0.694625	3.055892	0.0028
Log (PTK)	-0.705780	0.444241	0.203070	0.8394

Source : Output Eviews, 2022

DOI : 10.32734

Structure Model Selection 2

Chow Test

Table 1.5 Sub Structural Chow Test Results 2

Effect Test	Statistic	Df	Prob
Cross-Section F	16.995817	(33.116)	0.0000

Source : Output Eviews, 2022

When the Cross Section F probability value is 0.0000 < 0.05, the Fixed Effect Model (FEM) is the model of choice.

Table 1.6 Hausman Sub Structure 2 Test Results 2

Test Summary	Chi-Sq. Statistic	Chi-Sq d.f	Prob
Cross-Section Random	8.179912	3	0.0424

Source : Output Eviews, 2022

When the Cross Section R probability value is 0.0000 < 0.05, the Fixed Effect Model (FEM) model is chosen. The Fixed Effect Model (FEM) was chosen for the Sub Structure 2 equation where the dependent variable is Economic Growth based on the findings of the Chow Test and Hausman Test.

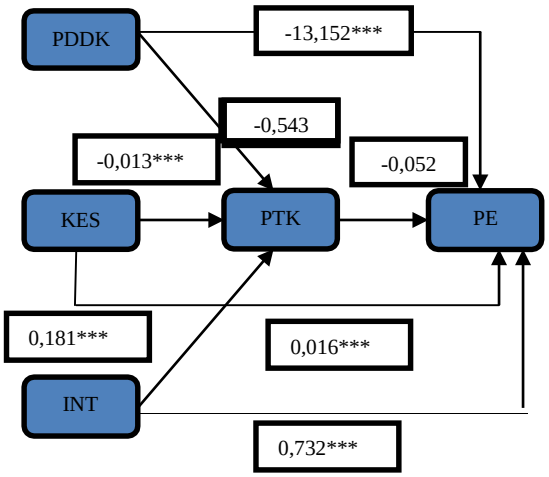
Test Classical Assumptions

The model chosen in substructural equation 2 is not subject to the traditional assumption test because it is a Fixed Effect Model.

Path Analysis Results

From the results of data processing obtained the path coefficient and the degree of its significance can be seen in the following figure:

Figure 1.2 Path Analysis Result



Source : Researcher Processed Products, 2022

Model of Decomposition of Causal Influences Between Variable

a. Direct causal Effect is the influence of one free without passing through another variable, a variable on a bound variable. The independent variables of education, health, and internet use have a direct impact on the intervening variables of labor productivity and economic growth, as well as the direct impact of labor productivity on economic growth, according to the results of processing with Eviews.

Direct Effect Interpretation (Direct Effect)

a. Variable education's impact on labor productivity The value of the education path coefficient to labor productivity is -0.543 with a P value of 0.379 > 0.05 based on the output data mentioned above. This indicates that the Labor Productivity variable is negatively and negligibly impacted by the Education variable. Labor productivity will fall by 0.053 units when education rises by 1%, providing that the other two independent variables and the intervening variable are held constant.

b. The impact of a health factor on a labor productivity factor Based on the output data mentioned above, the relationship between health and labor productivity has a coefficient value of -0,113 and a P value of 0,000,05. In other words, the health factor significantly and directly affects worker productivity. The 0.113 units drop in labor productivity caused by the 1% health improvement is notable.

c. The impact of a variable on labor productivity of the internet. Based on the output figures mentioned above, the internet's impact on labor productivity is estimated to be 0,181 with a P value of 0,000>0,05.

DOI : 10.32734

It implies that the labor productivity variable is positively and significantly impacted by the internet variable. If two other independent variables and intermediary variables are taken as fixed, then labor productivity will rise by 0,181 units for every 1% increase in internet usage.

d. The impact of the economic growth variable on the variable of worker productivity. The value of labor productivity on economic growth is 0,053 based on the production results above, with a P value of 0,8394>0,05. It implies that factors affecting labor productivity are favorable and unimportant to those affecting economic growth. Economic growth will increase by 0,053 units when labor productivity rises by 1%, assuming that two other independent variables and influencing variables are unchanged.

Indirect Causal Effect

The influence of the independent variable on the dependent variable through the intermediary variable is known as the indirect causal effect.

a. The impact of the labor productivity variable on the economic growth variable.

PDDK→PTK→PE= (-0,543)(0,053)=0,028

Sobel Z value = 0,240 < 1,96, the indirect effect of education on economic growth is not significant.

b. The Impact of Health Variables through Labor Productivity Variables on Economic Growth Variables.

