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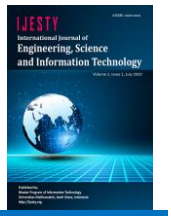

Analysis of the Relationship of Domestic Sea Transportation to the Gross Regional Domestic Product of the Real Estate Sector in Indonesia

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Abstract

The economic slowdown due to the pandemic has negatively affected various sectors in Indonesia, including the real estate sector. Meanwhile, Java Island is still the center of the economy in Indonesia. This contrasts the conditions of regions outside Java, which are still experiencing development gaps. Despite being a minor contributor to GDP, areas outside Java, such as Maluku and Papua, have experienced rapid economic growth. This proves that, outside Java, there is still significant potential for growth and investment, although it is inevitable that it will face unique challenges and obstacles in the future. Some of the factors that cause this to happen are the lack of supporting infrastructure such as roads, limited skilled human resources, and connectivity and transportation mobilization in the area. Excellent and appropriate connectivity and mobilization are needed to support economic growth in an area. One option for mobilization tools for archipelagic countries like Indonesia is sea transportation. In meeting the needs of the property and real estate sector, sea transportation is one of the options of choice. Excellent and proper connectivity and mobilization can be a factor that supports economic growth as well as the real estate sector outside Java. In the real estate sector, maritime transportation is essential in the timely distribution of quality building materials and construction equipment to development sites. There is undoubtedly a link between marine transportation and property/real estate in Indonesia. The research method used in this study is a significant correlation analysis, namely Pearson Product Moment, to determine the relationship between two variables, namely Domestic Sea Transportation and Real Estate Sector GRDP. The results of the correlation data test in this study show that the Domestic Sea Transportation variable is positively correlated with the Real Estate GRDP variable. Indicated by the correlation coefficient value for each sea transportation variable of domestic ship visits (units) = 0.331, domestic ship visits (GT) = 0.504, the flow of Non-Crate and Container goods (unloading) = 0.251, the flow of Non-Crate and Container goods (loading) = 0.447. It can be interpreted that there is a positive relationship between the four sea transportation variables and Real Estate GRDP.

Keywords: Sea Transportation, Real Estate GRDP, Flow of Goods, Passenger Visits.

1. Introduction

Java Island is the center of the economy in Indonesia, and its conditions are different from areas outside Java. An example is the development of the real estate sector, each of which experiences inequality. The contributing factors are the lack of supporting infrastructure such as roads, limited skilled human resources, and complex connectivity and mobilization. Areas outside Java have a lot of potential to be developed to advance the area. Even economic growth in Maluku and Papua experienced rapid growth. Excellent and appropriate connectivity and mobilization can be factors that support economic growth as well as the real estate sector outside Java.

Sea transportation is a node of inter-island connectivity, the lifeblood of economic growth in Indonesia as an archipelagic country. In the real estate sector, sea transportation is essential in the timely distribution of quality building materials and construction equipment to the development site. If the process goes smoothly, this can later affect the increase in real estate GRDP.

