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Effect of Infrastructure Development on the Rate GDRP in Daerah Istimewa Yogyakarta Province in 2012-2022

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Abstract

Economic growth is an indicator of the success of a country's development. On a regional scale, economic growth parameters can be seen from the growth of Gross Regional Domestic Product (GRDP) per capita. DIY Province is one of Indonesia's provinces designated as a National Tourism Strategic Area (KSPN) by the Ministry of Tourism. Daerah Istimewa Yogyakarta (DIY) is a tourist destination with high economic productivity. This, of course, must be supported by the availability of adequate infrastructure. Therefore, this research aims to determine the effect of road, electricity, and water infrastructure development on GRDP rates in DIY Province. The data that has been obtained is analyzed using multiple linear regression. The results of this research show that the development of road infrastructure and electricity significantly influences the rate of GRDP in DIY Province. Meanwhile, the development of clean water infrastructure does not significantly affect the rate of GRDP.

Keywords: Economic growth, electricity infrastructure, GRDP, road infrastructure, water infrastructure

Introduction

Daerah Istimewa Yogyakarta (DIY) is a province in Indonesia that is a tourist destination that is quite popular with local and foreign tourists. This happens because of various supporting factors, such as history, culture, and the government system that still adheres to a monarchy system and has beautiful natural panoramas (Marwahid, 2022).

The many cultural and educational-based tourist attractions have made DIY Province part of the National Tourism Strategic Area (KSPN) designated by the Ministry of Tourism (Hadi, 2018). Also, DIY Province has many natural tourist attractions spread throughout DIY Province, such as Parangtritis Beach, Mangunan Pine Forest, Kalibiru Natural Tourism, and so

on. This is, of course, very profitable for the DIY Provincial government because it can be used to support the regional economy.

Throughout 2017-2022, the GDP rate in DIY Province experiences a fairly stable increase. This increase occurred in all business sectors but was dominated by the construction sector. The dominance of the construction sector is due to the Yogyakarta International Airport construction project and the construction of supporting infrastructure, especially the JJLS (Southern Cross Road) (Directorate General of Treasury of Yogyakarta Special Region Province, 2019).

The availability of infrastructure is an essential key to the economic growth of a region (Atmaja and Mahalli, 2019). As a tourist area, DIY Province has a fairly high level of mobility. The high level of mobility in DIY Province makes roads one of the important infrastructures to support economic activities. Good road conditions will facilitate mobility from the center of economic activity to other areas, resulting in smooth economic transactions and influencing the economic growth of a region. Apart from road infrastructure, the availability of electricity and clean water infrastructure is also a crucial factor influencing economic growth. Electricity as an energy source will facilitate community economic activities. Apart from that, clean water supply is also one of the basic needs of society, and it is often used for cooking and sanitation (Lisnawati, 2021). Therefore, this research aims to determine whether or not the development of roads, electricity, and water infrastructure influences the rate of GRDP in the Special Region of Yogyakarta Province.

Literature Review

Economic Growth

Economic growth is a process of changing the economic conditions of a country sustainably over a certain period (Iwari, 2017). Economic growth is one of the indices to measure the success of a country's development in terms of several economic parameters, such as increasing the amount of production of goods and services, as well as infrastructure development. Generally, the assessment of a country's economic capacity is based on the main variables that are considered important in determining a country's economic growth, including Gross Domestic Product (GDP), inflation rate, and unemployment rate (Fatmawati and Syafitri, 2015).

Infrastructure

Infrastructure can be defined as physical facilities that are deliberately built to meet public needs and support government functions in providing water, electrical energy, transportation, waste disposal and public services to facilitate social and economic goals (Wijaya, 2016). This definition refers to the function of infrastructure as a system (Sari, 2015). Infrastructure systems are defined as facilities that are deliberately built for the functioning of social systems and economic systems. In this case, the infrastructure system acts as a mediator between the economic system and the social system in the structure of human life and nature. Poor (or even non-) functioning infrastructure systems will have a big impact on humans. On

the other hand, excessive infrastructure without considering the carrying capacity of the environment will have an impact on natural damage, which will be detrimental to humans and other living creatures (Wijaya, 2016).

