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Analysis of the Effect of the Transportation Infrastructure Sector on Indonesia's Economic Growth

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Abstract

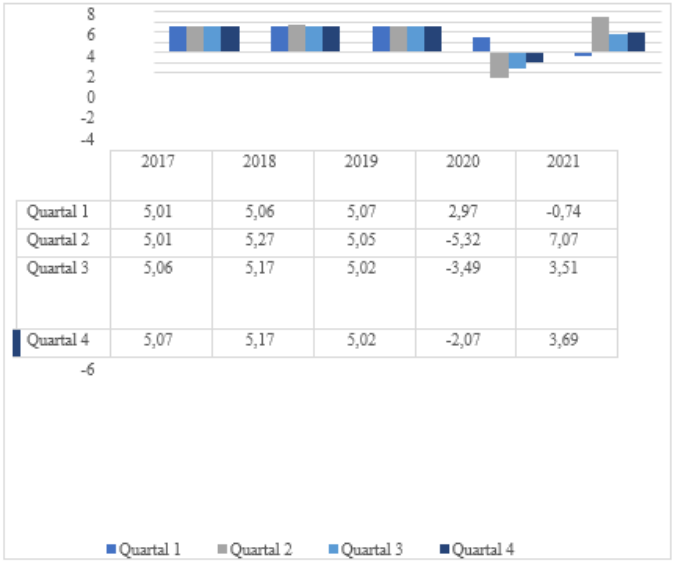
The purpose of this study for analysis of the influence of the transportation infrastructure sector on Indonesia's Economic Growth. The method used in this study is descriptive through a quantitative approach. In the initial stage, panel data regression analysis was tested. This method is done to observe the relationship between one dependent variable and one or more independent variable through three approaches namely, common effect model, fixed effect model, and random effect model, and several other tests. The data obtained in this study is secondary data through books and BPS – Statistics Indonesia The method used in this study is descriptive through a quantitative approach. The result of this study show that transportation infrastructure sector had positive and significant effect on Indonesia's Economic Growth.

Keywords: Infrastructure; Transportation; Economic Growth

1. Introduction

Economic growth is an increase in the overall income of the community that occurs in a region, the increase in opinion is an increase in all value added that occurs in the region. The region's income reflects the reward for the factors of production operating in the region, this can illustrate the prosperity in the region. The prosperity of a region, apart from being determined by the amount of value added created in the region, is also determined by how much income flows outside the region or gets a flow of funds from outside the region [1].

There are two components that can be used to measure economic growth, including Gross National Product (GNP) and Gross Domestic Product (GDP). Based on Statistics Indonesia (BPS), Indonesia's economic growth data is as follows:



	2017	2018	2019	2020	2021
Quartal 1	5,01	5,06	5,07	2,97	-0,74
Quartal 2	5,01	5,27	5,05	-5,32	7,07
Quartal 3	5,06	5,17	5,02	-3,49	3,51
Quartal 4	5,07	5,17	5,02	-2,07	3,69

Figure 1. Indonesia's Economic Growth Data

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In Indonesia, these two sectors have a major impact on the access of people or goods to their destination. Areas that previously had little infrastructure and modes of transportation have now begun to increase in number. The construction sector is one of the supporting factors for infrastructure development which will ultimately affect economic growth in Indonesia. Likewise, the transportation sector is no less important in terms of economic growth. The transportation sector affects economic growth in making it easier for people or goods to access the starting point to the final destination point.

A country's infrastructure development must be in line with its macroeconomic conditions. In recent years, Indonesia's economic development has lagged behind due to weak infrastructure development. The decline of infrastructure development in Indonesia can be seen from the infrastructure development expenditure that continues to decline from 5.3% of GDP (Gross Domestic Product) in 1993/1994 to 2.3%. Under normal conditions, development spending on infrastructure for developing countries is around 6% of GDP.

