

Infrastructure and Poverty: State Budget Effect Analysis with Panel Model

Nurul Azizah Az Zakiyyah

Email : nurul.azzakiyyah@ep.uad.ac.id

Universitas Ahmad Dahlan, Indonesia

* *Corresponding Author*

Abstract

The problem of poverty has an impact on various socio-economic problems such as high levels of illiteracy and unemployment, low levels of health and a bad environment. One strategy to reduce poverty can be done by building adequate infrastructure. The quality of advanced infrastructure is the main prerequisite needed by a country to accelerate its economic growth and development. This study focuses on the effect of infrastructure development that uses economic growth as a "bridge" in reducing the poverty rate that exists in Indonesia today. The contribution of this research is to find out how infrastructure budgeting affects poverty alleviation. The data used is panel data consisting of 32 provinces in Indonesia. The Fixed Effect model is the method used in this study, where the results show that the accelerated provision of priority infrastructure has a significant effect on poverty reduction. The availability of infrastructure services can encourage economic movement that reduces poverty. Partially, economic infrastructure, namely roads and clean water, has a significant effect on poverty alleviation, while social infrastructure DAU Education and DAU Health also have a significant negative effect. The results of this study have implications for the government where with the availability of adequate infrastructure it will be able to overcome poverty.

This is an open access article under the [CC-BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.



Article history

Received 2022-10-07

Revised 2022-01-12

Accepted 2023-01-28

Keywords

Accelerated Infrastructure

Poverty

Budget State

JEL Classification*:

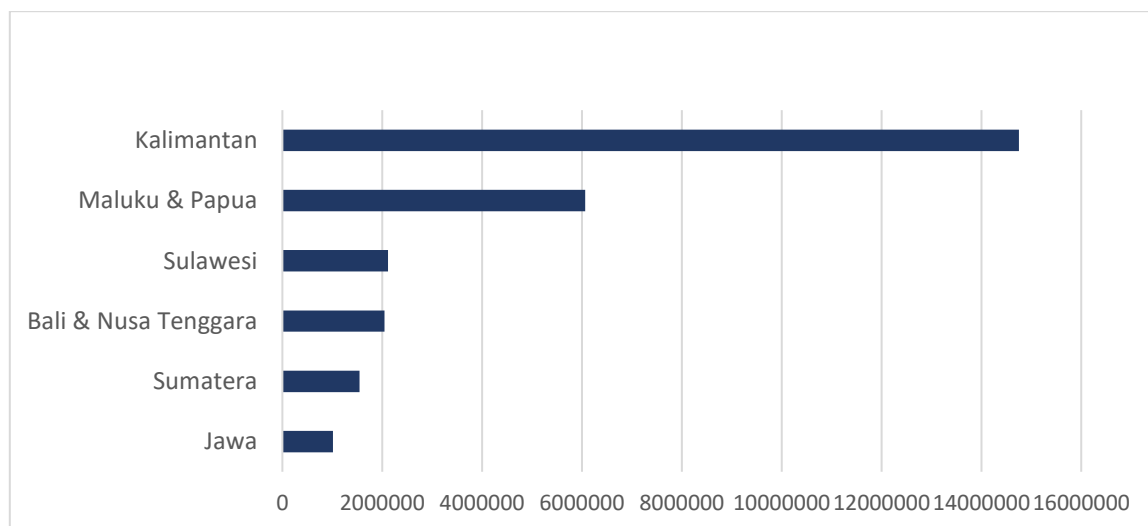
H1, H5, I3

Introduction

One of the important capital factors in improving and developing the economy is the condition of adequate infrastructure. The quality of advanced infrastructure is the main prerequisite needed by a country to accelerate its economic growth and development. Infrastructure development aims to reduce logistics costs so that the management of the allocation of resources owned by a region can be driven more quickly and have an impact on efficiency in economic activity.

Based on data from The Global Competitiveness Report 2020, infrastructure is one of the variables used to measure the level of efficiency of a country in utilizing production factors so as to encourage more efficient economic conditions. Resilient infrastructure development is also one of SDG's goals, which is the ninth goal (BPS, 2020).