X2→Z→Y = (-0,013)(0,053)=0,000689

Sobel Z value = -0.0310 <1.96 The indirect effect of health on economic growth is not significant.

c. The Effect of Internet Variables on Economic Growth Variables through Labor Productivity Variables.

X3→Z→Y= (0,181)(0,053)= 0,009593

Sobel Z value = 0.158 <1.96 The indirect effect of the Internet on economic growth is not significant.

Total Causal Effect

Total causal effect is the sum of the direct causal effect and indirect effect.

a. Total Effect of the influence of Education Variables on Economic Growth

Variables through Labor Productivity Variables.

PDDK→PTK→PE= (-0,543)+(0,053)= -0,49

b. Total Effect Pengaruh Variabel Kesehatan terhadap Variabel Pertumbuhan Ekonomi melalui Variabel Produktivitas Tenaga Kerja.

KES→PTK→PE = (-0,013)+(0,053)= 0,04

c. Total Effect Pengaruh Variabel Internet terhadap Variabel pertumbuhan Ekonomi melalui Variabel Produktivitas Tenaga Kerja.

INT→PTK→PE= (0,181)+(0,053)= 0,234

Based on the results above, the biggest Total Effect is the influence of Internet Variables on economic growth through products, namely the Internet variable, which is equal to 0.234.

Coefficient of Determination (R-Square)

Table 1.7 Coefficient of Determination

Variable	Estimate
PTK	0,993
PE	0,837

Source : Output Processed, 2022

Based on the results of the Coefficient of Determination test above, the R-Square value of the Labor Productivity variable (PTK) is 0.993, which means that Education, Health, Internet (PDDK, KES, INT) can explain variations in the Labor Productivity variable of 99.3%. Then Education, Health, Internet, and Labor Productivity (PDDK, KES, INT, PTK) are able to explain the variation in the Economic Growth (PE) variable of 83.7%.

Parsial Test (T-Statistik Test)

a. The relationship between Education (PDDK), Health (KES), and the Internet (INT) on Labor Productivity (PTK)

The hypothesis used in this test is as follows:

1. Ho : b1 = 0, meaning that there is no positive and significant effect of the independent variable (X) on the intervening variable (Y).
2. Ha : b1 ≠ 0, meaning that there is a positive and significant effect of the independent variable (X) on the intervening variable (Y)

The significant level used is 0.05. If the P-Value is < then the value α = 0.05, then Ho is rejected. So:

1. The variable P-Value (PDDK) is 0.379 > α=0.05, meaning that Ha is rejected and Ho is accepted. So it can be concluded that Education (PDDK) has no significant effect on Labor Productivity (PTK).
2. The variable P-Value (KES) is 0.008 <α=0.05, meaning that Ho is rejected and Ha is accepted. So it can be concluded that Health (KES) has a significant effect on Labor Productivity (PTK).
3. The variable P-Value (INT) is 0.000 <α=0.05, meaning that Ho is rejected and Ha is accepted. So it can be concluded that the Internet (INT) has a significant effect on Labor Productivity (PTK).

DOI : 10.32734

4. The variable P-Value (PTK) is 0.8394 > α=0.05, meaning that Ha is rejected and Ho is accepted. So it can be concluded that Labor Productivity (PTK) has no significant effect on Economic Growth (PE).
b. The Influence of Education (PDDK), Health (KES), and Internet (INT) on Economic Growth (PE)

The hypothesis used in the research is as follows:
1. Ho: b1 = 0, meaning that there is no positive and significant effect of the independent variables on the dependent variable, namely Economic Growth (PE).
2. Ha: b1 ≠ 0, meaning that there is a positive and significant effect of the independent variable on the dependent variable, namely Economic Growth (PE).

The significant level used is 0.05. If the P-Value is < then the value α = 0.05, then Ho is rejected. Based on the regression results above, then:
1. The variable P-Value (PDDK) is 0.01 <α=0.05, meaning that Ho is rejected and Ha is accepted. So it can be concluded that Education (PDDK) has a significant effect on Economic Growth (PE).
2. The variable P-Value (KES) is 0.758 > α=0.05, meaning that Ha is rejected and Ho is accepted. So it can be concluded that Health (KES) has no significant effect on Economic Growth (PE).
3. The variable P-Value (INT) is 0.003 <α=0.05, meaning that Ho is rejected and Ha is accepted. So it can be concluded that the Internet (INT) has a significant effect on Economic Growth (PE).