After the crisis, infrastructure spending dropped dramatically. Not only during the crisis, many infrastructure projects both privately and state-funded were shelved, but after the crisis, central government spending on infrastructure development was drastically reduced. In total, the share of the state budget for this sector has fallen by about 80% from pre-crisis levels. In 1994, the central government spent almost US$14 billion on development, 57% of which was on infrastructure. By 2002 development spending was much less at less than US$5 billion, and only 30% of this was on infrastructure [2].

Infrastructure development The land transportation sector by building a road network is a prerequisite for the development of economic activities and connecting hard-to-reach areas. Roads also connect rural communities to the economic mainstream, thereby increasing incomes and thereby improving living conditions. Government spending on transportation over the past five years has increased significantly. In 2009, there was an increase in transportation expenditure of around IDR 5 billion from the previous year. The land transportation sector will increasingly also affect the rate of economic growth in Indonesia.

Air transportation has become one of the important modes of transportation for medium and long-distance travel. The main infrastructure that handles air transportation movements is the airport. Airports in Indonesia are a transportation infrastructure that has a very fast development. Demand from prospective passengers is increasing along with increasing human mobility. The high demand directly affects the demand for flight schedules for an airline [3]

Sea transportation as a sector connects between islands because it is much more efficient and economical than air transportation. The development of sustainable sea transportation to improve sea transportation services, so that it is increasingly able to connect all regions of the country while encouraging trade growth and increasing competitiveness and marketing. In order to encourage exports and production for export, especially goods outside oil and gas, competitiveness and efforts to breakthrough and expand foreign markets are improved, among others through efforts to improve the efficiency and quality of production, ensure continuity and timeliness of delivery, diversify goods and export markets, improve trade information and export promotion, improve export marketing facilities and increase international trade cooperation [4].

The independence of the Indonesian state as the demands and needs of industrialization and economic development, requires the strength of all aspects such as socio-political, socio-economic both at the national and international levels. The availability of infrastructure such as roads is a necessity and demand to achieve better economic development. The provision of these public facilities will be faced with funding requirements. In Indonesia, infrastructure funding is obtained from taxation. Taxes as contributions often add to the burden on society when tax revenues are not used and directed to the provision of public services in general or in other words specifically such as the provision of road infrastructure.

The effect of the transportation sector on total production costs in Indonesia is still relatively high compared to the effect of the transportation sector in other countries that have better transportation infrastructure sectors than Indonesia. The selling price of production will be more expensive so that it becomes more difficult to compete in the market and has a small profit. This is a major influence on investors. New investors will not open their production sector and old investors will not look to increase production.

To facilitate trade, the government relies heavily on sea transportation, not only to support accessibility, mobility, transportation activities at sea, but also as a driver of the nation's economic growth. As a result, the government views maritime transportation as a major issue in the country's economic growth. The direct contribution of sea transportation to the economy is quite large. As a result, the government wants to see more marine transportation infrastructure developed across the country. Almost every region of Indonesia has ongoing port development. Port as a transportation area or as a support for maritime traffic. Ships conducting trade activities, both domestic ships and international ships carrying goods for trade, come and go during port activities.

2. Literature Review

2.1. Infrastructure

Infrastructure is a form of public capital consisting of bridges, public roads, sewer systems, and others as one of the investments made by the government [5].

2.2. Transportation

Transportation is the activity of moving goods (cargo) and passengers from one place to another. In transportation there are two most important elements, namely transfer / movement and physically changing the place of goods (commodities) and passengers to another place [6]. Transportation itself is divided into 3 namely, land, sea and air transportation. Air transportation is transportation that requires a lot of money to use it. Apart from having more sophisticated technology, air transportation is the fastest means of transportation compared to other means of transportation and has a relatively lower accident rate than land and water transportation.

2.3. Economic Theory

Economic theory is divided into two, namely microeconomic theory and macroeconomic theory.

The scope of Microeconomics is very broad and between one topic and another is interconnected so that we are interested in studying and understanding it. Starting from Demand Theory, which not only reveals the dependence of the amount of goods demanded individually but also applies to market demand (Market Demand) on the price of the goods themselves as the dominant factor, and how other factors affect the change in demand. Then in the form of a function, a mathematical demand model will be presented that can be used to estimate the amount of demand. The relationship between the amount of goods demanded and the price level as a negative relationship (Prioce Effect) which also reveals The Law of Demand.