2. Literature Review

Table 1. Previous Research

NO	Journal, Author, and Year	Research Title	Method	Similarities and differences
1	Journal of Marine Policy [1]	Maritime transport and economic growth: Interconnection and influence (an example of the countries the Caspian Sea coast; Russia, Azerbaijan, Turkmenistan, Kazakhstan, and Iran)	Statistical research methods and materialist dialectical methods used, as well as SWOT analysis and correlation analysis.	Equation: Using statistics and correlation analysis Difference: Case study and swot analysis
2	Journal of Transportation Economics [2]	The role of maritime, land, and air transportation in economic growth: Panel evidence from OECD and non-OECD countries.	Correlation Analysis	Equation: Using correlation analysis Differences: Case studies and the many variables such as land, sea, and air transportation.
3	Jurnal Studi Ekonomi Fiskal dan Regional [3]	Pengaruh Tingkat Pendidikan, Pembangunan Infrastruktur Dan Pembangunan Real Estate Terhadap Tingkat Serapan Tenaga Kerja Di Provinsi Papua Barat Tahun 2010-2014	Correlation Analysis	Equation: Using correlation analysis and real estate variables Difference: The variables used are education level, infrastructure development, and labor absorption
4	Journal of Transportation Economics [4]	The impact of container transport on economic growth in Turkey: An ARDL bounds testing approach	Autoregressive Distributed Lag (ARDL) based limit test	Equation: Using linear regression Difference: Test data with ARDL
5	Journal Economics [5]	Analysis of the relationship between gross domestic product (GDP) and development of the transport industry in Kazakhstan	Linear Regression Method	Equation: Using linear regression Distinctions: Case studies and variables of the transportation industry
6	Journal of Transportation Economics (PLoS ONE) [6]	Gross domestic product and logistics performance index drive the world trade: A study based on all continents.	Correlation Analysis	Equation: Using correlation analysis Distinctions: Case studies and the impact of GDP on international trade
7	Jurnal Teknik Sipil [7]	Pengaruh Pelabuhan Terhadap Pertumbuhan Ekonomi Di Pulau Sulawesi	Linear Regression Method	Equation: Using linear regression Differences: Case studies and a more comprehensive range of research variables
8	Jurnal Sistem Informasi [8]	Peran Pelabuhan Dalam Mendorong Arus Barang dan Pertumbuhan Ekonomi Sumatera Utara	Linear Regression Method	Equation: Using linear regression Difference: Case studies and variables
9	Journal of Marine [9]	Assessing the Economic Contribution of Ocean-Based Activities Using the Pacific Coast of British Columbia as a Case Study	Economic Survey and Analysis	Equation: Using statistics Difference: Data retrieval
10	Journal Economics [10]	Analysis of seaports' efficiency in supporting inter-island transportation	Qualitative and Quantitative Analysis Methods	Equation: Using statistics Distinctions: Case studies and port efficiency
11	Journal of Transportation Business & Management [11]	Assessment of maritime operations efficiency and its economic impact based on data envelopment analysis: A case study of Chilean ports	Data Envelopment Analysis	Equation: Using nonparametric statistics Differences: Case studies, data collection, and variables studied
12	Asian Journal of Shipping and Logistics [12]	Impact of Maritime Logistics on archipelagic in economic development eastern Indonesia	Stochastic Frontier Survey and Analysis	Equation: Using statistics Differences: Case studies, methods of data collection, and parametric analysis

13	Journal Economics [13]	The Importance of Maritime Transport for Economic Growth in the European Union: A Panel Data Analysis	Linear Regression Analysis	Equation: Using statistics and a positive correlation between sea transportation and economic growth Difference: Case study
14	Journal of Social Science Research [14]	A Case Study of Examining the Relationships Between Maritime Foreign Trade, GDP, and Construction in Turkey	Linear Regression Analysis	Equation: Using linear regression The difference: Case studies and the influence of GDP developments.
15	Journal of Interdisciplinary Perspectives on Transportation Research [15]	World economic growth and seaborne trade volume: Quantifying the relationship	Vector Error Correction (VECM)	Equation: Using statistics Difference: Case studies like world economic growth and the volume of seaborne trade
16	International Journal of Shipping and Ports [16]	Exploring the relationships between maritime connectivity, international trade, and domestic production	Linear Regression Analysis	Equation: Using linear regression Differences: Case studies and the effect of GDP on the value of exports and imports
17	Jurnal Manajemen Transportasi dan Logistik [17]	Sektor Transportasi Angkutan Barang dan Pertumbuhan Ekonomi di Indonesia	Correlation Analysis Test, Regression Coefficient Test, Simple Linear Regression Analysis Test	Equation: Using statistics Difference: Case study and positive correlation of GDP with land transportation
18	Journal of Marine Policy [18]	Maritime dependency and economic prosperity: Why access to oceanic trade matters	Regression Correlation Analysis	Equation: Using correlation The difference: Case studies and the significance of GDP to the maritime sector
19	Journal of Ocean and Coastal Management [19]	The Brazilian coastal and marine economies: Quantifying and measuring oceanic economic flow by input-output matrix analysis	Analysis Model Input-Output	Equation: Economic variable Difference: Case study and coastal economy dominated by the service sector
20	Journal of Transportation Business & Management [20]	Assessment of maritime operations efficiency and its economic impact based on data envelopment analysis: A case study of Chilean ports	Decoupling Method Analysis and Gray Correlation Analysis Method	Equation: Using correlation Difference: Case study and low correlation between rail and GDP by freight transport.

3. Research Methods

3.1. Data source

The research data is obtained from secondary data, namely GDRP Real Estate Data, 2020 Domestic Sea Transportation, and observation data. The main focus of this research is domestic ship visits (units) (gt) and the flow of non-containerized and containerized unloaded goods.