In addition to economic growth and competitiveness, the main goal of infrastructure development in developing countries is to support poverty alleviation programs. Poverty is a global phenomenon that arises not only from a lack of resources but also from limited access to resources, information, opportunities, empowerment and mobility. The problem of poverty if left unchecked will have an impact on various socio-economic problems such as high levels of illiteracy and unemployment, low levels of health and a bad environment. One strategy to reduce poverty can be done by building adequate infrastructure. Infrastructure development is a public investment that produces a positive correlation between growth and income inequality (Charlery, Qaim, & Smith-Hall, 2016; Chatterjee & Turnovsky, 2012). However, unbalanced development of unbalanced infrastructure development can result in failure to reduce inequality in economic growth (Chotia & Rao, 2017), because inequality between regions occurs as a consequence of development inequality between regions that occurs as a result of development being concentrated in certain areas (Sukwika, 2018).



Source: Central Bureau of Statistics, 2022

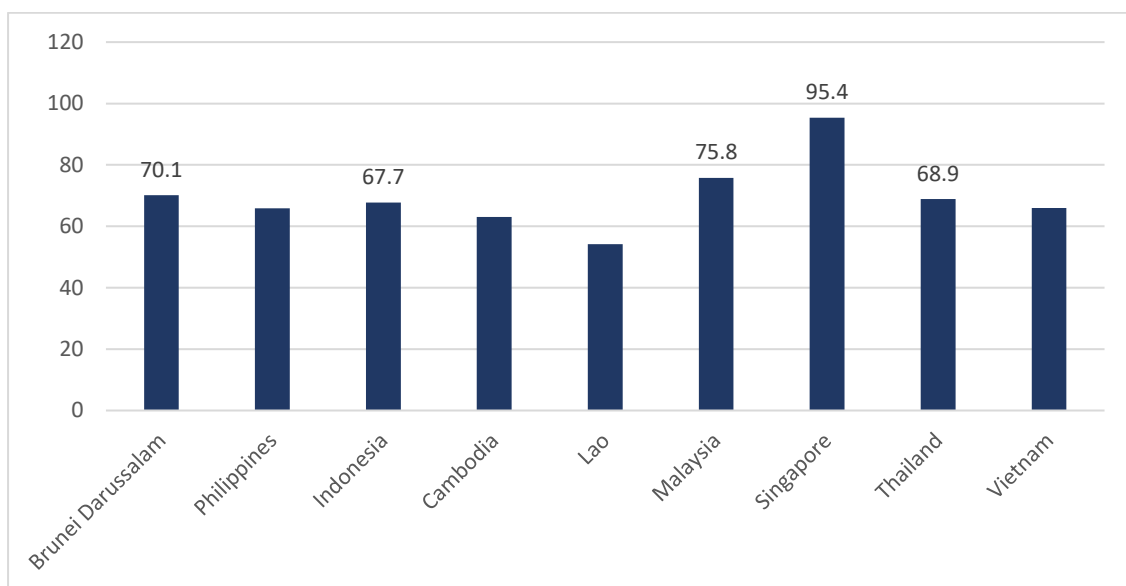
Figure 1. Number of Poor Population by Island in 2021

Figure 1 shows the number of poor people by island in Indonesia. The Central Statistics Agency (BPS) records that poverty in Indonesia will still be concentrated in Java until March 2021 (BPS, 2021). A total of 14.8 million poor people live in Java, which is equivalent to 53.6% of the national total. Sumatera is followed by 6.1 million poor people. In Bali and Nusa Tenggara,

there are 2.1 million poor people. Meanwhile, the poor population in Papua and Kalimantan amount to 1.5 million people and 1 million people respectively.

The problem of poverty is a multidimensional problem. Therefore, solving the problem of poverty can no longer be carried out by the central government alone, but must be carried out together with local governments as well as the participation of the community and the private sector. Infrastructure development has become an integral part of the poverty alleviation program.

