

The Effect of Social Infrastructure on Rural Poverty in Indonesia with The Village Development Index As Moderation Variable

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ABSTRACT: Poverty is a major issue in many developing countries, including Indonesia. During the 2015-2021 period, Indonesia's poverty was dominated by rural areas. One of the efforts to overcome poverty is to provide access to infrastructure for the poor. Indonesia's poverty predominates in rural areas with minimal access to basic infrastructure. This study aims to analyze: (1) the effect of educational infrastructure on rural poverty; (2) the influence of health infrastructure on rural poverty; (3) Development Village Index moderates the effect of the number of schools and the number of health facilities on rural poverty. Social infrastructure is measured based on educational infrastructure (number of elementary school, junior high school, high school, and university buildings) and health infrastructure (number of hospital buildings and public health center), while poverty is measured by the percentage of rural poverty. The data source used is from the results of a national scale survey, namely the village potential 2018-2021. The analytical method uses multiple linear regression models and moderation tests. The results of the analysis show that the number of schools has a negative and significant effect on rural poverty, while the number of health facilities has a positive and significant effect on rural poverty. And based on the results of the moderation test that development village index is a moderating variable that can strengthen the relationship between the number of schools and the number of health facilities to rural poverty in Indonesia. Based on these findings, government support is needed in education assistance which will help increase access to education for poor families and improve the quality of health services that can reach most of the poor.

Keywords: Education Infrastructure, Health Infrastructure, Rural Poverty, Developing Village Index.

ABSTRAK: Kemiskinan Indonesia di dominasi di daerah pedesaan yang minim akses infrastruktur dasar. Penelitian ini bertujuan untuk menganalisis: (1) pengaruh infrastruktur pendidikan terhadap kemiskinan pedesaan; (2) pengaruh infrastruktur kesehatan terhadap kemiskinan pedesaan; (3) Indeks Desa Membangun (IDM) memoderasi pengaruh jumlah sekolah dan jumlah fasilitas kesehatan terhadap kemiskinan pedesaan. Infrastruktur sosial diukur berdasarkan infrastruktur pendidikan (jumlah bangunan SD, SMP, SMA, Perguruan Tinggi) dan infrastruktur kesehatan (jumlah bangunan rumah sakit dan pusat kesehatan masyarakat), sedangkan kemiskinan diukur dengan persentase kemiskinan pedesaan. Sumber data berasal dari hasil survei berskala nasional yaitu Podes 2018-2021. Metode analisis menggunakan model regresi linier berganda dan uji moderasi. Hasil analisis menunjukkan jumlah sekolah berpengaruh negatif dan signifikan terhadap kemiskinan pedesaan, sedangkan jumlah fasilitas kesehatan berpengaruh positif dan signifikan terhadap kemiskinan pedesaan. Dan berdasarkan hasil uji moderasi, IDM merupakan variabel moderasi yang dapat memperkuat hubungan antara jumlah sekolah dan jumlah fasilitas kesehatan terhadap kemiskinan pedesaan di Indonesia. Berdasarkan temuan tersebut, diperlukan dukungan pemerintah dalam bantuan pendidikan yang akan membantu peningkatan akses pendidikan bagi keluarga miskin dan meningkatkan kualitas pelayanan kesehatan yang dapat menjangkau sebagian besar masyarakat miskin.

Kata Kunci : Infrastruktur Pendidikan, Infrastruktur Kesehatan, Kemiskinan Pedesaan, IDM

INTRODUCTION

The purpose of development policy is to eradicate widespread poverty, which lies at the heart of development issues (Todaro & Smith, 2013). Two-thirds of the extremely poor, either as small farmers or as low-paid farm laborers, are supported by subsistence agriculture, according to data from emerging nations. The remainder are located in the perimeter and on the outskirts of the city center, with the remaining one-third working in rural areas but providing minor services (Todaro & Smith, 2013).

World Bank research (2016) that 80% of the population is extremely impoverished and 75% resides in rural areas. And in the African and Asian regions, an average of 80% of all poverty groups reside in rural areas, whereas in Latin America, approximately 50 % of the entire poor reside in rural areas (Todaro & Smith, 2013).

