

Analysis Of The Influence Of Infrastructure On Economic Growth In South Sumatra Province

Nurul Fadhila Marza¹, Nasri Bachtiar², Elfindri³

^{1,2,3}Program Studi Ekonomi, Fakultas Ekonomi dan Bisnis, Universitas Andalas

Email : nurulfadhilamarza25@gmail.com

Abstract

Negotiation This study aims to analyze the effect of economic and social infrastructure on regional economic growth across regencies and municipalities in South Sumatra Province. The independent variables used in this study include electricity access, clean water access, roads in good condition, roads in moderate condition, mobile phone ownership, the number of senior high schools, and the number of hospitals, while Gross Regional Domestic Product (GRDP) is employed as the dependent variable. The study uses panel data from 17 regencies and municipalities in South Sumatra Province covering the period 2018–2024, resulting in 119 observations. Panel data regression is applied as the analytical method. Based on the Chow test and Hausman test, the Fixed Effect Model (FEM) with robust standard errors is selected as the most appropriate model. The results indicate that electricity access and the number of senior high schools have a positive and statistically significant effect on GRDP. In contrast, clean water access, roads in good condition, roads in moderate condition, mobile phone ownership, and the number of hospitals do not show a significant effect on GRDP. Simultaneously, all independent variables jointly have a significant effect on regional economic growth. The R-squared value of 0.4842 indicates that the model explains 48.42 percent of the variation in GRDP, while the remaining 51.58 percent is explained by other factors outside the model. These findings suggest that the development of electricity infrastructure and secondary education plays an important role in promoting regional economic growth in South Sumatra Province.

Keywords: economic growth, infrastructure, electricity, education, panel data, South Sumatra Province.

2473

IJEBIR, Volume 05 Issue 04, 2026



Copyright at authors some right reserved this work is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/).

INTRODUCTION

Economic growth is one of the important indicators used to measure the success of regional development. Higher economic growth reflects better production activities, income, employment opportunities, and public welfare (Todaro & Smith, 2020). To support economic growth, infrastructure has an important role because it facilitates production, distribution, communication, education, and health services. Good infrastructure can improve regional economic activities and support the development process (Barro, 1990; Calderón & Servén, 2010).

South Sumatra Province is one of the provinces that has an important contribution to the economy on Sumatra Island. Its economy is supported by agriculture, mining, industry, trade, and services. However, the level of economic growth among regencies and municipalities in South Sumatra is not evenly distributed. Differences in electricity access, clean water facilities, road conditions, communication facilities, educational facilities, and health services may influence the economic performance of each region (World Bank, 2019).

Infrastructure development has become one of the government's efforts to encourage regional economic growth. The development of electricity, water, roads, communication, education, and health infrastructure is expected to improve productivity and support community economic activities. However, each type of infrastructure may have a different contribution to economic growth. Some infrastructure may directly affect production activities, while others may support growth indirectly through public services and human resource development (Calderón & Servén, 2010; Becker, 1993).

Therefore, it is important to examine the effect of infrastructure on regional economic growth. This study aims to analyze the effect of electricity access, clean water access, roads in good condition, roads in moderate condition, mobile phone ownership, the number of senior high schools, and the number of hospitals on Gross Regional Domestic Product (GRDP) in regencies and municipalities of South Sumatra Province during the 2018–2024 period.

Objectives

This article intends

1. To understand the role of infrastructure in supporting regional economic growth.
2. To examine the importance of electricity, clean water, roads, and communication facilities in economic activities.



3. To identify the contribution of education and health infrastructure to regional development.
4. To analyze the effect of economic and social infrastructure on Gross Regional Domestic Product (GRDP) in South Sumatra Province.

Infrastructure has numerous benefits for regional economic development. It supports production, distribution, communication, education, and health services. Good infrastructure helps people carry out economic activities more effectively and improves public welfare (Todaro & Smith, 2020; Calderón & Servén, 2010). Electricity access supports household and business activities, while clean water facilities are important for daily life and community welfare. Road infrastructure helps connect one region to another and facilitates the movement of goods and people. Communication facilities also support the flow of information and economic activities (Barro, 1990; Calderón & Servén, 2010). In addition, education and health infrastructure contribute to the development of human resources and regional progress (Becker, 1993). Therefore, infrastructure development is important in supporting economic growth in regencies and municipalities of South Sumatra Province.

DISCUSSION

Infrastructure plays an important role in supporting regional economic growth. The availability of electricity, clean water, roads, communication facilities, schools, and hospitals can influence the performance of economic activities in a region. Infrastructure helps the movement of goods and people, supports production and distribution, and improves access to public services. Therefore, infrastructure development is closely related to the improvement of productivity and regional welfare (Barro, 1990; Calderón & Servén, 2010).

Electricity is one of the basic infrastructures needed by households and business sectors. Better electricity access can support production activities, trade, and household consumption. Clean water is also important because it supports public welfare and daily activities. In addition, road infrastructure has a major role in connecting one area to another, reducing transportation barriers, and facilitating the distribution of goods and services. Communication facilities, represented by mobile phone ownership, can also support the flow of information and economic interaction in society (Calderón & Servén, 2010; Arofah, 2021).

Social infrastructure is also important in regional development. Education infrastructure, represented by the number of senior high schools, contributes to the

2475



improvement of human resources. Health infrastructure, represented by the number of hospitals, supports public health and productivity. Both education and health are important elements in creating a better quality of labor and strengthening long-term economic growth (Becker, 1993; Amrizal et al., 2024).