The Government of Indonesia has carried out a massive infrastructure development program since 2015. In addition, in the 2020-2024 Indonesian RPJMN, infrastructure development is the main vision where the goal is to connect large infrastructure with people's production areas, small industrial areas, special economic zones (KEK), tourism area as well as agricultural area. However, Schwab (2019) in his research shows that Indonesia's infrastructure is still ranked 71 out of 140 countries.



Source: Schwab (2019)

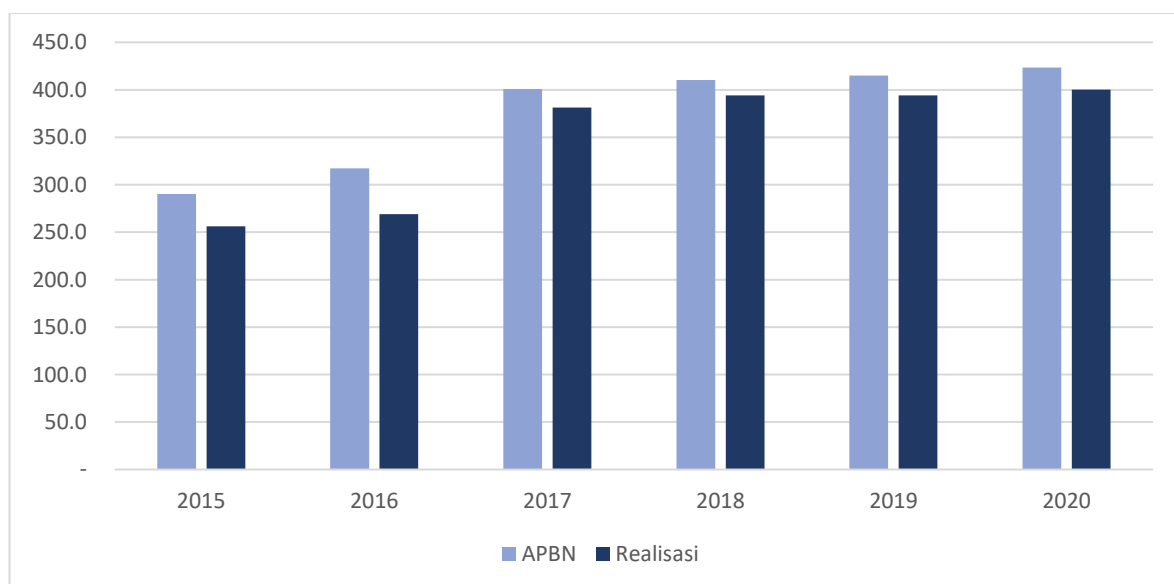
Figure 2. 2019 Southeast Asian Countries Infrastructure Score

Figure 2 shows the infrastructure scores among Southeast Asian Countries. Singapore has the highest score while Laos has the lowest score. Indonesia's infrastructure score is in fifth position which shows the condition of Indonesia's infrastructure is still inferior to several other countries in Southeast Asia. According to Breuer (2018), the poor condition of Indonesia's infrastructure is one of the factors that hampers Indonesia's economic growth because existing capital and infrastructure do not encourage job creation or reduce poverty in the medium term.

In terms of poverty, data from the Central Bureau of Statistics shows that the poverty rate in Indonesia fell from 14.12% in 2014 to 9.2% in 2019. However, there are still many people living below the poverty line, especially (BPS, 2021) rural areas and outer islands which are constrained by accessibility and lack of basic infrastructure.

To overcome the above problems, the Government of Indonesia implemented a policy of accelerating the implementation of infrastructure by issuing Presidential Regulation Number 75 of 2014 which was amended by Presidential Regulation Number 122 of 2016 concerning the Acceleration of Priority Infrastructure Provision. The regulation states that there is priority infrastructure which is defined as infrastructure that has a significant impact on the economy at the central and regional levels which includes the availability of transportation, roads and agricultural irrigation, clean drinking water, waste management, telecommunications and electricity.

In the posture of the 2015-2020 State Budget, the infrastructure expenditure budget continues to experience a significant increase. Figure 2 shows the development of the budget and realization of infrastructure in the 2015-2020 State Budget.