Lack of access to basic services and inadequate infrastructure development are two factors that are strongly associated with poverty in rural Sub-Saharan Africa (SSA) (Shepherd et al., 2014). According to a World Bank report entitled *Reshaping Economic Geography* (2009) demonstrated that infrastructure in Brazil, Ghana, India, Mexico, Russia, and Uganda does not have a sufficiently substantial association to lowering the level of inequality between regions. In addition, the analysis demonstrates that infrastructure development is not pro-poverty, therefore the enacted policies do not contribute to the eradication of poverty.

Poverty in rural areas is one of the characteristics of Indonesian poverty and a factor in the high total poverty rate, as the majority of the rural population works in the agricultural sector, primarily as farm laborers and casual laborers, resulting in very low salaries (Hasibuan et al., 2019). The poor situation in Indonesia is illustrated in Figure 1, a greater proportion of the impoverished will reside in rural areas than in urban areas. When seen as a percentage of the poor population, it indicates that the percentage of the poor population in rural areas increases every year, while the percentage of the urban population is lower than the percentage of the entire poor population. These factors suggest that rural populations are predominately impoverished. In addition, it indicates that the poor population in rural areas has had a declining tendency between 2015-2021, On the other hand, the poor population in urban areas has experienced an increasing trend.

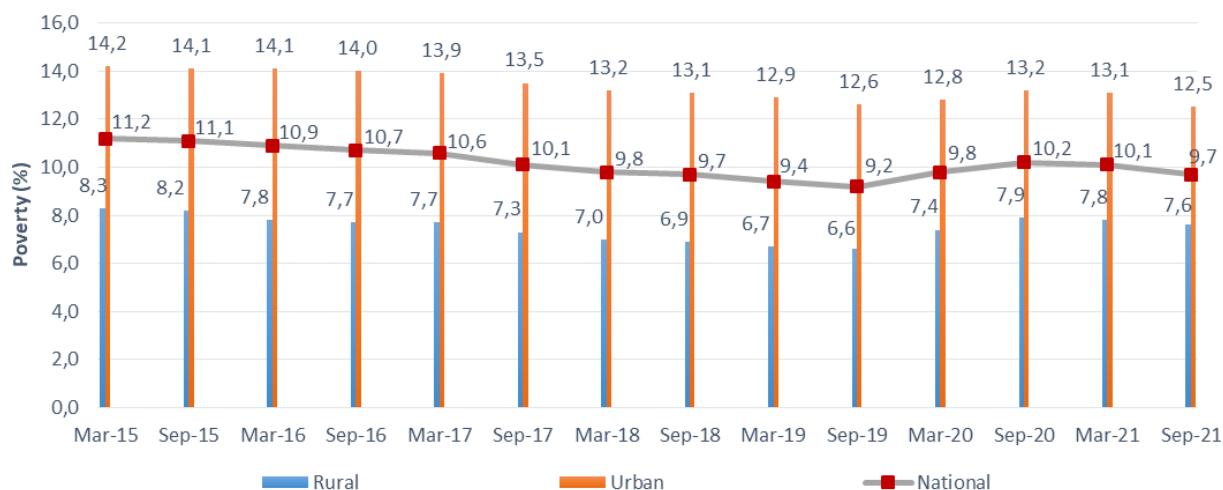


Figure 1. Percentage of Poor Population in 2015-2021

Source: Statistics Indonesia, 2022

Sen (1999) argues that poverty is not only seen based on insufficient income, but poverty can also occur due to the absence of one or several basic abilities needed to obtain a minimum function in social life. By increasing basic abilities, namely education and health, it is possible for someone to earn a better income and also be free from income poverty. The more inclusive the outreach to education and health, the more likely it is that the poor will have a better chance of overcoming poverty.

Several prior studies have emphasized the alleviation of poverty through development in various domains. Studies conducted by Prawesti and Hermawan (2017) found that fundamental infrastructure improvement can help alleviate poverty. According to Faridi et al (2015) Infrastructure is crucial in the context of building a country's economy since it has an effect on boosting productivity, lowering transaction costs, and expanding employment possibilities in order to alleviate poverty. Rural infrastructure improvement given for the community can create revenue savings through reduced spending that can be redirected to other areas of consumption, hence reducing poverty levels. (Galadima, 2014).