The Relationship of Infrastructure Availability to Economic Growth

A study of development economic theory states that to support economic activities, good and adequate infrastructure is needed. Infrastructure is also the main support for the ongoing development of a region. Increasing infrastructure development will also attract investors and private participation (Atmaja and Mahalli, 2015). Several scientific articles on economic growth explain the importance of infrastructure in supporting the economy. This theory explains that infrastructure acts as an input that influences aggregate output and is a source of innovation for technological progress (Supriadi, 2018). The main source of the rate of economic growth is the availability of capital and labor factors, which will increase capita and aggregate output. The increase in capital includes investment in the factory and private sectors. Generally, the private sector plays a role in building factories and production factors. Meanwhile, the public sector plays a role in infrastructure development, such as roads, electricity, and water (Hapsari, 2011).

Research Method

Subject and Object of Research

The subjects used in this research were the Special Region of Yogyakarta Province (DIY). Meanwhile, the objects used in this research are road, electricity, and water infrastructure, as well as the GRDP per capita of DIY Province in 2012-2022.

Data Collection Methods

This research uses quantitative methods with time series data in the 2012-2022 range. Data collection was carried out using documentation techniques, namely collecting relevant documents, reports, and records from relevant institutions. This research uses secondary data from the Central Statistics Agency and the Department of Public Works, Housing and Energy and Mineral Resources of the Special Region of Yogyakarta Province by looking at data on road infrastructure, electricity, clean water, and GRDP per capita at constant prices in DIY Province.

Data Analysis Methods

Data analysis was carried out using multiple linear regression analysis methods. This analysis technique aims to determine whether or not there is a significant influence of one or more independent variables (X1, X2, X3, …, …, …, k), on the dependent variable (Y). The regression equation used in this research is as follows:

$$GRDP = a + \beta 1IJ + \beta 2IL + \beta 3IAB + e$$

Result

Test Result

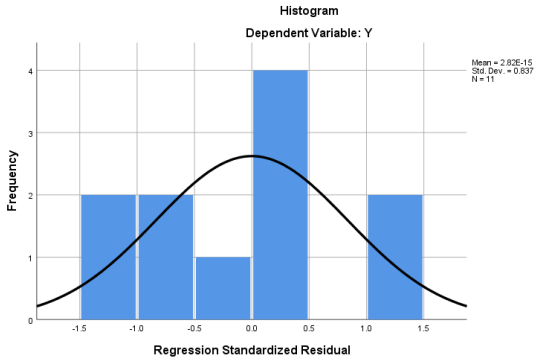
Classical Assumption Test

The assumption test is carried out to determine that the data used is not biased and to obtain a valid regression equation. This test includes the normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test.

a. Normality Test

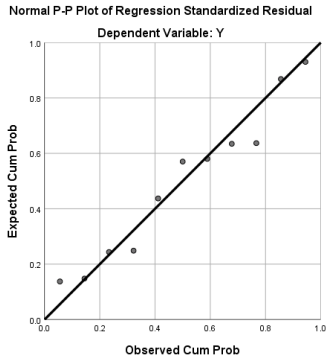
The normality test was carried out using histogram graphic analysis and P-P Plot. The results of the histogram graphic analysis are presented in the following graph:

Figure 1. Histogram Graph of Normality Test Results



Source: SPSS processed, 2023

Figure 2. P-P Graph Plot Normality Test Results



Source: SPSS processed, 2023

The results of the normality test graph show that the resulting histogram graph forms a bell shape; the histogram line above does not lean to the right or left (Figure 1). Meanwhile, for the normality test results, the P-P Plot graph above (Figure 2) shows that the distribution of items in the image looks close and follows the direction of the diagonal line. According to Sucipto (2017), data can be said to be normally distributed if the results of the histogram graph are not skewed to the right or left (bell-shaped), whereas on the P-P Plot graph, data is said to be normal if the data items are spread close to and in the same direction as the diagonal line. On this basis, it can be concluded that the data group used in this study is normally distributed.

b. Multicollinearity Test

The multicollinearity test is carried out by looking at the tolerance value and VIF (*Variance Inflation Factor*) value of each independent variable. The results of the multicollinearity test are presented in the following table:

Table 1. Multicollinearity Test Results

Variable	Tolerance	Conditions	VIF	Conditions	Information
X1	0.862	≥0.1	1.862	≤10	No Multicollinearity

X2	0.391	>0.1	1.391	<10	No Multicollinearity
X3	0.356	>0.1	2.807	<10	No Multicollinearity

