



Analysis of the Effect of Public Infrastructure on the Economy in South Sumatra Province

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ARTICLE INFO

Keywords: Gross Regional Domestic Product (GRDP), Road infrastructure, Water Infrastructure, Electricity Infrastructure

Received : 08, October

Revised : 16, November

Accepted: 24, December

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ABSTRACT

The purpose of this study is to analyze how much influence Road Infrastructure, Water and Electricity, on GRDP in South Sumatra Province. The data used in this study is secondary data which includes GRDP data at constant 2010 prices, road length according to good road conditions, water data using the amount of water supplied, and electricity data using the distribution of electricity sold in South Sumatra Province from 2018-2022. The data obtained will be analyzed through panel data regression. The results showed that road infrastructure development has a positive and significant impact on Gross Regional Domestic Product (GRDP), while water infrastructure has a positive but insignificant impact on GRDP. In addition, electricity infrastructure also has a positive and significant impact on GRDP. The results also show that the road and electricity variables jointly affect the GRDP variable in South Sumatra Province in 2018-2022.

INTRODUCTION

Development is the main foundation in the effort to improve people's welfare. According to (Todaro 2000) Development is a comprehensive strategy associated with changes in social structure, economic growth, national institutional systems, poverty reduction, and equitable income distribution, with the aim of improving people's welfare. One of the factors that can advance development is investment in infrastructure. Infrastructure is the foundation of sustainable economic growth, as it facilitates the overall development process. With efforts to increase and improve infrastructure, it is expected to encourage economic growth both nationally and at the regional level. (Suratno, 2010).

(Ministry of Public Works and Housing, 2016) One of the efforts in regional development and infrastructure in the field of PUPR is to plan the growth of Metropolitan areas outside Java with the aim of reducing inequality between various regions in Indonesia. This will be realized through the development of Greater Palembang Metropolitan, which involves the development of Palembang City area and its surrounding cities into Greater Palembang Metropolitan area. In this development, Palembang City is planned to be the main center that will drive the economy, especially as a national scale trade and service center, which is expected to have a positive impact on the surrounding area.

In terms of infrastructure provision, the government can collaborate with business entities in accordance with the Presidential Regulation of the Republic of Indonesia Number 67 of 2005 concerning Government Cooperation with Business Entities in Infrastructure Development. The role of the government has a very important impact on infrastructure delivery. While there are opportunities to involve designated private partners in infrastructure projects, not all types of infrastructure services can be run by the private sector. This is due to certain infrastructure projects that require large investments with long payback periods and high levels of investment risk. Improved infrastructure is expected to benefit public welfare and accelerate economic growth as economic activity will become more efficient. Therefore, the government is expected to provide facilities and infrastructure that support economic development. With these public facilities in place, the private sector will be more interested in investing their capital.

Infrastructure is property built by the government with the aim of providing services to the public, such as roads, clean water, electric power, and the like. People then utilize these infrastructure facilities to carry out their social and economic activities. Research (Esfahani & Ramírez, 2003) shows that infrastructure has a significant influence on economic development. (ErnaErnawi 2007) states that the economic activities of the people in a country will not run optimally without the support of adequate infrastructure.

According to (ArsyaArsyad 1997) The availability of infrastructure has a significant impact on the success of a region in various aspects, such as production processes, trade expansion, poverty reduction, population growth management, investment attraction, and environmental improvement. The fact that the economic growth of a region is strongly related to the level of

infrastructure in the region shows how important the provision of infrastructure is in an effort to improve the welfare of the region.

To ensure quality infrastructure that can improve the welfare of the people in South Sumatra Province, there is a need for equitable and comprehensive development throughout the region. With this approach, regulating and providing adequate facilities will help improve the overall economic situation. The Harrod-Domar concept explains that any economy can allocate part of its national income to replace damaged capital. However, to promote economic growth, new investment is required to add working capital. This concept is known as the capital-output ratio (COR). The theory states that in order to achieve economic growth, an economy must have the capacity to save and allocate part of its overall income to investment. The greater the amount of savings invested, the faster economic development can be achieved.(Lincoln, 2004).

Whether infrastructure development will have a similar impact on economic growth in South Sumatra Province requires a more in-depth study. We will now describe the state of infrastructure in South Sumatra Province, including the length of roads for transportation, clean water systems, and electricity supply.