Macroeconomics is a branch of economics that focuses its analysis on economic variables as a whole; including aggregate demand and supply, total outputs, employment and their consequences such as booms, recessions, economic growth, inflation, unemployment and depreciation and appreciation of money. This means that macroeconomics concerns the economic problems that we face on a daily basis.

2.4. National Income

National income is a form of benchmark used to calculate a country's economy to obtain an overview of the economy that has been achieved and the value of expenditure produced. In short, national income is a measuring tool to determine the level of a country's economy. In simpler language, national income is the amount of income received by the people of a country within a certain period of time, usually one year [7].

2.5. Economic Growth

Economic growth is an increase in the ability of an economy to produce goods and services. In other words, economic growth refers more to quantitative changes and is usually measured using gross domestic product (GDP) or per capita output income data. The economic growth rate shows the percentage increase in real national income in a given year compared to real national income in the previous year. The higher the economic growth rate, the faster the process of increasing regional output so that the prospects for regional development are getting better. By knowing the sources of economic growth, the priority sectors of development can be determined. There are three main factors or components that affect economic growth, namely capital accumulation, population growth, and technological progress [8].

3. Research Method

The type of research that analyzes “Analysis of the Effect of the Transportation Infrastructure Sector on Indonesia's Economic Growth” is quantitative descriptive analysis. Descriptive research includes data collection to test hypotheses. The data used in this study are secondary data sourced from the publication of the Central Statistics Agency (BPS) for 34 provinces in Indonesia from 2016 to 2020, which consists of data on the amount of transportation, and economic growth in Indonesia [9].

Data collection techniques in this study were carried out as follows: Literature study, namely by collecting data and information through literature related to the problems studied, which can be obtained from books, journals, the internet and others [10]. In this study, the analysis method used is panel data regression analysis, which is one of the statistical methods used to see the effect of several predictor variables on one response variable with a data structure in the form of panel data.

In this study, the analysis method used is panel data regression analysis, which is one of the statistical methods used to see the effect of several predictor variables on one response variable with a data structure in the form of panel data. The analysis used in this study is panel data regression analysis, where the research model can be written as follows:

$$InPDRB_{it} = \beta_0 + \beta_1 InJALAN_{it} + \beta_2 BUS_{it} + \beta_3 InMOBA_{it}$$

$$\beta_4 InBMPL_{it} + \beta_5 InJPPL_{it}$$

$$\beta_6 InBMPU_{it} + \beta_7 InJPPU_{it} + e_{it}$$

$PDRB_{it}$ = ADHK GRDP of province i in year t

$JALAN_{it}$ = Length of Good and Medium Roads per total population of Province i in year t (km /1000 people)

BUS_{it} = Total bus flow per population of province i in year t (number of routes/1000 people)

$MOBA_{it}$ = Total freight car flow per population of province I in year t (tons/1000 people)

$BMPL_{it}$ = Total Flow of Goods (Loading & Unloading) at Sea Port per total population of province i in year t (tons/1000 people)

$JPPL_{it}$ = Total passenger flow at Sea Port per population of province i in year t (number of routes/1000 people)

$BMPU_{it}$ = Total Goods Flow (Loading & Unloading) at Air Port (Airport) per total population of province i in year t (tons/1000 people)

$JPPU_{it}$ = Total Passenger Flow at Airports per population of province i in year t (number of flights/1000 people)

e_{it} = Residual (error)

β_0 = Intersep

β_n = Regression Coefficient (contribution to the magnitude of changes in the value of the independent variable

In = Natural Logarithm (all positive real numbers x and can also be interpreted as complex numbers that are not 0)

4. Results and Discussion

4.1. Results

4.1.1. Panel Data Analysis

Panel data as a combination of time series and cross section is able to provide more informative, more varied and more efficient data than time series and cross sectional. With regression estimation techniques, there are two approaches, namely: Common Effect Model, Fixed Effect Model and Random Effect Model.