Marinho et al (2017) contends that infrastructure spending, particularly in the field of education, is crucial for eradicating poverty. Nugroho (2015) conducted research on the significance of basic infrastructure in Indonesia's fight against poverty. According to his findings, a rise in the number of schools influences poverty rates through economic growth as measured by the Human Development Index.

Health infrastructure is also an important part of poverty avoidance, as persons with diseases can impede productivity and, as a result, decrease revenue (Marinho et al., 2017). According to Douthit & Alemu (2016) Due to their inability to pay for transportation, lodging, and treatment, those in poverty who are afflicted with illness are unable to overcome obstacles to getting health care. Owing to a lack of infrastructure, the patient's vulnerability to disease due to poverty cannot be overcome in this instance. Due to insufficient investment and other building delays, the development of infrastructure failed.

According to a study conducted by the IMD World Competitiveness Ranking 2022, which is a study to determine how a country manages competence in achieving long-term economic growth in creating jobs and social welfare, shows that infrastructure ranking has increased from position 59 in 2018 to position 52 out of 63 countries in 2022. Indonesia's infrastructure ranks lowest in the education and health and environment sectors respectively at 58 and 59.

In this research, two variables affected rural poverty: the number of schools and the number of healthcare services. The variable number of schools is used to characterize access to education infrastructure, while the variable number of health facilities is used to characterize access to health infrastructure. In addition, the Developing Village Index or in Indonesian term called Developing Village Index (*IDM*) is used as a moderating variable, which can increase or lessen the direct association between the independent variables and the dependent variable.

The Development Village Index is used as a moderating variable because it is an indicator from the Ministry of Villages, Development of Disadvantaged Regions, and Transmigration to measure the efficiency of village development from village fund programs (Ministry of Villages, Disadvantaged Regions and Transmigration, 2016) which has nearly quadrupled (from IDR 20.7 trillion in 2015 to IDR 72.0 trillion in 2020) (Kementerian Keuangan, 2019). Developing Village Index is an index used to determine of rural development by using indicators of Social Security Index, Economic Resilience Index, and Environmental Resilience Index. The developing village index is used as a reference because the social security index indicator can explain the dimensions of education and health.

Research conducted by Fasya et al (2020) when comparing between the developing village index and poverty in Jabung District, Malang Regency, that there is a moderate/quite strong correlation between poverty and the index of developing villages and a negative relationship when the poverty level is lower, the village will more advanced. Sunaryono (2021) also believes that increasing village status has a significant effect on reducing the percentage of poverty rates in West Kalimantan Province. Using a moderating variable in this study is a novelty that has not been carried out in previous studies.

With the domination of Indonesian poverty in rural areas for the last six years (2015-2021), policies related to rural poverty issues are needed. Therefore, various in-depth studies are needed regarding the factors that can affect the level of poverty in rural Indonesia. One of the factors that play an important role in reducing poverty is the availability of education and health infrastructure.

This research's objective is to examine: (1) the impact of education infrastructure on rural poverty; (2) the impact of health infrastructure on rural poverty; and (3) the impact of the development

village index moderates as a moderator between education infrastructure and health infrastructure on rural poverty in Indonesia during the period of 2018 to 2021. Education is an investment in the production of high-quality human capital, and both formal and non-formal education can play a significant role in the long-term reduction of poverty.

METHODS

This research was carried out using a quantitative methodology. This research utilizes secondary data received from the national statistics office. This research utilised panel data comprised of time series from 2018 to 2021 and cross section data from 34 provinces. The factors included in the research are: (1) the dependent variable, rural poverty in percent units; (2) the dependent variables are the number of schools (elementary, middle, high, and tertiary institutions) and the number of health facilities (hospitals and health centers) in units.; (3) Village building index with index units is the moderating variable.

Observation and literature review were employed in the acquisition of data (Sugiyono, 2014). This research implemented multiple linear regression analysis and the moderation test as its method of analysis. Multiple regression analysis is used to determine the regression coefficient, which determines whether the proposed hypothesis is accepted or rejected (Ghozali, 2016).