Table 1. Road Length by Road Condition (km)

District/City	Road Length by Road Condition (km)				
	Good Condition				
	2018	2019	2020	2021	2022
Ogan Komering Ulu	42.4	65.57	60.22	109.7	95.71
Ogan Komering Ilir	41.1	48.1	70.29	71.55	97.21
Muara Enim	58.2	52.25	41.14	117.5	119.5
Lahat	60.7	44.01	54.12	82.01	71.15
Musi Rawas	26.6	22.2	62.11	38	81.05
Musi Banyuasin	16	24.9	61.23	35.27	37.15
Banyuasin	23.74	24.9	55.52	45.16	98.88
South Ogan Komering Ulu	124.18	127.35	72.91	166.53	179.85
East Ogan Komering Ulu	118.65	150.4	66.16	194.35	231.95
Ogan Ilir	54	83.12	63.32	119.19	153.24
Empat Lawang	70.11	63.76	64.1	135.38	108.52
Pali	88.1	78.9	70.08	100.24	167.5
North Musi Rawas	25.2	20.85	42.93	50.25	78.36
Palembang	44.55	50.98	86.39	56.9	69.63
Prabumulih	0	0	0	0	0
Pagar Alam	33.6	0	0	0	5.7
Lubuk Linggau	0	0	0	0	13.62
South Sumatra	827.13	857.29	870.52	1322.02	1609.02

Source: Central Bureau of Statistics(BPS, 2023c)

Using data obtained from the Central Bureau of Statistics (BPS, 2023) about the condition of the length of the road according to the condition of the road (km), that road construction every year in 2018 amounted to 827.13 km, experiencing a fairly high increase in 2022 which amounted to 1609.02 km. However, there is quite minimal road construction, namely in Pagaralam City

amounting to 5.7 km in 2022 and in 2018 in Musi Banyuasin amounting to 16 km. The lack of availability of good road infrastructure is one of the problems that can have a significant negative impact on various sectors in the economy such as poor road infrastructure can hinder the movement of goods from producers to consumers.

Improving road infrastructure is an important step to support sustainable economic growth. By investing in the improvement and development of an adequate road network, a region can improve connectivity, reduce transportation costs, increase productivity, and strengthen key sectors in the economy.

Transportation serves as a connecting tool that connects production areas with markets, or in other words, brings production areas closer to the market, and often bridges the gap between producers and consumers. The role of transportation is very important, because transportation acts as a connecting tool, intermediary, and facilitator of interaction between parties who have needs for each other. (asmAdisasmita, 2011: 7).

Water supply is an integral part of city infrastructure. Urban infrastructure plays an important role in the growth and development of a city, as it can have a positive impact on improving people's quality of life, urban growth patterns, and economic prospects. Therefore, in urban planning, water supply is considered as one of the most important and prioritized aspects of a city. (Catanese and Snyder, 1996: 318-319).

Table 2. Amount of Water Distributed (M3)

District/City	Amount of Water Distributed (M3)				
	2018	2019	2020	2021	2022
Ogan Komering Ulu	7066806	4459431	4061439	4339464	4257129
Ogan Komering Ilir	1493661	1883722	1907489	2037921	2311525
Muara Enim	9791769	10321783	5426516	4615294	3386616
Lahat	92689	3917373	2985276	3052636	3129114
Musi Rawas	1530970	1458934	1998401	1893992	1860215
Musi Banyuasin	8123647	10420212	10567189	10884223	8683287
Banyuasin	4313394	4719600	4837444	4814291	4913475
South Ogan Komering Ulu	1541489	2979131	1692964	1876635	1774535
East Ogan Komering Ulu	1398300	1504402	887708	910564	851666
Ogan Ilir	1691923	2587284	2089721	2443765	2190409
Empat Lawang	481814	444348	675519	635435	708067
Pali	-	-	-	-	-
North Musi Rawas	-	-	-	145477933	-
Palembang	102889837	133111281	147877991	149080119	159779212
Prabumulih	1051200	1275388	1212735	1159166	1271168
Pagar Alam	1302178	1376101	506423	1141492	1223156
Lubuk Linggau	3336044	2926339	3356595	2738090	2902497
South Sumatra	146105721	183385329	190083411	191623087	199242070