Source: Ministry of Finance, 2022

Figure 3. APBN and Realization of Infrastructure Development 2015-2020

Figure 3 shows the progress of increasing the State Budget and the realization of Indonesia's infrastructure development in 2015-2020. Even after the Covid-19 pandemic, the infrastructure budget has still increased from the previous year. This shows that the government is quite serious in encouraging the process of accelerating infrastructure development in Indonesia where this is also stated in the National Medium Term Program Plan (RPJM), namely the priority of infrastructure development is carried out by supporting road transportation

accessibility. Road access makes it easier for people to reach remote areas so that the economy can develop. The development of productive areas supported by infrastructure can create jobs. That way, poverty alleviation efforts can be carried out.

This study focuses on the effect of infrastructure development that uses economic growth as a "bridge" in reducing the poverty rate that exists in Indonesia today. This research is expected to contribute to evaluating the results of infrastructure development program policies so that the government can determine which policies have an impact on the final goals of the targets that have been set. The novelty of this research is to aggregate infrastructure development variables a. In addition, this study also uses the variable transfers to regions with special allocation funds as a form of fiscal decentralization in the infrastructure sector, according to type and using recent years' analysis.

Literature Review

Infrastructure

According to the Big Indonesian Dictionary, infrastructure can be interpreted as public facilities and infrastructure. Facilities are generally known as public facilities such as hospitals, roads, bridges, sanitation, telephones, etc. According to the MacMillan Modern Economics Dictionary (1996) infrastructure is a structural element that facilitates the flow of goods and services between buyers and sellers.

In relation to the relationship between infrastructure and economic development, several economists also provide their opinions. Hircyman (1958) defines infrastructure as something that is needed for production activities in various sectors of economic activity. Infrastructure development plays a very important role in spurring economic growth, both at the national and regional levels, as well as reducing unemployment, alleviating poverty and of course increasing people's welfare. Therefore, the government is committed to continuing to increase infrastructure development, because the availability of reliable infrastructure is very important to support economic activity and business growth. Infrastructure development plays a very important role in spurring economic growth, both at the national and regional levels, as well as reducing unemployment, alleviating poverty and of course increasing people's welfare.

According to Presidential Regulation of the Republic of Indonesia Number 38 of 2015, the type of infrastructure includes several sections including (1) Economic infrastructure, namely economic activities that have a positive impact, including public utilities (gas, telecommunications, energy, water), public works (irrigation, processing, waste, roads, dams), and the transportation sector (harbors, railways, airports); (2) Social infrastructure, including education, health, and tourism; (3) Administrative infrastructure, including administrative controls and law enforcement

Poverty

Poverty generally has two dimensions, namely the income dimension and the non-income dimension. Income poverty is defined as families who have low income as measured by property ownership and difficulties in accessing public services. Whereas non-income poverty is the existence of incompetence, hopelessness, lack of representation and freedom that can occur at various income levels. Until now there have been several previous studies that have conducted research on the effect of infrastructure development on poverty, including research conducted by Khaira (2021) which analyzed the impact of infrastructure development on poverty by using the variables of sanitation, electricity and roads where the results of these three variables have a significant effect on reducing the poverty rate.

Infrastructure and Poverty

Sumardjoko and Akhmadi (2019) in their writing regarding Sari Connectivity Infrastructure Development, Maqdi and Syahbandar (2017) examined the effect of infrastructure development on poverty in Tangerang City where the results showed that infrastructure investment had a 26.7 percent effect on changes in the poverty rate in Tangerang City. as Economic Equality and Poverty Reduction in East Java shows that the provision of infrastructure has a positive effect on regional economic growth and reducing poverty. Expenditures for infrastructure, electricity capacity and accommodation buildings have a significant positive effect on the regional economy.

Purnomo, Wijaya and Setiawan (2021) researched Infrastructure and Poverty in the Province of the Special Region of Yogyakarta where the results show that economic infrastructure has a significant negative relationship in reducing poverty rates in Yogyakarta. Several other studies have shown similar results, such as research by Fardilla and Masbar (2020), Khairunnisa (2020), Rahma (2022), Nugraheni, Ananda and Syafitri (2018) and Purnomo (2019).