3.2. Research variable

1. Dependent Variable (Y)
   a. Gross Regional Domestic Product 2020
2. Independent Variable (X)
3. Domestic Sea Transportation 2020
   a. Domestic Vessel Visit (Unit)
   b. Domestic Vessel Visit (GT)
   c. The flow of Non-Crated Goods and Domestic Shipping Crates (Unloading)
   d. Flow of Non-Crated Goods and Domestic Shipping Crates (Loading)

3.3. Data analysis

1. Normality Test
   In the data test method with the regression model, the variables studied are usually distributed or not. The conclusion from the normality test results can be known because if the significance value is > 0.05, the data is generally distributed. And if the significance value is <0.05, the data is not normally distributed.

2. Linearity Test
   Test that aims to determine the relationship between the independent and dependent variables. The conclusion from the results of the linearity test can be known because if the significance value is > 0.05, the relationship between the two variables is linear. If the significance value is <0.05, the relationship between the two variables is not linear.
3. Correlation Test
   Test to determine the relationship between the two variables, namely Domestic Sea Transportation to the GRDP of the Real Estate Sector, with the provisions of the correlation coefficient as follows:

Table 2. Correlation Coefficient

Correlation Intervals	Relationship Level
0,00 – 0,199	Very low
0,20 – 0,399	Low
0,40 – 0,599	Currently
0,60 – 0,799	Strong
0,80 – 1,00	Very strong

Source: (Sugiyono, 2011)

4. Hypothesis Test
   Test whether there is a relationship between one or more than two variables with the provision that if the significance value is less than 0.05, then there is a relationship between the two variables. If the significance value is more than 0.05, then there is no relationship between the two variables. The statistical parameter used in this study is the product-moment correlation, where the hypothesis used is:
   Hypothesis 1
   (H_0): "There is no positive relationship between Domestic Vessel Visits Sea Transportation (GT) (X) to the GRDP of the Real Estate Sector (Y)."
   (H_1): "There is a positive relationship between Domestic Vessel Visits Sea Transportation (GT) (X) to the GRDP of the Real Estate Sector (Y)."
   Hypothesis 2
   (H_0): "There is no positive relationship between Sea Transportation Domestic Vessel Visits (Unit) (X) to the GRDP of the Real Estate Sector (Y)."
   (H_1): "There is a positive relationship between Sea Transportation Domestic Vessel Visits (Unit) (X) to Real Estate Sector GRDP (Y)."
   Hypothesis 3
   (H_0): "There is no positive relationship between Sea Transportation of Goods Flow (Non-Container and Container) Domestic Shipping (Unloading) (X) to the GRDP of the Real Estate Sector (Y)."
   (H_1): "There is a positive relationship between Sea Transportation of Goods Flow (Non-Container and Container) Domestic Shipping (Unloading) (X) to the GRDP of the Real Estate Sector (Y)."
   Hypothesis 4
   (H_0): "There is no positive relationship between Sea Transportation of Goods Flow (Non-Container and Container) Domestic Shipping (Loading) (X) to the GRDP of the Real Estate Sector (Y)."
   (H_1): "There is a positive relationship between Sea Transportation of Goods Flow (Non-Container and Container) Domestic Shipping (Loading) (X) to the GRDP of the Real Estate Sector (Y)."

4. Results And Discussion

4.1. Prerequisite Test

1. Normality Test

a) Real Estate GRDP Normality Test

Table 3. Real Estate GRDP Normality Test

		Real Estate GRDP
N		88
Normal Parameters[a,b]	Mean	5.8644
	Std.	1.43341
Most Extreme	Deviation	
Differences	Absolute	.114
	Positive	.114
	Negative	-.054
Kolmogorov-Smirnov Z		1.068
Asymp. Sig. (2-tailed)		2.04

Source: SPSS, 2023

To find out whether the data distribution is normal, look at the values in the Asymp column. Sig. (2-tailed). In the table above, it can be seen that the Asymp. Sig. (2-tailed) of 0.204. Because the value is 0.204 (> 0.05), it can be concluded, according to the normality test conditions, that if the significance value (Sig.) is more significant than 0.05, then the data is usually distributed.

b) Domestic Vessel Visit Normality Test (Unit)

Table 4. Normality Test Results for Domestic Vessel Visits (Units)

		Domestic Vessel Visit (Unit)
N		77
Normal Parameters[a,b]	Mean	7.1065
	Std. Deviation	1.49462
Most Extreme Differences	Absolute	.088
	Positive	.081
	Negative	-.088
Kolmogorov-Smirnov Z		.775
Asymp. Sig. (2-tailed)		.585