Source: Central Bureau of Statistics(BPS, 2023b)

Using data obtained from the Central Bureau of Statistics (BPS, 2023) Based on data obtained from the Central Statistics Office (BPS, 2023), that in South Sumatra Province clean water has always increased from 2018 by 146105721 M3 and in 2022 by 199242070 M3, but in Lahat district the water supplied is quite minimal in 2018 which is 92689 M3 and in Empat Lawang district in 2019 by 444348 M3. Lack of water availability is a serious problem that can hamper sectors in the economy of a region such as the agricultural sector, the Manufacturing Industry Sector, Health and Sanitation, and others. Lack of water availability can lead to various economic and social problems, including reduced production, loss of employment, increased prices of goods, and reduced quality of life. Therefore, it is important for the government and private sector to properly manage water resources and develop strategies to address water availability issues to support sustainable economic growth.

Table 3. Electricity Distribution (KWh)

District/City	Electricity Distribution (KWh)				
	Electricity Sold				
	2018	2019	2020	2021	2022
Ogan Komering Ulu	368565699	367022782	336113155	354851934	362098462
Ogan Komering Ilir	120956848	131763267	142571472	149072216	312060190
Muara Enim	169946048	197792216	182228821	221797825	255665110
Lahat	143604209	143285832	146164933	151308546	158966787
Musi Rawas	130772672	138360080	146566992	157205185	164324364
Musi Banyuasin	133196650	145072318	149953275	156039616	242320287
Banyuasin	367835222	394836825	423077355	449793838	403362877
South Ogan Komering Ulu	54479440	63379123	71742346	78724720.6	81415044.1
East Ogan Komering Ulu	117842211	130623470	140480951	146480979	274665629
Ogan Ilir	268308472	288828720	297751705	321387929	337702008
Empat Lawang	67837228	72632859	77913140	81052117	82844089.8
Pali	95092251	100089120	101277105	109058932	112538297
North Musi Rawas	-	-	-	-	81507342.2
Palembang	2228719770	2370842995	2914347774	2987452795	2537153642
Prabumulih	202557814	216166453	221770036	231651012	238996419
Pagar Alam	72405331	73919815	77523714	79456243	81315343.4
Lubuk Linggau	184484792	201312821	206573724	219607888	151370778
South Sumatra	4726604657	5035928696	5636056498	5894941774	5878306668

Source: Central Bureau of Statistics (BPS, 2023a)

Electricity utilization is a very important aspect in increasing Gross Regional Domestic Product (GRDP), which will also have a positive effect on economic growth. This is due to the importance of electricity as the main factor supporting the production process in the manufacturing sector. (Wicaksana & Rachman, 2018).

Using data obtained from the Central Bureau of Statistics (BPS, 2023) That electricity distribution is always increasing, the largest increase in electricity is in Palembang City, namely in 2021 by 2987452795 (KWh). However, there are still

some areas with minimal electricity distribution, namely in South Ogan Komering Ulu district in 2018 by 54479440 (KWh) and in 2018 in Empat Lawang district by 67837228 (KWh). The lack of availability of adequate electricity infrastructure is a serious problem that can have a negative impact on sectors in the economy of a region.

To address the problem of insufficient electricity infrastructure, investment in the construction and improvement of electricity infrastructure is required. This includes the construction of reliable power plants, transmission and distribution networks. Adequate electricity infrastructure is important to support sustainable economic growth and community welfare.

Table 4. ADHK 2010 GRDP by Regency/City (Billion)