APBN, Infrastructure Policy, and Public Policy

One of the important tasks of the government in developing countries is to be responsible for the provision of infrastructure because one of the challenges faced is the limited participation of the private sector in the provision of public goods which are high risk and have a low rate of return. One manifestation of sovereignty in the political, economic and cultural fields is the Merdeka Infrastructure. According to Gregory Mankiw (2003) in Economic Theory, infrastructure means a form of public capital consisting of public roads, bridges, sewer systems, etc., as investments made by the government. Looking at history, the government has consistently made efforts to achieve infrastructure self-reliance where one of the ways taken is by allocating a budget for infrastructure provision. During the New Order era, the infrastructure sector was the second largest item in the APBN with a focus on road construction which

increased from 1979 by 74% to 1980 and irrigation networks continued to increase by 14.9% until 1985. In the current era, infrastructure development is directed at supporting a number of strengthening basic services as well as supporting increased productivity through connectivity and mobility infrastructure. In addition, the budget will be used to provide energy and food infrastructure that is affordable, reliable and environmentally sound, as well as equal distribution of infrastructure and access to information technology in Indonesia.

Hypothesis

H1: The acceleration of infrastructure provision simultaneously has a significant negative effect on the poverty rate.

H2: Accelerating the provision of education infrastructure has a significant negative effect on the poverty rate

H3: Accelerated provision of health infrastructure has a significant negative effect on the poverty rate

H4: Accelerating the provision of clean water infrastructure has a significant negative effect on the level of poverty

H5: The acceleration of road infrastructure provision has a significant negative effect on the poverty rate

H6: The acceleration of port infrastructure provision has a significant negative effect on the poverty rate.

Method

This study uses panel regression using the Fixed Effect Model approach, where the data obtained is of a secondary nature, taken from the Central Statistics Agency (BPS) and the Ministry of Finance as well as news published in the mass media. Indonesian Statistics, Poverty Rate, Clean Water Statistics, Indonesian Infrastructure Statistics, and Land and Sea Transportation Statistics. Ministry of Finance data used includes government infrastructure spending, domestic and foreign investment. The timeframe used is 2008 to 2019, in 32 provinces in Indonesia which is based on complete data, especially on infrastructure.

In this research using secondary data from the publication of the Central Statistics Agency (BPS) and the Ministry of Finance as well as news published in the mass media. BPS data used includes Indonesian Statistics, Poverty Rate, Clean Water Statistics, Indonesian Infrastructure Statistics, and Land and Sea Transportation Statistics. Ministry of Finance data used includes government infrastructure spending, domestic and foreign investment.

This research is a quantitative research in which the infrastructure variables used describe two types of infrastructure, namely economic and social. Economic infrastructure consists of clean water, road and port infrastructure variables, while social infrastructure consists of

educational infrastructure projected by the Special Allocation Fund (DAK) for physical education and health infrastructure projected by the Special Allocation Fund (DAK) for health.

Research also adopts the approach taken by Dharmakarja and Aritonang (2021) which uses a time dummy variable to see the effect of the priority infrastructure acceleration program. The dummy variables used are 0 for the 2008-2014 period (before the acceleration of priority infrastructure provision) and 1 for the 2015-2019 period (after the acceleration of priority infrastructure provision). All variables will be converted into natural logarithmic form in the analysis.

The research model in this analysis is written with the following equation:

$$Poverty_{it} = \alpha + \beta_1 Water_{it} + \beta_2 Roadway_{it} + \beta_3 Harbor_{it} + \beta_4 Educ_{it} + \beta_5 Health_{it} + \beta_6 Dummy_{it} + \varepsilon_{it} \quad (1)$$

Information about the equation is Poverty to Poverty Rate (%), to Constants, to Regression Coefficient, Water to Water company production potential divided by population, Roads are a proxy of country length paved, provincial and district roads divided by area, Ports for capacity domestic and foreign loading and unloading divided by the total population, Education for special allocation funds for physical education, Health for special allocation funds for physical health, Dummy for time dummy variables where 0 (2008-2014) and 1 (2015-2019), i is the proxy for the Observation Area (32 Provinces), t for the Time Range (2008-2022) and e for the Standard error.