6. F-Statistic Test

F test to see the effect of the independent variable on the dependent variable simultaneously. In this study, the F test was carried out at α=5%. The dependent variable is 2 (two) Labor Productivity (PTK) variables which are also intervening variables and the second variable is Economic Growth (PE).

Table 1.8 F-Statistik Test

Variable	Probability F Statistic	a	Result
PTK	0,000	0,05	Significant
PE	0,000	0,05	Significant

Source : Processed Data, 2022

From the table above the results of the F test for two independent variables are significant.

CONCLUSION

Based on the results of data processing, it can be concluded as follows:
1. The direct effect of the Education variable on the Labor Productivity variable is negative and not significant.
2. The direct effect of the Health variable on the Labor Productivity variable is negative and significant.
3. The direct effect of the Internet variable on the Labor Productivity variable is positive and significant.
4. The direct effect of the Labor Productivity variable on the Productivity variable of the Economic Growth variable is positive and not significant.
5. The indirect effect of education on economic growth through the Labor Productivity variable is not significant because the Z value = 0.240 <1.96.
6. The indirect effect of health on economic growth through the labor productivity variable is not significant because the Z value = -0.0310 <1.96.
7. The indirect effect of the internet on economic growth through the Labor Productivity variable is not significant because the Z sobel value = 0.158 < 1.96.

ACKNOWLEDGMENTS

Thank you to the University of North Sumatra for funding research activities and publication of this article. The author expresses his gratitude to the reviewers of this article who have provided constructive input to improve the quality of the scientific substance of this article.

REFERENCES

[1] Achmad, E. Kuncoro and Riduwan. 2014. How to Use and Use Path Analysis (Path Analysis). 6th printing. Bandung: Alphabet.

[2] rsyad, Limcolin. 1992 Economic Development, Edition 2. Yogyakarta: STIE YKPN

[3] Darmawan, Arya. 2022. The Effects of Poverty, Education and Health on Economic Growth in East Java. Syarif Hidayatullah State Islamic University.

[4]Ghozali, Imam. 2018. Application of Multivariate Analysis with the IBM SPSS 25 Program Diponegoro University Publishing Agency semarang.

DOI : 10.32734

[4] Ghozali, Imam. 2018. Application of Multivariate Analysis with the IBM SPSS 25 Program Diponegoro University Publishing Agency semarang.

[5] Hidayat, A. (2019). Analysis of the Influence of Government Expenditure, Investment, and Manpower on Economic Growth in Pasaman Regency in 2004-2017. Andalas University.

[6] Indriani, M. 2016. The Role of Labor in National Economic Development. Echo of Justice, Vol. 3, no. 1, pp. 74-85.

[7] Jorgensen, DW., Gollop, FM., Fraumeni, BM. 1987. Productivity and US Economic Growth. Cambridge, Harvard University Press

[8] Lubis, Citra Ayu. B. E. 2014. The Effect of Total Labor and Education Spending on Economic Growth, Journal of Eonomia, Vol. 10, No. 2.

[9] Purnamasari, S.A., Rostin, & Ernawati. (2017). The Effect of Investment and Labor on Economic Growth in Southeast Sulawesi Province. Journal of Development Economic Progress, 2.

[10] Ramayani Citra. 2012. Analysis of Labor Productivity and Indonesia's Economic Growth, Journal of Economic Studies, Vol 1 No1 April 2012

[11] Saria Dwi Puspita. Oktora Siskarossa Ika. 2021. Determinants of Labor Productivity in Large and Medium Manufacturing Industries in Java Island, Indonesian Journal of Economics and Development, Indonesian Journal of Economics and Development, Vol. 21 No. July 2, 2021: 185– 203

[12] Sari Raina Linda et al. 2019. Indonesian Labor Productivity, Al-Hayat Foundation, Medan

\[13] Solow, R. 1956. A Contribution to the Theory of Economic Growth. Journal of Economics, 70(1),65–94.

[14] Sugiyono. 2004, Business Research Methods,Alfabeta, Bandung

[15] Yogaswara, A. R. (2015). The Role of Information And Communication Technology (ICT) in Economic Growth in Developing Countries. University of Indonesia

[16] Yuhendri, Idris, and Yeniwati. (2013). The Influence of the Quality of Education, Health, and Investment on West Sumatra's Economic Growth. Journal of Development Economics, Faculty of Economics, Padang State University

DOI : 10.32734