District/City.	Gross Regional Domestic Product at 2010 Constant Prices by Regency/City (Billion)				
	2018	2019	2020	2021	2022
Ogan Komering Ulu	9339.33	9867.73	9866.72	10116.56	10683.32
Ogan Komering Ilir	19205.73	20180.57	20228.21	20909.48	21993.06
Muara Enim	38854.44	41581.53	41594.54	44257.27	47970.37
Lahat	11723.72	12382.33	12427.42	13022.37	13920.58
Musi Rawas	12921.71	13680.64	13712.55	14032.62	14602.02
Musi Banyuasin	42670.21	44620.4	44604.66	46129.29	48097.66
Banyuasin	18982	19973.44	19999.57	20767.64	21871.6
OKU South	5436.56	5712.92	5734.09	5975.14	6264.44
OKU East	9493.39	10043.97	10081.03	10554	11127.87
Ogan Ilir	7113.26	7482.61	7492.94	7775.12	8168.68
Empat Lawang	3349	3470.33	3473.4	3605.94	3784.49
Penukal Abab Lematang Ilir	4430.55	4703.6	4716.96	4819.89	5033.47
North Musi Rawas	5331.25	5552.59	5573.36	5706.54	5961.63
Palembang	98471.25	104239.4	103952.7	107182.6	112809
Prabumulih	5101.77	5387.82	5377.93	5541.97	5822.37
Pagar Alam	2158.09	2233.77	2234.27	2332.45	2447.55
Lubuk Linggau	4106.07	4339.2	4333.67	4470.23	4671.9
South Sumatra	298688.33	315452.85	315404.02	327199.11	345230.01

Source: Central Bureau of Statistics (BPS, 2023d)

Using data obtained from the Central Bureau of Statistics. (BPS, 2023) that GRDP in South Sumatra Province in 2018-2022 has always increased. However, there was a decrease in 2020, which amounted to 315404 M, where in the previous year in 2019 it was 315452.9 M. The decline in the level of GRDP is due to the limitations of poor road infrastructure or limited public transportation facilities that can hinder the movement of goods and people, thus affecting the productivity and distribution of goods.

To overcome the decline in GRDP due to public infrastructure bottlenecks, the government and private sector can work together to plan, finance, and implement necessary infrastructure projects. Investment in adequate infrastructure can improve the economic competitiveness of a region and support long-term growth.

In order for quality infrastructure to support the improvement of the welfare of the population of South Sumatra Province, an even and comprehensive development effort is needed throughout the region. In this way, equal distribution and the provision of adequate facilities can encourage better GRDP growth. When viewed from the discussion above regarding the background and problems that occurred in South Sumatra Province in the period 2018-2022, this variable holds significant importance in the research as it seeks to ascertain whether there is a noteworthy impact of public infrastructure factors, including roads, water, and electricity, on the GRDP in South Sumatra.

THEORETICAL REVIEW

Sustainable Development Theory

According to (Runa, 2012) Sustainable development is the process of urban development that is able to meet the needs of society in a balanced manner today, remain competitive in the global economy, and maintain environmental harmony, social life, culture, politics, and security, without compromising the potential of future generations to meet their needs.

Economic Base Theory

According to (Siwu 2019), this theory explains that the growth of a region or city will depend on the leading sector (base) whose products are exported or sold to other regions. This leading sector is a sector with high productivity and competitiveness that is the source of income from export activities in the region. In contrast, non-base sectors are economic sectors whose growth is related to the internal economic conditions of the region.

Infrastructure to Gross Regional Domestic Product (GRDP)

Public infrastructure plays an important role in production activities. Concretely, public infrastructure can be considered as part of the production function due to the important role of the public sector as one of the components in the production process. This productive involvement of the public sector can create potential positive synergies between government and economic growth (Barro, 1990: 53). (Barro, 1990: 53). Infrastructure can be classified as capital. Infrastructure has a direct impact on the production process, and the development of infrastructure not only increases the capital stock, but is also able to improve the economy and people's standard of living (Heri Purnomo, 2009). (Heri Purnomo, 2009).

According to (aArsyad, 1997) The availability of infrastructure has a very important role in determining the success of a region in various aspects, such as production processes, trade expansion, poverty reduction, population growth control, investment attraction, and environmental improvement. The fact that the economic growth of the region is closely related to the infrastructure available in the region, shows that the provision of infrastructure is a very important need to improve the welfare of the region.

Research by (Fauziah & Juliprijanto, 2021) The growth of the Gross Regional Domestic Product (GRDP) in Magelang Regency is positively and significantly

influenced by the development of road infrastructure. And research by (Ramadhany, 2019) The GRDP in East Java is positively and significantly impacted by road infrastructure.

H1: Road infrastructure has a significant positive effect on GRDP

Research by (MS, 2018) The research findings show that water infrastructure has a positive and significant effect on GRDP growth in Gowa Regency, South Sulawesi Province. Meanwhile, research by (Ramadhany, 2019) The water infrastructure variable shows a positive but insignificant effect on GRDP.