Source: SPSS processed

Based on the data in Table 4.5, it can be seen that the tolerance values in the three variables show results below 0.1. Meanwhile, the VIF values on all three variables show results below 10. According to the rules of the multicollinearity test, the results obtained on these three variables show no multicollinearity marked tolerance value below 0.1 and VIF value below 10.

c. Heteroscedasticity Test

The heteroscedasticity test is performed with the Glejser test. The results of the heteroscedasticity test are presented in the following table:

Table 2. Heteroscedasticity Test Results

Variable	Conditions	Result	Clarity
X1	≥ 0.05	0.662	No heteroscedasticity occurs
X2		0.082	
X3		0.153	

Source: SPSS processed

Based on the results above, it can be seen that the significance value (sig.) in the Road variable (X1) is 0.662, the Electric variable (X2) is 0.082, and the water variable (X3) is 0.153. Based on the significant results (sig.) of the three variables above more than 0.05 (>0.05), then in accordance with the basis of decision making, it can be concluded that the resulting variable data is free from heteroscedasticity.

d. Autocorrelation Test

This test is performed using the Durbin-Watson test (DW *Test*). The results of the autocorrelation test in this study are presented in the following table:

Table 3. Autocorrelation Test Results

Type	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin Watson
1	0.996a	0.992	0.989	1457048.665	1.172

Source: SPSS processed

Based on the data in Table 3, it can be seen that the Durbin-Watson result (d) is 1.172. The resulting Durbin-Watson value (d) is .172, which lies between a dU value of 1.9280 and a

dL value of 0.5948. So based on the decision-making in the Durbin-Watson test, it is said that there is no definite conclusion.

Test the hypothesis

a. Test F (Simultaneous Test)

This F Test (Simultaneous Test) serves as proof of the influence of the Free Variable (X1, X2, X3) simultaneously (simultaneously) on the dependent variable (Y), obtained the results of the F Test as follows:

Table 4. Simultaneous Test Results (Test F)

	Sum of Squares	Df	Middle Square	F count	Sig.
Regression	1868288701484650.200	3	622762900494883.400	293.342	0.000
Residuals	14860935681201.370	7	2122990811600.196		
Total	1883149637165851.500	10			

Source: SPSS processed

Based on the results of the simultaneous test (Test F) above, it can be seen that the significance value (Sig.) obtained is 0.000. Referring to the existing decision-making basis, there is an influence between the variables of Road (X1), Electricity (X2), and Water (X3) on the rate of GRDP (Y) in the province of Yogyakarta Special Region.

b. T-Test (Partial Test)

The t-test (Partial Test) serves to see the effect of road length (X1), electricity infrastructure (X2), and water infrastructure (X3) partially on economic growth (Y). The results of the t-test are as follows:

Table 5. Simultaneous Test Results (Test t)

Variable	t count	t table	Significance
Road (X1)	2.629	2.36462	0.034
Electric (X2)	18.419		0.000
Water (X3)	-0.219		0.833

Source: SPSS processeds

Based on the results of the research described above, the independent variables in this study, namely Road Infrastructure (X1), Electricity Infrastructure (X2), and Water Infrastructure (X3), simultaneously have a significant influence on the rate of GDP. This is indicated by the significance value (Sig.) in Test F of 0.000, where the value is less than 0.05 (<0.05).

Discussion

The variable of road infrastructure (X1) has an influence on economic growth in the Special Region of Yogyakarta. This conclusion was obtained in the results of the t-test analysis (Partial Test) with t-count results of 2,629 > 2,364 (t table) and with significance values of 0.034 > 0.05. Road infrastructure has an influence on GDP because This infrastructure can be one of the important facilities that can support economic growth in an area, which can be said to be a function for liaison between regions as supporting infrastructure for production business people to the marketing areas to be addressed.

Variable electricity infrastructure (X2) has a significant influence on the GDP rate. This is known in the results of the analysis of the t-Test (Partial Test) with a calculated t value of 18,419 > 2,364 (t table) and with a significance value of 0.000 > 0.05. Electricity infrastructure has a positive effect on GDP in an area because electricity is also an infrastructure that has a significant influence on the sustainability of community activities. Community activities related to this infrastructure, such as the availability of electricity for the needs of the production process of an item, make it easier for industry players to run production machines to produce the products they trade.