The parameter estimation method in the common effect model uses the Ordinary Least Squence (OLS) method following the regression equation model:

Table 1. Common Effect Model Test Results

Variable	Coefficient	Std. Error	t- Statistic	Prob.
C	-2.761473	9.88 E-10	-2.79E+09	0.0000
Sektor Transportasi	0.022352	9.04E-12	2.47E+09	0.0000
Sektor Transportasi Darat	2.933930	6.31E-10	4.65E+09	0.0000
Sektor Transportasi Laut	0.256255	5.55E-10	4.62E+08	0.0000
Sektor Transportasi Udara	-0.020982	6.57E-12	-3.19E+09	0.0000
R-squared	1.000000	Mean dependent var		15.32048
Adjusted R-squared	1.000000	S.D. dependent var		0.873 985
S.E. of regression	2.67E-12	Akaike info criterion		-50.195 91
Sum squared resid	7.15E-23	Schwarz criterion		-49.959 90
Log likelihood	381.4693	Hannan-Quinn criter.		-50.198 43

F-statistic	3.74E+23	Durbin-Watson stat	3.928747
Prob(F-statistic)	0.000000		

Source: Secondary data processed by Eviews 10 year 2024

The CEM (Common Effect Model) estimation approach in the table above that the four variables with individual tests (ttest probability) are seen with α = 5% and the adjusted R2 value of 1.000000. The probability value of the F-Stat of 0.000000 means that the model is significant. The Durbin-Watson stat value of 3.928747 is close to the 0.3 range.

The regression estimation method in the fixed effect model uses the technique of adding dummy variables or Least Square Dummy Variables (LSDV). The following is the regression equation model:

Table 2. Fixed Effect Model Test Results

Variable	Coefficient	Std. Error	t- Statistic	Prob.
C	-2.761473	1.10 E-09	-2.50E+09	0.0000
Sektor Transportasi	0.022352	1.01E-11	2.21E+09	0.0000
Sektor Transportasi Darat	2.933930	7.06E-10	4.16E+09	0.0000
Sektor Transportasi Laut	0.256255	6.20E-10	4.13E+08	0.0000
Sektor Transportasi Udara	-0.020982	7.35E-12	-2.85E+09	0.0000
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	1.000000	Mean dependent var		15.32048
Adjusted R-squared	1.000000	S.D. dependent var		0.873985
S.E. of regression	2.99E-12	Akaike info criterion		-49.92925
Sum squared resid	7.15E-23	Schwarz criterion		-49.59882
Log likelihood	381.4693	Hannan-Quinn criter.		-49.93277
F-statistic	1.99E+23	Durbin-Watson stat		3.928748
Prob(F-statistic)	0.000000			

Source: Secondary data processed by Eviews 10 year 2024

The FEM (Fixed Effect Model) estimation approach in the table above that the four variables with individual tests (t-test probability) are seen with α = 5% and the adjusted R2 value of 1.000000. The probability value of the F-Stat of 0.000000 means that the model is significant. The Durbin-Watson stat value of 3.928748 is close to the range of 3.

The Random Effect Model panel data regression estimation method uses the Generalized Least Square (GLS) method. The following is the regression equation model:

Table 3. Random Effect Model Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.761473	9.88 E-10	-2.79E+09	0.0000
Sektor Transportasi	0.022352	9.04E-12	2.47E+09	0.0000
Sektor Transportasi Darat	2.933930	6.31E-10	4.65E+09	0.0000
Sektor Transportasi Laut	0.256255	5.55E-10	4.62E+08	0.0000
Sektor Transportasi Udara	-0.020982	6.57E-12	-3.19E+09	0.0000

R-squared	1.000000	Mean dependent var	15.32048
Adjusted R-squared	1.000000	S.D. dependent var	0.873985
S.E. of regression	3.17E-12	Akaike info criterion	-49.85757
Sum squared resid	1.00E-22	Schwarz criterion	-49.62155
Log likelihood	378.9317	Hannan-Quinn criter.	-49.86008
F-statistic	2.67E+23	Durbin-Watson stat	3.948768
Prob(F-statistic)	0.000000		

Source: Secondary data processed by Eviews 10 year 2024

The REM (Random Effect Model) estimation approach in the table above shows that there are two variables with individual tests (t-test probability) seen with α = 5% and an adjusted R2 value of 1.000000. The probability value of the FStat of 0.000000 means that the model is significant. The Durbin-Watson stat value of 3.948768 is close to the range of 1.