Todaro & Smith (2013) argue that public spending in the form of providing education and health infrastructure is one of the policy options for overcoming poverty because it can indirectly increase the income of the poor. Therefore, this study examines the effect of education infrastructure and health infrastructure on rural poverty with multiple linear regression analysis, with the following model:

$$\text{LnY} = \alpha + \beta_1 X_1 + \beta_2 X_2 + \varepsilon \dots\dots\dots(1)$$

Where:

- α : Constant
- $\beta_1 - \beta_2$: The coefficient of each variable in model (i)
- Y : Percentage of poor population in rural areas (percent)
- X_1 : Number of schools in rural areas (units)
- X_2 : Number of health facilities in rural areas (units)
- Ln : Natural Logarithm
- ε : Error

To determine whether the Z variable (Developing Village Index) can moderate the relationship between the independent variables, namely the infrastructure for education and health, and the dependent variable, namely the percentage of poverty. According to Ghozali (2016) tests of moderation can be conducted using a residual test specified by the regression equation model as follows:

$$Z = \alpha + \beta_1 \text{Ln}X_1 + \beta_2 \text{Ln}X_2 + \varepsilon \dots\dots\dots(2)$$

$$|\varepsilon| = \alpha + \beta_3 \text{Ln}Y \dots\dots\dots(3)$$

Where:

- α : Constant
- $\beta_1 - \beta_3$: The model's coefficient for each variable (ii)
- Y : Percentage of poor population in rural areas (percent)
- X_1 : Number of schools in rural areas (units)
- X_2 : Number of health facilities in rural areas (units)
- Z : Development Village Index
- Ln : Natural Logarithm
- ε : Error

RESULTS AND DISCUSSIONS

The description of statistical data contains a description of the basic data, namely the number of observations, minimum value, maximum value, average value, and standard deviation of the variables in this study. These values will be shown in the following Table 4.1:

Table 1. Statistical Description

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Rural_Poverty (%)	132	4.87	36.64	13.38	7.60
Education (unit)	136	550.00	42895.00	7254.28	9123.93
Health (unit)	136	70.00	1614.00	404.68	354.67

Source : SPSS, Author’s Calculation

The rural poverty percentage variable in this study is used as the dependent variable. The statistical description table above shows that the rural poverty percentage variable has an average of 13.38 and a standard deviation of 7.6 with values ranging from 4.87 to the highest of 36.64.

Furthermore, the independent variables in this study are education infrastructure and health infrastructure. Educational infrastructure based on the number of school building units elementary school, junior high school, high school, and university. The educational infrastructure variable has the highest score of 42,895 and the lowest score of 550 with an average value of 7,254.28. The health infrastructure variable is based on the number of hospital and public health center building units. The health infrastructure variable has the highest value of 1614 and the lowest value of 70 with an average of 404.68.

The percentage of rural poverty in Indonesia during the period 2015 to 2021 shows a declining trend. Based on data from the Central Statistics Agency in Figure 1, the March 2015 period had the highest poverty rate of 14.2 percent and in September 2021 it decreased to 12.25 percent.

Based on Figure 2, it can also be seen that the average percentage of rural poverty from 2018-2021 tends to cluster in eastern Indonesia, namely the provinces of West Papua, Papua, Maluku, Gorontalo and East Nusa Tenggara. Meanwhile, the western region of Indonesia tends to have a low poverty rate, namely the provinces of Bali, Jambi, South Kalimantan, Central Kalimantan and the Bangka Belitung Islands.