Source: SPSS, 2023

To find out whether the data distribution is normal, look at the values in the Asymp column. Sig. (2-tailed). In the table above, it can be seen that the Asymp. Sig. (2-tailed) of 0.585. Because the value is 0.585 (> 0.05), it can be concluded, according to the normality test conditions, that if the significance value (Sig.) is more significant than 0.05, then the data is usually distributed. The data is 77 because several districts/cities have a value of 0 and are not included in the data test.

c) Domestic Vessel Visit Normality Test (GT)

Table 5. Normality Test Results for Domestic Vessel Visits (GT)

		Domestic Vessel Visit (GT)
N		78
Normal Parameters[a,b]	Mean	14.2754
	Std. Deviation	2.33241
Most Extreme Differences	Absolute	.131
	Positive	.046
	Negative	-.131
Kolmogorov-Smirnov Z		1.156
Asymp. Sig. (2-tailed)		.138

Source: SPSS, 2023

To find out whether the data distribution is normal, look at the values in the Asymp column. Sig. (2-tailed). In the table above, it can be seen that the Asymp. Sig. (2-tailed) of 0.138. Because the value is 0.138 (> 0.05), it can be concluded, according to the normality test conditions, that if the significance value (Sig.) is more significant than 0.05, then the data is usually distributed. The data is 78 because several districts/cities have a value of 0 and are not included in the data test.

d) Test for Normality of the Flow of Goods (Non-Containers and Containers) Domestic Shipping (Unloading)

Table 6. Results of the Normality Test for the Flow of Goods (Non-Container and Container) Shipping Domestic (Unload)

		Flow of Goods (Non-Containers) Domestic Shipping (Unloading)
N		83
Normal Parameters[a,b]	Mean	12.6883
	Std. Deviation	2.64466
Most Extreme Differences	Absolute	.115
	Positive	.063
	Negative	-.115
Kolmogorov-Smirnov Z		1.048
Asymp. Sig. (2-tailed)		.222

Source: SPSS, 2023

To find out whether the data distribution is normal, look at the values in the Asymp column. Sig. (2-tailed). In the table above, it can be seen that the Asymp. Sig. (2-tailed) of 0.222. Because the value is 0.222 (> 0.05), it can be concluded, according to the normality test conditions, that if the significance value (Sig.) is more significant than 0.05, then the data is usually distributed. The data is 83 because several districts/cities have a value of 0 and are not included in the data test.

e) Test the Normality of the Flow of Goods (Non-Crates and Containers) Domestic Navigation (Loading)

Table 7. Results of the Normality Test for the Flow of Goods (Non-Container and Container) Domestic Shipping (Loading)

		Flow of Goods (Non-Crates and Containers) Domestic Navigation (Loading)
N		84
Normal Parameters[a,b]	Mean	11.9463
	Std.	2.88391
Most Extreme	Deviation	
Differences	Absolute	.065
	Positive	.049
	Negative	-.065
Kolmogorov-Smirnov Z		.598
Asymp. Sig. (2-tailed)		.867

Source: SPSS, 2023

To find out whether the data distribution is normal, look at the values in the Asymp column. Sig. (2-tailed). In the table above, it can be seen that the Asymp. Sig. (2-tailed) of 0.867. Because the value of 0.867 > 0.05 can be concluded according to the normality test conditions, if the significance value (Sig.) is more significant than 0.05, then the data is usually distributed. The data is 84 because several districts/cities have a value of 0 and are not included in the data test.

2. Linearity Test

a) Linearity Test for Domestic Shipping Vessel Visits (Units)

Table 8. Linearity Test Results for Domestic Shipping Vessel Visits (Units)

			Sum of Square	df	Mean Square	F	Sig.
Domestic Vessel Visit (Unit) Real Estate GRDP	Between Groups	(Combined)	1615492334.443	84	19232051.601	4.886	.107
		Linearity	178493961.810	1	78493961.810	45.345	.007
		Deviation From Linearity	1436998372.634	83	17313233.405	4.398	.123
	Within Groups		11809098.000	3	3936366.000		
	Total		1627301432.443	87			

Source: SPSS, 2023

According to the results of the linearity test above, the value can be written as a Deviation from Linearity, Say. of 0.123 (> 0.05). It is stated that the variable Domestic Shipping Vessel Visits (Unit) is linear to the Real Estate GRDP variable.

b) Linearity Test for Domestic Shipping Vessel (GT) Visits

Table 9. Linearity Test Results for Domestic Shipping Vessel (GT) Visits

			Sum of Square	df	Mean Square	F	Sig.
Domestic Vessel Visit (GT) Real Estate GRDP	Between Groups	(Combined)	1960.364	84	23.338	4.828	.109
		Linearity	241.288	1	241.288	49.922	.006
		Deviation From Linearity	1719.076	83	20.712	4.285	.127
	Within Groups		14.500	3	4.833		
	Total		1974.864	87			