Selection of the most appropriate panel data regression model used in managing panel data, there are several tests that can be done, with the Chow Test (Common Effect vs Fixed Effect), Hausman Test (Fixed Effect vs Random Effect) and Lagrange Multiplier Test (Random Effect vs Common Effect). The following is the selection of the research model:

Table 4. Chow Test (Likelihood Test Ratio)

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.371547	(17,68)	0.1787
Cross-section Chi-square	26.533935	17	0.0653

Source: Secondary data processed by Eviews 10 year 2024

Based on the table test above, it shows that the value of the Probability Cross-section Chi-square is 0.0653, which is <0.05, then H0 is accepted with the hypothesis:

H0: Choosing to use the Common Effect Model estimation model

H1: Choosing to use the Fixed Effect Model estimation model

So it can be concluded that the estimation model that can be used is the Common Effect Model compared to the Fixed Common Effect Model.

Table 5. Hausman Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	26.875987	5	0.0001

Source: Secondary data processed by Eviews 10 year 2024

Based on the table test above, it shows that the value of the random Cross-section Probability is 0.0001, which is <0.05, which means it is significant with a significance level of 99% (α = 5%) and uses the Chi-Square distribution (Gujarati, 2012). So that the decision taken through the Hausman test is to accept H1 with the hypothesis:

H0: Choosing to use the Random Effect Model estimation model

H1: Choosing to use the Fixed Effect Model estimation model

So it can be concluded that the estimation model that can be used is the Fixed Effect Model compared to the Random Effect Model.

Table 6. Lagrange Test

Lagrange Multiplier Tests for Random Effects
Null hypotheses: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	0.076606 (0.7820)	0.810399 (0.3680)	0.887005 (0.3463)
Honda	0.276778 (0.3910)	-0.900222	-0.440841
		--	--
King-Wu	0.276778 (0.3910)	-0.900222 --	-0.689165 --
Standardized Honda	0.879748 (0.1895)	-0.673752 --	-3.856677 --

Lagrange Multiplier Tests for Random Effects
Null hypotheses: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives

	Test Hypothesis		
	Cross-section	Time	Both
Standardized King-Wu	0.879748	-0.673752	-3.538136
	(0.1895)	--	--
Gourierioux, et al.*	--	--	0.076606
			(>= 0.10)

Source: Secondary data processed by Eviews 10 year 2024

Based on the table test above, it shows that the Breush-Pagan Probability (BP) value is 0.3463, which is > 0.05, then H0 is accepted with the hypothesis:

H0: Choosing to use the Common Effect Model estimation model

H1: Choosing to use the Random Effect Model estimation model

So it can be concluded that the estimation model that can be used is the Common Effect Model compared to the Random Effect Model.

Based on the three tests, the Chow Test, the Hausman Test and the Lagrange Multiplier Test, it can be concluded that the Common Effect Model is more appropriate than the Fixed Effect Model and the Random Effect Model. So it can be said that the Common Effect Model can be carried out in further testing.

4.1.2. Classical Assumption Tests

To test whether the regression model used in this study is feasible or not to be used, it is necessary to conduct a classical assumption test. The classical assumption tests used in this study include:

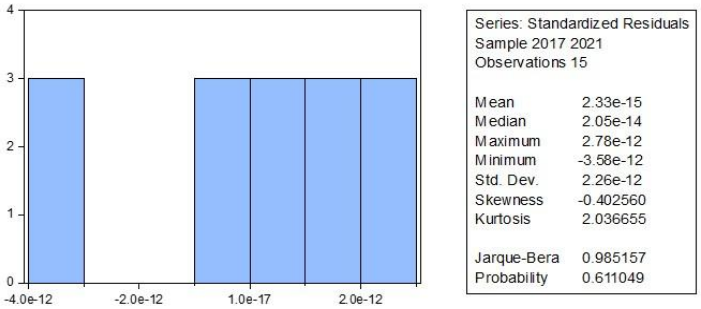

Figure 2. Normality Test

Source: Secondary data processed by Eviews 10 year 2024

Based on Figure 1, it can be seen that the data is not normally distributed, this can happen because there are outliers in the data. The data is said to be abnormal because the Jarque-Bera (JB) probability value is at 0.985157 which is greater than the significant value of 0.05 or 5%. So it can be said that the research data has been normally distributed so that it can be said that the regression model is suitable for use and can be used for further testing.

Table 7. Heteroskedasticity Test

Heteroskedasticity Test: Glejser

F-statistic	1.62E+19	Prob. F(4,10)	0.0560
Obs*R-squared	15.00000	Prob. Chi-Square(4)	0.0047
Scaled explained SS	8.849562	Prob. Chi-Square(4)	0.0650

Source: Secondary data processed by Eviews 10 year 2024

Based on the table above, it shows that the Chi-Square probability value is 0.0560 > 0.05, so it can be concluded that this regression model does not experience heteroscedasticity.

Table 8. Multicollinearity Test

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	2.18 E-18	2048981.	NA
Sektor Transportasi	1.82E-22	1543163.	254795.6
Sektor Transportasi Darat	8.90E-19	27417750	60939.15
Sektor Transportasi Laut	6.87E-19	12064478	145555.5
Sektor Transportasi Udara	9.65E-23	748936.1	127321.8

Source: Secondary data processed by Eviews 10 year 2024

Based on the table above, it shows that all independent variables have a Coefficient Variance value of less than 10, so it can be concluded that the regression model of this study does not experience multicollinearity and the regression model is suitable for use.

Table 9. Autocorrelation Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.09E+11	Prob. F(2,8)	0.8730
Obs*R-squared	15.00000	Prob. Chi-Square(2)	0.3496

Source: Secondary data processed by Eviews 10 year 2024

Based on the table above with testing with the number of samples (n) = 5 and the number of independent variables (k) = 4, with the Breusch-Godfrey test or Lagrange Multiplier (LM) This test uses lag 2 to detect the presence or absence of autocorrelation. After testing, the probability value of obs*R-squared was obtained as 0.3496. This means that there is sufficient evidence to state that there is no autocorrelation in the data because the probability of obs*R-squared> 0.05. *4.1.3 Hypothesis Testing*

Table 10. Coefficient of Determination Test

R-squared	1.000000	Mean dependent var	15.32048
Adjusted R-squared	1.000000	S.D. dependent var	0.873985
S.E. of regression	4.00E-12	Akaike info criterion	-49.39233

Sum squared resid	1.60E-22	Schwarz criterion	-49.15631
Log likelihood	375.4425	Hannan-Quinn criter.	-49.39484
F-statistic	1.67E+23	Durbin-Watson stat	3.490754
Prob(F-statistic)	0.000000		

Source: Secondary data processed by Eviews 10 year 2024

The table above shows that the adjusted R Square value is 1.000000. This means that 100% of Indonesia's economic growth can be explained by transportation infrastructure (X1), land transportation (X2), air transportation (X3) and sea transportation (X4), while the remaining 0% is explained by other variables not included in this research model. The standard error value of the regression model is 4.00E-12 which is indicated by the label S.E. of regression.

Table 11. Partial Test (t-Test)

Variable	Coefficient	Std. Error	t- Statistic	Prob.
C	-2.761473	9.88 E-10	-2.79E+09	0.0000
Sektor Transportasi	0.022352	9.04E-12	2.47E+09	0.0000
Sektor Transportasi Darat	2.933930	6.31E-10	4.65E+09	0.0000
Sektor Transportasi Laut	0.256255	5.55E-10	4.62E+08	0.0000
Sektor Transportasi Udara	-0.020982	6.57E-12	-3.19E+09	0.0000

Source: Secondary data processed by Eviews 10 year 2024

The first hypothesis (H1) the influence of the transportation infrastructure sector on Indonesia's economic growth produces a significance value of 0.0000 <0.05 with a t-Statistic value of 1.65E+09. This means that the transportation infrastructure sector has a positive and significant effect on Indonesia's economic growth, so H01 is rejected and Ha1 is accepted.