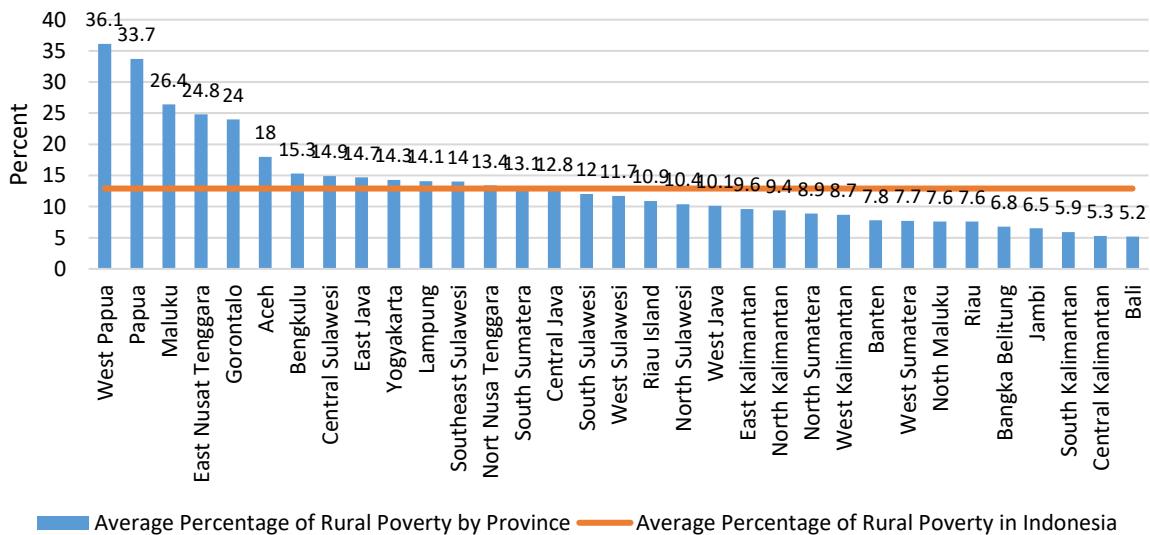


Figure 2. Average Percentage of Rural Poverty by Province 2018-2021

Source: Statistics Central Agency (BPS), 2022

Based on the number of school building elementary school, junior high school, high school, and university in rural Indonesia throughout 2019-2021, the rural education infrastructure has not undergone considerable development. In 2020, there will be 282,187 units of educational infrastructure. In 2021, however, it will decline to 281,423 units.

Based on the distribution of education infrastructure in each province in 2021, the provinces are ranked as follows. This indicates that the majority of school facilities are located on the island of Java. The provinces of North Sumatra, West Java, Central Java, East Java, and South Sulawesi have

excellent educational infrastructures. Meanwhile, educational infrastructure is lacking in the provinces of Papua, West Sulawesi, Gorontalo, North Kalimantan, and the Bangka Belitung Islands.

The rural health infrastructure, as measured by the number of hospitals and public health center buildings between 2019 and 2021, has grown annually. In 2019, there were 14,340 units of health infrastructure; in 2020, there will be a rise, and by 2021, there will be 14,632 units of health infrastructure.

The distribution of health infrastructure in each province in 2021 indicates that the majority of health infrastructure is concentrated in Java. North Sumatra, West Java, Central Java, East Java, and South Sulawesi are provinces with superior health infrastructure. In contrast, the provinces of Maluku, Gorontalo, West Sulawesi, North Kalimantan, and the Bangka Belitung Islands have limited health facilities.

To examine the model in greater depth, the following classical assumption tests, statistical tests, and moderation tests will be conducted:

Classic Assumption Test

The *One Sample Kolmogorov Smirnov* test is used to determine if the dependent and independent variables have normal distributions. If the significance value is greater than 0.05, the data are considered regularly distributed. In contrast, if the significance value is < 0.05 , the data are not regularly distributed. According to the outcomes of statistical tests, the significance level is 0.200. This explains the normal distribution of the regression equation, since $0.200 > 0.05$. Consequently, the residual data in the regression model have a normal distribution.

This research's multicollinearity test tries to determine whether or not there is a correlation between the independent variables by examining the value of the *Variation Inflation Factors (VIF)*. Ghozali (2013) indicates that the presence of multicollinearity is indicated if the VIF value is > 10 .

Table 2. Multicollinearity test with VIF Method

Variable	Centered VIF
LnEducation	6.477
LnHealth	6.477

Dependen Variabel: LnPoverty

Source : SPSS, Author's Calculation

According to Table 2, the results of the multicollinearity test indicate a VIF value of 6,477 for both the variable education infrastructure and the variable health infrastructure. All of them satisfy the multicollinearity-free requirement, which is a VIF value of < 10 . Consequently, it is possible to conclude that there is no multicollinearity between variables.

Heteroscedasticity

The heteroscedasticity test seeks to identify non-constant residual variance in the regression, hence the accuracy of the prediction results is questionable. In this research, the Spearman test will be used to examine heteroscedasticity.