Result and Discussion

Panel Data Regression Analysis

The first stage of panel data regression analysis is to test the best model. All variables in this analysis are converted to natural logarithms to facilitate model estimation. Table 1 shows the results of each model

Table 1. Common Effect Model (CEM) Panel Data Estimation Results

Variable	Coefficient	Problem.
C	-4.982779	0.0000
LN_Air	-0.22312	0.0073
LN_Jalan Raya	0.0432292	0.0083
LN_Port	0.0453621	0.0004
LN_Educ	0.0982773	0.0073
LN_Health	-0.329384	0.0002
Example	-0.0273761	0.0000
R-Square		0.107743
Adjusted R-Square		0.076453
Durbin-Watson Stats		0.736433

Table 1 shows that all variables have a significant effect because the probability value of

each variable is below the value of 0.05, which means that all variables in this model are significant.

Table 2. Fixed Effect Model Panel Data Estimation Results

Variable	Coefficient	Problem.
C	-7.998729	0.0000
LN_Air	-0.088977	0.0002
LN_Jalan Raya	-0.243221	0.0050
LN_Port	-0.335340	0.4202
LN_Educ	-0.094537	0.0000
LN_Health	-0.129344	0.0024
Example	-0.057343	0.02839
R-Square	0.907433	
Adjusted R-Square	0.896829	
Durbin-Watson Stats	1.226478	

Table 2 shows that all variables have a significant effect except for Harbor and Dummy variables because the probability of Harbor and Dummy shows that these variables are not significant.

Table 3. Estimation Results of Panel Data Model Random Effects

Variable	Coefficient	Problem.
C	-7.998729	0.0000
LN_Air	-0.298938	0.03021
LN_Jalan Raya	-0.736382	0.07827
LN_Port	-0.327293	0.50001
LN_Educ	-0.028373	0.82921
LN_Health	-0.029732	0.00541
Example	-0.0837927	0.07282
R-Square	0.507428	
Adjusted R-Square	0.498382	
Durbin-Watson Stats	1.1264892	

Table 3 shows that all variables except Health in the model are not significant because the coefficient value is above 0.05.

Best Model Test

After the three types of models have been analyzed, the next step is testing to select one of the three models using the Chow Test and Hausman Test. 3 what are the results of the Chow and Hausman tests to choose the best model.

Table 4. Chow and Hausman Test Results

Chow test			
Effect Test	Stats.	df	Problem
Chi Square cross section	788.920043	31	0.0000
Hausmann test			
Test Summary	Chi-square. tat	Chi-sq df	Problem
Random Cross-section	33.894322	5	0.0000

From table 4 which shows the results of the Chow and Hausman tests, it can be concluded that the best model for this analysis is the Fixed Effect Model (FEM) because the random cross-section probability value is less than 0.05. The regression equation model can be written as follows

$$\text{Ln_Poverty} = -7.998729 - 0.088977 * \text{LnWater} - 0.243221 * \text{LnHighway} - 0.335340 * \text{LnPort} + 0.094537 * \text{LnEduc} - 0.129344 * \text{LnHealthy} - 0.057343 * \text{Dummy} \quad (2)$$

Furthermore, simultaneous and partial significance tests were carried out using the F test and t test.

Table 5. Simultaneous Significance Test Results (F Test)

Cross Section Fixed (Dummy Variable)	
F-stat	46.092270
Problem (F-stat)	0.000000

Table 5 shows that the results of the simultaneous significance test (F test) with a calculated F value = 46.092270 where this value is greater than F table = 3.151 and has a probability level of less than 1 percent. Thus it can be concluded that all variables independently have a significant effect on the poverty rate.