The variable Water infrastructure (X3) has no influence on economic growth in the Special Region of Yogyakarta. This conclusion was obtained in the results of the t-test analysis (Partial Test) with t-count results of -0.219 > 2.364 (t table) and with significance values of 0.833 > 0.05. Water infrastructure negatively affects GDP in an area because this infrastructure is one of the reasons for limited access in some areas. This limited access makes the distribution of clean water uneven in an area. This can hamper community activities, such as the production process and distribution of the products they produce.

This study is in line with previous research stated by Kamila & Hutajulu (2020); the results of the study stated that road and electricity infrastructure variables have a significant positive influence on economic growth in Central Java province. As for the variable water, infrastructure does not have a significant influence on economic growth in Central Java. Based on the results of the study, it can be interpreted that the higher the value produced by road and electricity infrastructure, the more it will increase the value of economic growth in the Special Region of Yogyakarta. Conversely, the lower value generated by road and electricity infrastructure will reduce the value of economic growth in Daeerah Istimewa Yogyakarta. Then, for water infrastructure variables, it can be interpreted that water infrastructure has little influence and impact directly on economic growth in the Special Region of Yogyakarta.

Conclusion

Based on the results of research and discussion that have been presented, road infrastructure (X1) and electricity infrastructure have a significant influence on the rate of GRDP (Y) in the Special Region of Yogyakarta. This is due to the high mobility in DIY Province as well as the increase in electricity demand. The availability of good roads and electricity infrastructure will support the economic activities of the people in the Special Region of Yogyakarta. Meanwhile, water infrastructure does not have a significant influence on the rate of GRDP (Y) in the Special Region of Yogyakarta. This is due to the lack of optimal

clean water infrastructure in distribution to the community, so there are still many people in the DIY who still do not use clean water managed by the government.

References

Atmaja, H. K., & Mahalli, K. (2015). Pengaruh Peningkatan Infrastruktur terhadap Pertumbuhan Ekonomi di Kota Sibolga. *Jurnal Ekonomi*, *3*(4).

Badan Pusat Statistik Provinsi Daerah Istimewa Yogyakarta. (2021). *Provinsi DI Yogyakarta Dalam Angka 2020*.

Badan Pusat Statistik Provinsi Daerah Istimewa Yogyakarta. (2023). *Provinsi Daerah Istimewa Yogyakarta Dalam Angka 2022*.

Direktorat Jenderal Perbendaharaan Provinsi Daerah Istimewa Yogyakarta. (2019). *Kajian Fiskal Regional Tahun 2018*.

Direktorat Jenderal Perbendaharaan Provinsi Daerah Istimewa Yogyakarta. (2020). *Kajian Fiskal Regional Tahun 2019 D.I. Yogyakarta*.

Fatmawati, I., & Syafitri, W. (2015). Analisis Pertumbuhan Ekonomi Indonesia dengan Model Solow dan Model Schumpeter. *Jurnal Ilmiah Mahasiswa FEB Universitas Brawijaya*, *3*(2).

Hadi, W. (2018). Analisa Terhadap Pengembangangan Obyek Wisata Di Mata Mahasiswa Luar Jawa Sebagai Wisatawan Di Daerah Istimewa Yogyakarta. In *Journal of Indonesian Tourism, Hospitality and Recreation* (Vol. 1, Issue 2).

Iwari, M. I. (2017). *Faktor-Faktor yang Mempengaruhi Pertumbuhan Ekonomi di Provinsi Daerah Istimewa Yogyakarta tahun 2001-2015*. Universitas Islam Indonesia.

Kamilla, S., & Hutajulu, D. M. (2020). Pengaruh Infrastruktur terhadap Pertumbuhan Ekonomi di Provinsi Jawa Tengah. *JUSIE (Jurnal Sosial & Ilmu Ekonomi)*, *5*(02), 170–179.

Lisnawati. (2021). *Pengaruh Infrastruktur terhadap Pertumbuhan Ekonomi di Provinsi Aceh*. Universitas Islam Negeri Ar-Raniry.

Marwahid, H. (2022). Membangun Kembali Pariwisata Yogyakarta: Strategi dan Upaya Pemerintah melalui Badan Tourisme (BATOUR) 1945-1959. *Jurnal Penelitian Sejarah Dan Budaya*, *8*(1), 105–134. https://doi.org/10.36424/jpsb.v8i1.309

Sucipto, A. (2017). *Pengaruh Pelatihan Khitobah terhadap Keterampilan Berceramah Narapidana Lembaga Pemasyarakatan Kelas II A Kota Pekalongan* (Issue 2). Universitas Islam Negeri Walisongo.