H2 : Water infrastructure has a significant positive effect on GRDP

Research by (MS, 2018) Indicates that the electricity variable significantly and positively contributes to the growth of Gross Regional Domestic Product (GRDP) in Gowa Regency, South Sulawesi Province. And research by (Yelvita, 2022) The Gross Regional Domestic Product (GRDP) in Yogyakarta Special Region Province is significantly and positively influenced by electricity infrastructure.

H3: Electricity infrastructure has a significant positive effect on GRDP

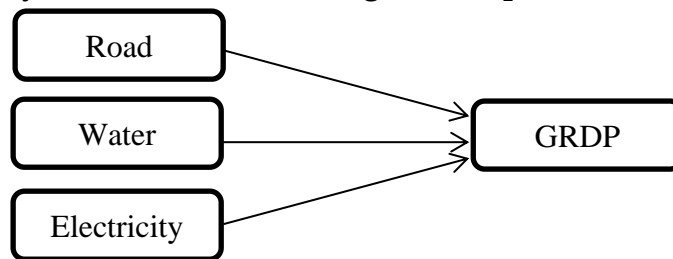


Figure 1. Conceptual Framework

METHODOLOGY

Data Type

The research method applied in this research is a quantitative approach, where the data collected is in the form of numbers and analyzed using statistical tools. The data used is secondary data, which is in the form of numerical information analyzed by statistical methods based on pre-existing data. The data was sourced from the Central Bureau of Statistics (BPS). Data analysis uses a panel data approach, which combines time series data and district/city data as cross section data. The statistical tool used in this research is EViews 9 software.

Panel Data Regression Model

The location in this study is in 17 regencies / cities in South Sumatra Province, in the period from 2018-2022. In this study, the variable taken is the dependent variable is the Gross Regional Domestic Product (GRDP). Meanwhile, the independent variables are roads (PJ), water (AB), and electricity (DL). The road data used is the length of roads according to good road conditions (km), water data uses the amount of water supplied (M3), and electricity data uses the distribution of electricity sold (KWh). The data obtained will be analyzed through panel data regression. The resulting equation model is:

$$Y_{it} = \alpha + \beta_1 \text{LogPJ}_{it} + \beta_2 \text{LogAB}_{it} + \beta_3 \text{LogDL}_{it} + \mu_{it}$$

Where:

Y = GRDP

α = Constant

β (1,2,3) = Regression coefficient

Log = Logarithm

PJ = Road

AB = Water

DL = Electricity

μ = error or variable outside the model

i = Cross Section (17 districts/cities)

t = Time Series (Year 2018-2022)

RESULTS

In processing this data, the panel data regression method is used which involves a series of econometric and statistical measurements. In the Ordinary Least Squares (OLS) method, there are two types of tests that must be met in the classical assumption framework, namely multicollinearity test and heteroscedasticity test, which are used to analyze whether there are problems in panel data analysis. In addition, there is an autocorrelation test that aims to determine whether there are confounding errors between the observation data at the previous time and the observation data at the current time in the regression model. In addition, there are three models used in the calculation to select the best model in panel data analysis, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). This research also includes various supplementary statistical assessments, including the determination coefficient examination, simultaneous significance evaluation, and partial significance analysis. The purpose of these steps is to ensure the validity and proper interpretation of the results of the analysis conducted.

Classical Assumption Test Results**Table 1. Classical Assumption Test Results**

Classical Assumption Test	Statistical Test	Statistical Value	Significance	Decision
Multicollinearity	Centered VIF	(1,06), (3,07), (2,99)	< 10	No Multicollinearity
Heteroscedasticity	Prob. Chi Square	0,0089	>0,05	Heteroscedasticity Occurs
Autocorrelation	Durbin-Watson stat	1,2895	$\geq 1 \leq 3$	No Autocorrelation

Source: data processed with EViews 9

According to the information presented in the table, it is evident that the multicollinearity test outcomes reveal a Centered VIF value below 10, indicating the absence of multicollinearity issues in this study, or in other words, the multicollinearity test has been met. Additionally, the heteroscedasticity test results indicate a chi-square probability value of 0.0089, which is lower than the significance level of 0.05, indicating the presence of heteroscedasticity. And the results of the autocorrelation test show that the Durbin-Watson stat value is 1.2895, indicating that the value is more than 1 and less than 3 which indicates no autocorrelation.