1. The second hypothesis (H2) the influence of the land transportation sector on Indonesia's economic growth produces a significance value of 0.0000 <0.05 with a t-Statistic value of 3.11E+09. This means that the land transportation sector has a positive and significant effect on Indonesia's economic growth, so H02 is rejected and Ha2 is accepted.
2. The third hypothesis (H3) the influence of the air transportation sector on Indonesia's economic growth produces a significance value of 0.0000 <0.05 with a t-Statistic value of 3.09E+08. This means that the air transportation sector has a positive and significant effect on Indonesia's economic growth, so H03 is rejected and Ha3 is accepted.
3. The fourth hypothesis (H4) the effect of the sea transportation sector on Indonesia's economic growth produces a significance value of 0.0000 <0.05 with a t-Statistic value of -2.14E + 09. This means that the sea transportation sector has a negative and significant effect on Indonesia's economic growth, so H04 is accepted and Ha4 is rejected.

4.2. Discussion

This research model shows that Indonesia's economic growth can be explained through the independent variables of transportation infrastructure, land transportation, air transportation and sea transportation:

1. The influence of the transportation infrastructure sector on Indonesia's economic growth. The first hypothesis, namely the influence of the transportation infrastructure sector on Indonesia's economic growth, is accepted, with a significance value of 0.0000 <0.05 with a t-Statistic value of 1.65E + 09. The test results indicate that the transportation infrastructure sector has a positive and significant effect on Indonesia's economic growth, so Ha1 is accepted.
2. The influence of the land transportation sector on Indonesia's economic growth. The second hypothesis, namely the influence of the land transportation sector on Indonesia's economic growth, is accepted, with a significance value of 0.0000 <0.05 with a t-Statistic value of 3.11E + 09. The test results indicate that the land transportation sector has a positive and significant effect on Indonesia's economic growth, so Ha2 is accepted.

3. The influence of the air transportation sector on Indonesia's economic growth. The third hypothesis, namely the influence of the air transportation sector on Indonesia's economic growth, is accepted, with a significance value of 0.0000 <0.05 with a t-Statistic value of 3.09E + 08. The test results indicate that the air transportation sector has a positive and significant effect on Indonesia's economic growth, so Ha3 is accepted.
4. 4. The influence of the sea transportation sector on Indonesia's economic growth. The fourth hypothesis, namely the influence of the sea transportation sector on Indonesia's economic growth, is accepted, with a significance value of 0.0000 <0.05 with a t-Statistic value of -2.14E + 09. The test results indicate that the sea transportation sector has a positive and insignificant effect on Indonesia's economic growth, so Ha4 is accepted.

5. Conclusions

Based on the analysis of the research results, it is concluded that the transportation infrastructure sector has a positive and significant effect on Indonesia's economic growth. This is because transportation infrastructure plays an important role in the economy, and industrial activities in achieving national socio-economic development goals. The land transportation sector has a positive and significant effect on Indonesia's economic growth. The transportation sector both cars, buses, and trains as a driver of economic growth in the community, region and country through which the transportation passes. The air transportation sector has a positive and significant effect on Indonesia's economic growth. The number of types of aircraft operating in Indonesia for domestic and foreign travel is evidence that the air transportation sector has been able to increase economic growth in Indonesia. The sea transportation sector has a positive and insignificant effect on Indonesia's economic growth. Although the level of use of passenger ships is small, sea transportation is still widely used for shipping goods, because it has a greater carrying capacity or cargo capacity so that it offers better economies of scale and is able to connect all regions of the country with the construction of docks on every remote island that has no airport or is not passed by aircraft.

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