Table 6. Partial Significance Test Results (T Test)

Variable	t-statistics	Problem. Q
C	-32.09334	0.0000
Ln_Air	-2.394830	0.0002
Ln_Jalan Raya	-2.837729	0.0050
Ln_Harbor	-2.373849	0.4002
Ln-Educ	-2.039483	0.0000
Ln_Health	-6.873922	0.0024
Example	-2.3748473	0.02839

From these 6 it can be seen that all variables have a t-value value that is greater than the t-table value, which means that all variables except the Port variable partially affect the poverty rate.

The equation of the regression model and the results of the F test show that all infrastructure variables simultaneously have a negative and significant relationship with poverty alleviation. This shows that the variables of social infrastructure and economic infrastructure have an impact on reducing poverty in Indonesia. Meanwhile, partially all variables except the port variable have a significant effect on poverty alleviation.

The clean water and road infrastructure variables have coefficient values of -0.088977 and -0.243221 respectively, which means that an increase in the development of clean water infrastructure and road infrastructure by 1 percent will reduce the poverty rate by 8.8 percent and 24 percent. Road access makes it easier for people to reach remote areas so that the

economy can develop. The development of productive areas supported by infrastructure can create jobs. That way, poverty alleviation efforts can be carried out. This result is in line with Sulaiman's research (2014) that clean water and road infrastructure significantly reduce the poverty rate in North Sumatra. The availability of access to clean water can also reduce the number of poor people who fall into the relatively poor category. Access to clean water is one of the conditions for freedom from relative poverty, namely the determination of poverty using the ability to access public goods and services approach introduced by Sen (World Bank Institute, 2005). This result is in line with Putra and Rianto's research (2017).

The Port variable has a coefficient value of -0.335346 which means that an increase in infrastructure availability by 1 percent will reduce the poverty rate by 33 percent. However, these results are not significant which can be concluded that there is no influence between port infrastructure development and poverty reduction.

The variables DAU for Education and DAU for Health respectively have coefficient values of -0.094537 and -0.029732, which means that an increase in the development of clean water infrastructure and road infrastructure by 1 percent will reduce the poverty rate by 9.4 percent and 2.9 percent. This result is in line with Sembiring (2020). The DAU for Education and Health is used to fund physical/non-physical activities in order to improve the quality of basic services in the education and health sectors in accordance with priority activities and sub-activities. Education and health infrastructure is the main support for reducing poverty. Both are the main conditions for increasing productivity in a country. Education has an important role in the ability of developing countries to deal with technological developments while health is a support for increasing productivity. Thus it can be interpreted that education and health have an important role in economic development according to (Todaro & Smith, 2015).

The results of the regression model equation and the t test show that the dummy variable, namely the accelerated infrastructure development program, has a negative and significant relationship with the Poverty Level. The coefficient value is -0.057343, which means that an increase in the acceleration of infrastructure development by 1 percent will reduce the poverty rate by 5.7 percent. Infrastructure is one of the important factors in reducing poverty in Indonesia. Increasing the quality and quantity of infrastructure provides the basic services needed to increase national productivity and support the smooth running of business activities so that employment can increase. It is this increase in employment that reduces the poverty rate.

Conclusion

Simultaneously, the accelerated provision of priority infrastructure has a significant effect on reducing poverty. The availability of infrastructure services can encourage economic movement that reduces poverty. Partially, economic infrastructure, namely roads and clean

water, has a significant effect on poverty alleviation, while social infrastructure DAU Education and DAU Health also have a significant negative effect. The dummy variable that describes the policies before and after the accelerated program shows a significant negative value, meaning that the accelerated infrastructure development policy has an effect on reducing poverty. The contribution of this research is to find out how infrastructure budgeting affects poverty alleviation. Suggestions for further research are that researchers can analyze the impact of infrastructure development in the long term. This can be done by considering the availability of data and the multiplier effect that might be seen in the next few years.