Model Selection Results**Table 2. Model selection results**

Testing	Results	Decision
Chow Test	Prob. 0.0000 < 0.05	FEM
Hausman Test	Prob. 0.0000 < 0.05	FEM
Lagrange Multiplier Test	Prob. 0.0000 < 0.05	REM

Source: data processed with EViews 9

Based on the model selection results, the Chow test has a probability value of 0.0000, which is less than 0.05, indicating that the Fixed Effect Model (FEM) is superior to the Common Effect Model (CEM). Additionally, the Hausman test, with a probability value of 0.0000, also suggests that the FEM outperforms the Random Effect Model (REM). The Lagrange Multiplier test, having a probability value of 0.0000, indicates that the REM is better than the CEM. Considering the selection of the best model from these three tests, In conclusion the Fixed Effect Model (FEM) is the most appropriate model.

Hypothesis Test Results

After testing the assumptions and selecting the best model, the results show that the best model is the Fixed Effect Model (FEM). The Fixed Effect Model (FEM) is estimated using the method of incorporating dummy variables. Subsequently, the results of the calculations using the FEM model in panel data regression analysis are provided:

Table 3. Hypothesis Test Results

Dependent Variable: Gross Regional Domestic Product (GRDP)					
Variables	Description	Coefficient	Std. error	t-stat	Prob.
C	Intercept	5.97259	0.628529	9.502496	0,0000
PJ	Road Length	0.034027	0.013116	2.59431	0.0127
AB	Clean Water	0.014019	0.010741	1.305188	0.1983
DL	Electricity Distribution	0.170268	0.032783	5.193796	0.0000
R-squared	0.998871				
Adjusted R-squared	0.998479				
Prob(F-statistic)	0.0000				

Source: data processed with EViews 9

1. Coefficient Value

The constant value of 5.97259 indicates that when the independent variables are at zero, the level of GRDP will reach 5.972590. The coefficient seen in the PJ variable of 0.034027 indicates that if the Road represented by the length of good roads increases by 1%, this will contribute to the level of GRDP by 0.034027. Then, the coefficient seen in the AB variable of 0.014019 indicates that if the amount of water distributed increases by 1%, it will have an impact on the level of GRDP by 0.014019. And the coefficient seen in the DL variable of 0.170268 indicates that if the amount of electricity distributed increases by 1%, this results in an increase in the level of GRDP by 0.170268.

2. Prob Value (F-statistic)

From the statistical test analysis, the probability test result (f-statistic) is 0.0000, the p-value of $(0.0000) < \alpha (0.05)$. Therefore, this result can be concluded that at a significance level of 5% the model that has been formed is considered good.

3. Coefficient of Determination (R-square)

The determined coefficient is an R-squared value of 0.998871, suggesting that the established model can account for approximately 99% of the variations in the dependent variable, which is GRDP in 17 regencies/cities in South Sumatra between 2018 and 2022. The remaining 1 % of the variability may be attributed to factors not included in this model. Adj R-square with a value of 0.998479 is an adjustment of R-square related to the number of observations and variables involved in the sample data analysis.

4. Simultaneous Effect Test (F Test)

The f-test test results show that the observed f-statistic value is 2544.363, while the f-table value is 2.717342734. Based on the calculations performed, we can conclude that the f-statistic value $(2544.363) > f\text{-table} (2.717342734)$ at the 5% significance level. This indicates that together, there is a significant relationship between the dependent variable and the independent variable.

5. Partial Effect Test (t Test)

It can be observed that the t-table value is 1.988267907. When compared with the t-statistic value of the PJ variable, which is 2.594310, it is found that the t-statistic value ($2.594310 > t\text{-table } (1.988267907)$). In addition, the prob value ($0.0127 < \alpha (0.05)$). The coefficient is positive at 0.034027, Demonstrating that the PJ variable has a notable positive impact on GRDP.

The t-statistic value for variable AB is 1.305188, which means that the t-statistic ($1.305188 < t\text{-table } (1.988267907)$). In addition, the probability ($0.1983 > \alpha (0.05)$). The coefficient is positive at 0.014019 indicating that the AB variable has a positive, but insignificant influence on GRDP.