Table 3. Heteroscedasticity Test with Spearman Rho

Variable	Sig. (2-tailed)
Constant	1.000
LnEducation	0.977
LnHealth	0.600

Source : SPSS, Author's Calculation

According to the *Spearman Rho* test results in Table 3, the variable education infrastructure (X1) has a significant value of 0.977 and the variable health infrastructure (X2) has a significance value

of 0.600, with each variable's significance being greater than the 5% confidence level (0.05). Therefore, it can be stated that the regression model lacks heteroscedasticity.

The autocorrelation test aims to see whether there is a correlation between the confounding errors in period t and the errors in period t-1 (previously). The statistical value of the *Durbin-Watson* test is 0.540, as indicated by the value of the autocorrelation test. Because the statistical result of the *Durbin-Watson* test is less than 1, it can be assumed that the non-autocorrelation assumptions are not satisfied or that autocorrelation exists.

Therefore, it is necessary to do an action to overcome the occurrence of autocorrelation. One of the methods to overcome autocorrelation is *Cochrane-Orcutt*. According to Ghozali (2016) the *Cochrane-Orcutt* method is one of the methods used to overcome the autocorrelation problem, where the research data is converted into a lag form. Following are the results after the *Cochrane-Orcutt* method was carried out.

The *Durbin-Watson* value after repairs using the *Cochrane-Orcutt* method was 1.672, which is between 1 and 3. It can be concluded that either the assumption of non-autocorrelation holds true or there is no autocorrelation.

Statistic Test

F Test

F test to determine whether all independent variables in the model have an influence on the dependent variable simultaneously. If after testing the probability significant value ($Sig \leq 0.05$), the probability is significant, then simultaneously the independent factors affect the dependent variable, however if the probability $>$ significant value ($Sig \geq 0.05$), then simultaneously the independent variables have no effect on the dependent variable.

The F test results can be obtained by computing the F value, which is 12,695 with a probability of 0.000. With a probability value of 0.000, the significance level is less than 0.05. It can be concluded that simultaneously the variables of education infrastructure and health infrastructure have a significant effect on rural poverty.

t Test

Table 4. t Test

Variable	Coefficient	t-statistic	t-table	P-value
Constant	2.901	7.797	1.9784	0.000
LnEducation	-0.529	-4.786	1.9784	0.000*
LnHealth	0.703	5.020	1.9784	0.000*

Dependen Variable: LnPoverty

Note: *) significant at $\alpha = 0.05$

Source : SPSS, Author's Calculation

Based on the results of the multiple regression test in table 4, the following can be explained:

- (1) Education infrastructure variable has a t statistic value $4.786 >$ t table (1.9784). This means the education infrastructure variable has a significant influence on rural poverty variable in Indonesia.
- (2) The next result shows the result of t-statistic health infrastructure, where the result of health infrastructure has a t-statistic value of $5.020 >$ 1.9784 (t table). That is, in this study health infrastructure variable has a significant influence on rural poverty variable in Indonesia.

R² Test

The coefficient of determination attempts to quantify the model's capacity to explain the variance in the effect of independent factors on the dependent variable. R^2 (R-Square), a measure of the coefficient of determination, indicates that the infrastructural factors for education and health have a positive impact on the dependent variable with a coefficient of determination value of 0.164, and shows the

percentage value of the independent variable studied which influences the rural poverty variable by 16% while the remaining 84% is explained by other variables outside this study.

The Effect of Education and Health Infrastructure on Rural Poverty

In this research, the effect of education infrastructure and health infrastructure factors on rural poverty variables was analyzed using multiple linear regression, as shown in Table 4 below:

Based on table 4, the following equation may be derived:

$$\text{LnPoverty} = 2.901 - 0.529 \text{ LnEducation} + 0.703 \text{ LnHealth}$$

The coefficient value for educational infrastructure is -0.529, indicating that educational infrastructure has a significant negative and significant impact on rural poverty. This suggests that a 1 % increase in the average length of education will reduce poverty by 0.529%. This is in line with the first hypothesis which states that educational infrastructure has a negative and significant impact on poverty in Indonesia.