In South Sumatra Province, the availability of infrastructure differs across regencies and municipalities. Some regions have better access to electricity, roads, education, and health services, while others still face limitations in infrastructure development. These differences may affect the level of Gross Regional Domestic Product (GRDP) among regions and create disparities in regional economic performance (World Bank, 2019).

This study focuses on the effect of electricity access, clean water access, roads in good condition, roads in moderate condition, mobile phone ownership, the number of senior high schools, and the number of hospitals on GRDP in regencies and municipalities of South Sumatra Province. Through this analysis, the study is expected to provide a clearer understanding of which infrastructure variables play a more important role in supporting regional economic growth.

CONCLUSION

Acquiring Infrastructure has an important role in supporting regional economic growth in South Sumatra Province. Based on the results of this study, electricity access and the number of senior high schools have a positive and significant effect on Gross Regional Domestic Product (GRDP) in regencies and municipalities of South Sumatra Province. This finding shows that electricity infrastructure and education infrastructure contribute to improving regional economic performance.

Meanwhile, clean water access, roads in good condition, roads in moderate condition, mobile phone ownership, and the number of hospitals do not show a significant partial effect on GRDP during the period of study. However, all infrastructure variables simultaneously have a significant effect on regional economic growth. This indicates that economic and social infrastructure together play an important role in supporting regional development.

Overall, the study shows that infrastructure development remains an important factor in encouraging economic growth in South Sumatra Province. Therefore, the government needs to continue improving infrastructure development, especially in sectors that have a stronger contribution to economic performance, such as electricity



and education, while also maintaining the development of other supporting infrastructure to achieve more balanced and sustainable regional growth.

RESEARCH METHOD

This study uses a quantitative approach with panel data analysis. The data used are secondary data obtained from publications and statistical tables of the Central Bureau of Statistics (BPS) of South Sumatra Province and the Central Bureau of Statistics of regencies and municipalities in South Sumatra Province. The study covers 17 regencies and municipalities during the period 2018–2024, resulting in 119 observations.

The dependent variable in this study is Gross Regional Domestic Product (GRDP). The independent variables consist of both economic and social infrastructure. Economic infrastructure is represented by electricity access, clean water access, roads in good condition, roads in moderate condition, and mobile phone ownership. Social infrastructure is represented by the number of senior high schools and the number of hospitals.

Panel data regression is used to analyze the effect of infrastructure on regional economic growth. To determine the most appropriate panel data model, this study applies the Chow test and the Hausman test. The Chow test is used to select the best model between the Common Effect Model and the Fixed Effect Model, while the Hausman test is used to choose between the Fixed Effect Model and the Random Effect Model. Based on the test results, the Fixed Effect Model (FEM) is selected as the best model. The estimation is then carried out using robust standard errors in order to obtain more reliable results.

Hypothesis testing is conducted through the t-test to examine the partial effect of each independent variable on GRDP, while the F-test is used to examine the simultaneous effect of all independent variables on regional economic growth. In addition, the coefficient of determination (R-squared) is used to measure the ability of the model to explain variations in the dependent variable.

Table 1. Panel Data Model Selection Results

Test	Statistic	Probability	Decision
Chow Test	F = 37,27	0,0000	FEM
Hausman Test	Chi ² = 22,32	0,0042	FEM

The Chow Test result indicates a probability value of 0.0000, which is lower than the significance level of 0.05. Therefore, the Fixed Effect Model (FEM) is preferred over

2477



the Common Effect Model (CEM). Furthermore, the Hausman Test produced a probability value of 0.0042, suggesting that FEM is more appropriate than the Random Effect Model (REM). Based on these findings, the Fixed Effect Model was selected as the final estimation model.

REFERENCES

- Amrizal, A., Saputra, R., & Wibowo, D. (2024). Pengaruh infrastruktur pendidikan dan kesehatan terhadap pertumbuhan ekonomi kabupaten/kota di Provinsi Jambi. *Jurnal Development*, 12(1), 45–58.
- Arofah, N. (2021). Pengaruh infrastruktur terhadap pertumbuhan ekonomi di Indonesia. *Jurnal Ekonomi Pembangunan*, 19(2), 145–158.
- Aschauer, D. A. (1989). Is public expenditure productive? *Journal of Monetary Economics*, 23(2), 177–200. [https://doi.org/10.1016/0304-3932\(89\)90047-0](https://doi.org/10.1016/0304-3932(89)90047-0)
- Baltagi, B. H. (2021). *Econometric analysis of panel data* (6th ed.). Springer.
- Barro, R. J. (1990). Government spending in a simple model of endogenous growth. *Journal of Political Economy*, 98(5), S103–S125. <https://doi.org/10.1086/261726>
- Becker, G. S. (1993). *Human capital: A theoretical and empirical analysis with special reference to education* (3rd ed.). University of Chicago Press.
- Calderón, C., & Servén, L. (2010). Infrastructure and economic development in Sub-Saharan Africa. *Journal of African Economies*, 19(Suppl. 1), i13–i87.
- Canning, D., & Pedroni, P. (2008). Infrastructure, long-run economic growth and causality tests for cointegrated panels. *The Manchester School*, 76(5), 504–527. <https://doi.org/10.1111/j.1467-9957.2008.01073.x>
- Gujarati, D. N., & Porter, D. C. (2009). *Basic econometrics* (5th ed.). McGraw-Hill.
- Romer, P. M. (1990). Endogenous technological change. *Journal of Political Economy*, 98(5), S71–S102. <https://doi.org/10.1086/261725>
- Todaro, M. P., & Smith, S. C. (2020). *Economic development* (13th ed.). Pearson.
- Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data* (2nd ed.). MIT Press.