There is a t-statistic with a value of 5.193796 for the DL variable, which means that the t-statistic ($5.193796 > t\text{-table } (1.988267907)$). In addition, the probability value ($0.0000 < \alpha (0.05)$). The positive coefficient is 0.170268, Suggesting that the DL variable exerts a considerable positive and significant effect on GRDP.

DISCUSSION

Road Infrastructure to GRDP

The Road variable, represented by the length of good roads, shows that the regression analysis found a significant positive effect on GRDP. The existence of road infrastructure that is in good condition will facilitate the distribution process of production factors. In addition, the development of road infrastructure will open access routes from one region to another, which has the potential to increase the growth of Gross Regional Domestic Product (GRDP). The results of this study are in line with the findings by (Fauziah & Juliprijanto, 2021) The growth of the Gross Regional Domestic Product (GRDP) in Magelang Regency is positively and significantly influenced by the development of road infrastructure. And research by (Ramadhany, 2019) the Gross Regional Domestic Product (GRDP) in East Java is positively and significantly impacted by road infrastructure.

(Limão and Venables, 2001) proved that infrastructure has a significant effect on the cost and volume of trade. High transportation costs can make exports from African countries less competitive. (Amjadi and Yeats, 1995).. Road infrastructure is a very important asset in the land transportation system, serving as a link between various regions. Roads have a very important role in the national economy, so good or bad road conditions can affect the economic growth of a region. (Bappenas, 2003).

Water Infrastructure to GRDP

The calculation results of the panel data analysis show that the water variable measured by the amount of water supplied has a positive, but insignificant impact on Gross Regional Domestic Product (GRDP). The results of this study are similar to the findings in the study (Piter Sony Hutauruk Meeting, 2021) The amount of clean water has a positive but insignificant impact on economic growth. In South Sumatra Province, the amount of clean water does

not have a significant impact because most of the population there relies on groundwater or boreholes in their daily lives, so the distribution of clean water from PDAMs is not so extensive. The results of this study are in line with the findings by (Ramadhany, 2019) Water infrastructure variables have a positive but insignificant effect on gross regional domestic product.

Clean water is a very important basic need in human life, so the provision of this resource is one of the priorities in development. Efficient clean water management must take into account the characteristics of liquids that easily flow, evaporate, seep, and pass through various specific media. (Tri Wahyuni, 2009).

Electricity Infrastructure to GRDP

The findings from the panel data regression analysis indicate that the Electricity variable has a positive and significant influence on GRDP. This shows that the increasing use of electricity that has been spread in South Sumatra Province so that economic activities will produce quality output so that it can increase economic growth and one's income. This finding is the same as the results of research conducted previously by (MS, 2018) Indicates that the electricity variable significantly and positively contributes to the growth of Gross Regional Domestic Product (GRDP) in Gowa Regency, South Sulawesi Province. And research by (Yelvita, 2022) The Gross Regional Domestic Product (GRDP) in Yogyakarta Special Region Province is significantly and positively influenced by electricity infrastructure.

Along with the progress of a region, electricity supply is one of the basic needs that must be met. This is not only true for households, but also for economic activities, especially in the industrial sector. In an increasingly modern society, more and more household appliances, office equipment, and community activities are highly dependent on electrical energy sources. (Krismanti, 2009).

CONCLUSIONS AND RECOMMENDATIONS

Based on the discussion of the results of the research analysis, conclusions can be drawn:

1. Road length has a positive and significant relationship with GRDP in South Sumatra. If the road conditions in South Sumatra Province are getting better, it will encourage the level of GRDP. An increase in the number of roads that are repaired and evenly distributed throughout the region can positively affect GRDP. This is due to the smoothness and significant improvement in the distribution of goods and services.
2. Electricity Distribution has a significant positive effect on GRDP in South Sumatra. The more electrical energy installed and distributed in South Sumatra Province, the greater the boost to the economy. Electricity infrastructure development reflects one aspect of fiscal policy implemented by the government to accelerate development and economic growth.

FURTHER STUDY

This study only uses road, water and electricity infrastructure variables, for further research can add telecommunications infrastructure variables such as internet networks. And also for further research using a wider area coverage.

ACKNOWLEDGMENT

The author would like to thank all those who have helped, supported and prayed so that he could complete this research.

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