The results of this study are in line with the research Adhitya et al (2022) that the number of educational facilities has a negative and significant relationship to poverty in Indonesia. Liu et al (2021) explain that having education in rural areas is because it helps redistribute income and decides for rural communities to stay in school. Rural communities can easily access educational infrastructure; as a result, revenue savings from reduced spending can be generated. These savings can then be used to improve other areas of consumption, such as food, raising standards of nutrition and lowering poverty levels (Galadima, 2014).

This is also in line with the findings of Didu & Fauzi (2016) who found that education variables have an effect on reducing poverty in Lebak Regency. This is reinforced by the findings Ambia dan Irwan (2018) which explain that spending on education infrastructure can reduce poverty in Indonesia. As well as the findings Pramono & Marsisno (2018) explaining that 12 years of compulsory education must be supported by the availability of quality educational infrastructure, including the construction of new school units, classrooms, libraries and laboratories. By providing accessibility to basic infrastructure such as increasing the number of schools which has an impact on reducing poverty (Nugroho, 2015).

Research Marinho et al (2017) on the relationship between infrastructure and poverty has also been proven in Brazil in his research that infrastructure has affected the temporal trajectory in Brazil and after improving education infrastructure can reduce poverty in Brazil. Spending on infrastructure has two effects. The direct effect appears in the form of benefits received from spending on work programs, increased income and welfare. Indirect effects arise when government investments in rural infrastructure, agricultural research, health and education of rural communities stimulate agricultural and non-agricultural growth leading to greater jobs and income-earning opportunities for the poor and cheaper food (Purnomo et al., 2021)

Human capital theory (Becker, 1994) explains that education can create skills that facilitate higher productivity and are considered as an important way for the rural poor to become free from rural poverty traps (Zhang, 2014). The higher the education level, the less likely it is to become poor (Njong, 2010). Thus, higher knowledge will improve quality and skills and produce a skilled workforce, so as to increase productivity and welfare.

Rural poverty is positively and significant impacted by health infrastructure, as indicated by the influence's coefficient value of 0.703 on this factor. The poverty rate will therefore rise by 0.703% if the health infrastructure is 1%. This is not in line with the second hypothesis that health infrastructure negatively affects rural poverty.

The results of this study are in line with the findings of Fithri & Kaluge (2017) that government expenditure on health has a positive effect on poverty in East Java. Because the health infrastructure budget has not been effective in reducing the prevalence of poverty (Prawesti & Hermawan, 2017). The government's efforts to improve the health of the poor are not effective because there are factors

identified at the institutional and policy level that impede the increase in access to and outcomes of health services for the poor (Utomo et al., 2011).

The ineffectiveness in overcoming poverty is caused by differences in the number of health infrastructure, such as the number of public health center. The ideal public health center standard per sub-district is at least one public health center per sub-district. This standard has been achieved nationally, but there are still areas that have not met these standards, such as the provinces of Papua and West Papua (Ministry of Health, 2021).

The availability of health infrastructure is not supported by the uneven distribution of doctors in Indonesia because they are concentrated on the island of Java or in urban areas. For example, in DKI Jakarta one doctor treats 608 residents, while in West Sulawesi one doctor treats 10,417 residents. Around 5 percent of public health center do not have doctors at all and 9 percent of public health center have doctors, but the location of the doctor's residence is far from the public health center (Rahayu, 2020). Hafidz & Shidieq (2018) explains that public health center are inefficient for population health insurance coverage in accessing health facilities. Increasing health insurance coverage drives demand for health care and increases the efficiency of health facilities and access to services, especially for the poor.

This finding is not in line with Nugroho (2015) ased on his findings that the health infrastructure described by the number of hospitals and public health center has a significant indirect effect on the poverty rate in Indonesia. Furthermore, Pramono & Marsisno (2018) by taking a spatial approach that there is a negative and significant effect of the availability of health infrastructure which is reflected in the ratio of the number of public health center and hospitals per 1,000 residents in each province to the percentage of poor people due to increased equity, access and quality basic health services for people in Indonesia. The existence of adequate and good health facilities will have an impact on improving public health, so that it will increase people's productivity and ultimately have a positive influence on improving the economy. (Hulu & Wahyuni, 2021).