References

- BPS. (2020). Indonesia Infrastructure Statistics 2020 (Results of 2020 Village Development Data Update)
- Schwab, K. (Editors). (2018). Global Competitiveness Report 2018. World Economic Forum
- Breuer, LE, Guajardo, J., & Kinda, T. (Editors). (2018). Realizing Indonesia's economic potential. International Monetary Fund.
- Charlery, LC, Qaim, M., & Smith-Hall, C. (2016). Impact of infrastructure on rural household income and inequality in Nepal. *Journal of Development Effectiveness*, 8(2), 266–286. doi:10.1080/19439342.2015.1079794.
- Chatterjee, S., & Turnovsky, SJ (2012). Infrastructure and inequality. *European Economic Review*, 56(8), 1730–1745. doi:10.1016/j.euroecorev.2012.08.003
- Chotia, V., & Rao, NV. (2017). Exploring the link between infrastructure development, poverty and rural-urban income inequality: Evidence from the Brics Nations. *Economics and Finance Studies*, 34(4), 466– 484. doi:10.1108/SEF-07-2016-0159
- Hirschman, AO (1958). *Economic Development Strategy* (Vol. 10). University of Texas: Yale University Press
- Khaira, Alfatih (2021) *The Effect of Infrastructure Analysis on Poverty in Indonesia*. Diploma thesis, Andalas University.
- Sumardjoko, I., & Akhmadi, MH (2019). Development of Connectivity Infrastructure as Economic Leverage and Poverty Alleviator in East Java. *PUBLIC FINANCIAL MANAGEMENT JOURNAL*, 3 (1), 22–31. <https://doi.org/10.31092/jmkp.v3i1.506>
- Sari, RM, Aisha Maqdi, I., & Syahbandar, MY (2017). Analysis of the Impact of Infrastructure Development on the Poor in Tangerang City. *Proceedings of the National Seminar on 'Rural-City Inclusive Development Planning'*, 737–746. [http://repo.unand.ac.id/5269/1/PROSIDING ASPI PERHEPPI - Faidil Tanjung.pdf](http://repo.unand.ac.id/5269/1/PROSIDING_ASPI_PERHEPPI_-_Faidil_Tanjung.pdf)
- Sukwika, Tatan. 2018. The Role of Infrastructure Development in Interregional Economic Inequalities in Indonesia. *Regional and Environmental Journal*, 6(2)
-

- Purnomo, SD, Wijaya, M., & Setiawan, H. (2021). Infrastructure and Poverty in the Province of the Special Region of Yogyakarta. *Scientific Magazine 5 Management and Business (MIMB)*, 1(1), 1-10.
- Fardilla, S., & Masbar, R. (2020, August). Analysis of the Influence of Road Infrastructure, Electricity, Schools, and GRDP on Poverty in Aceh. *Student Scientific Journal (JIM)*, Vol.5 No.3, 175-183.
- Khairunnisa, R. 2020. Analysis of the Influence of Income Inequality and Infrastructure on Poverty Reduction in Indonesia. Faculty of Economics. Department of Economics. Andalas University
- EO, Rahma. (2022) Connectivity, Inclusivity, Resilience Infrastructure Sustainability: Bridges and Sidewalks Main Supporting Sustainable Road Infrastructure. *Road Engineering Regional Conference Proceedings. 2022: 2022 KRTJ Proceedings.*
- Nugraheni, RS, Ananda, CF, & Syafitri, W. (2018). Impact Analysis of Village Budget Allocations and Village Infrastructure at the Poverty Level in Semarang Regency. 18(2).
- Purnomo, Sodik Dwi. (2019). Determinants of Poverty in the Province of the Special Region of Yogyakarta. *Al-Amwal Journal of Islamic Economics and Banking Studies*. Vol.11 No.1.
- Putra, HS, & Rinato, N. (2017). Effects of Access to Clean Water on Poverty in Indonesia: Examination of Household Data. *Social Economic Journal of Public Works*, 9(1), 1-12.
- Todaro, MP, & Smith, SC (2015). *Economic development: The Addison-Wesley series on economics*
- Sembiring, TA (2020). The effect of regional original income (pad), general allocation funds (dau), and physical special allocation funds (dak) on human development in North Sumatra Province (2016 - 2018 period). *Indonesian Treasury Review: Journal of the Treasury, State Finances and Public Policy*, 5 (1), 77-92.