The government's efforts to improve health infrastructure are quite important in alleviating poverty (L. Arsyad, 2010). Arsyad et a (2020) explained that the better access to social services such as public health facilities, the higher the household income. As well as when public health facilities are closer, less time and money is used for traveling, so more household income is available for agricultural inputs and will indirectly reduce poverty.

The Development Village Index strengthens the Impact of Education and Health Infrastructure on Rural Poverty

The test for residuals was conducted to see whether the moderating variable may strengthen or diminish the influence of the independent factors on the dependent variable. The test findings for residuals can be found in Tables 4.9 and 4.10, respectively.

Table 5. Residual Test

Variable	t-statistic	p-value
Constant	3.773	0.000
Rural Poverty	-3.849	0.000

Dependent Variable: Unstandardized Residual

Source : SPSS, Author's Calculation

Based on table 5, the following equation can be derived:

$$|e| = 0.88 - 0,36 Poverty$$

Based on the residual test equation, it is known that poverty is significant with a negative parameter coefficient. The significance value of $0.000 < 0.05$ and the coefficient value of -0.36 demonstrate this. A variable is considered a moderating variable if its parameter coefficient value is negative and statistically significant. The Development Village Index variable is thus a moderating

variable that can strengthen the association between the number of schools and the number of health facilities and poverty.

These results are in line with research conducted by Sunaryono (2021) that increasing the status of the developed village index has a significant effect on reducing the percentage of poverty in West Kalimantan Province. Based on data from the Central Statistics Agency for the 2018-2021 period, Bali is the province with the highest average IDM which has the lowest percentage of rural poverty in Indonesia.

The findings of Fasya et al (2020) with the Product Moment Correlation (Pearson) analysis between the poverty level and the developing village index have a moderate/quite strong relationship and have a negative correlation, which means that the lower the poverty level, the higher the developing village index. Furthermore, in his research that villages with the availability of facilities such as education and health can increase the status of the developing village index.

The government's goal is to increase the village development index as a means of reducing the rural poor population. The village development index places initiatives and the strength of community capacity as the main basis in the process of village development and empowerment, which includes aspects of social, economic and ecological resilience. This can strengthen human quality by increasing opportunities and choices in an effort to uphold the rights and dignity of rural communities, so as to improve welfare and escape the poverty trap.

CONCLUSION

The following conclusions are drawn from the findings of this research: (1) education infrastructure has a negative and significant effect on rural poverty in Indonesia; (2) Indonesia's health infrastructure has a beneficial and considerable impact on rural poverty; (3) The results of the residual test indicate that the index of developing villages can reduce the impact of education and health infrastructures on rural poverty in Indonesia.

The Ministry of Villages, Development of Disadvantaged Regions, and Transmigration has programs that can be carried out to help the success of rural poverty alleviation in Indonesia. These programs are designed to prioritize development activities related to health infrastructure that can be implemented. Educational infrastructure is easy to access for rural communities, so that with this convenience it will generate income savings that come from reduced spending which can be diverted to other areas of consumption such as food which can increase eating standards, so that this infrastructure can reduce poverty.

As for the construction of suitable health facilities, yet if the population is extremely impoverished, Due to the fact that the poor's average income is utilized to meet their daily necessities, they are unable to escape poverty, and any development undertaken must be in line with the growth in the number of new jobs.

This research has limitations on the availability of data used. To see the effect of a policy, it is necessary to use a longer research year period. This study only uses the 2018-2021 period due to the availability of data from BPS. The weakness of this study is that it has not included administrative infrastructure and economic infrastructure variables which are included in the scope of infrastructure types by the World Bank (1994) due to limited data. In addition, education and health infrastructure data cannot further explain the effectiveness of the use of these facilities.

The availability of existing educational infrastructure needs to be supported with education assistance for poor families which will help reduce dropout rates. In addition, the accessibility of the poor to schools must be improved even though the effect is indirect. Efforts to improve the health of the poor must be realized in quality services that can reach most of the poor. The government needs to improve institutions and policies that impede efficiency and effectiveness in accessing health facilities. In addition, it is necessary to expand the distribution of doctors in rural areas and health insurance for the rural poor. The developing village index is expected to be a reference for the government in developing policy interventions that are able to address rural poverty issues.

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