Source: SPSS, 2023

According to the results of the linearity test above, the value can be written as a Deviation from Linearity, Say. of 0.127 (> 0.05). It is stated that the variable Domestic Shipping Vessel Visits (GT) is linear to the PDRB Real Estate variable.

c) Linearity Test of Goods Flow (Non-Container and Container) Domestic Shipping (Unloading)

Table 10. Linearity Test Results for the Flow of Goods (Non-Containers and Containers) Domestic Shipping (loading)

			Sum of Square	df	Mean Square	F	Sig.
Flow of Goods (Non-Containers) Domestic Shipping (Unloading)	Between Groups	(Combined)	1739.273	84	20.706	5.916	.083
		Linearity	253.178	1	253.178	72.336	.003
		Deviation From Linearity	1486.095	83	17.905	5.116	.101
	Within Groups		10.500	3	3.500		
	Total		1749.773	87			

Real Estate GRDP							

Source: SPSS, 2023

According to the results of the linearity test above, the value can be written as a Deviation from Linearity, Say. of 0.101 (> 0.05). It is stated that the variable Flow of Goods (Non-Container and Container) Domestic Shipping (Unloading) is linear to the Real Estate GRDP variable.

d) Linearity Test of Goods Flow (Non-Container and Container) Domestic Shipping (Loading)

Table 11. Linearity Test Results for the Flow of Goods (Non-Containers and Containers) Domestic Shipping (Loading)

			Sum of Square	df	Mean Square	F	Sig.
Flow of Goods (Non-Containers) Domestic Shipping (Unloading) Real Estate GRDP	Between Groups	(Combined)	11558646389257	84	13760293320533	4.277	.127
		Linearity	23266410105496	1	23266410105496	72.312	.003
		Deviation From Linearity	92320053786982	83	11122898046624	3.457	.167
	Within Groups		965254330329.5	3	3217516110109		
	Total		11655171872551	87			

Source: SPSS, 2023

According to the results of the linearity test above, the value can be written as a deviation from linearity, say, 0.167 (> 0.05). It is stated that the variable Flow of Goods (Non-Container and Container) Domestic Shipping (Loading) is linear to the Real Estate GRDP variable.

4.2. Correlation Test

Table 12. Correlation Test Results

		Real Estate GRDP	Domestic Vessel Visit (Unit)	Domestic Vessel Visit (GT)	Flow of Goods (Non-Containers) Domestic Shipping (Unloading)	Flow of Goods (Non-Crates and Containers) Domestic Navigation (Loading)
Real Estate GRDP	Pearson Correlation	1	.331**	.504**	.251**	.447**
	Sig. (2-tailed)		.002	.000	.018	.000
	N	88	88	88	88	88
Domestic Vessel Visit (Unit)	Pearson Correlation	.331**	1	.797**	.749**	.754**
	Sig. (2-tailed)	.002		.000	.000	.000
	N	88	88	88	88	88
Domestic Vessel Visit (GT)	Pearson Correlation	.504**	.797**	1	.778**	.740**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	88	88	88	88	88
Flow of Goods (Non-Containers) Domestic Shipping (Unloading)	Pearson Correlation	.251*	.749**	.778**	1	.778**
	Sig. (2-tailed)	.018	.000	.000		.000
	N	88	88	88	88	88
Flow of Goods (Non-Crates and Containers) Domestic Navigation (Loading)	Pearson Correlation	.447**	.754**	.740**	.778**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	88	88	88	88	88

Source: SPSS, 2023

1. Correlation Analysis of Real Estate GRDP with Domestic Vessel Visits (Units)
   According to the table above, the correlation coefficient (r) value is 0.331 for the correlation between GRDP Real Estate and Domestic Vessel Visits (Units). It can be concluded that there is a positive correlation between real estate GRDP and domestic vessel visits (units) with a low level of relationship according to the value of the Pearson correlation that appeared.
2. Correlation Analysis of Real Estate GRDP with Domestic Vessel Visits (GT)
   According to the table above, the correlation coefficient (r) value is 0.504 for the correlation between GRDP Real Estate and Domestic Vessel Visits (GT). It can be concluded that there is a positive correlation between Real Estate GRDP and Domestic Vessel Visits (GT) with a moderate level of relationship according to the value Pearson Correlation that appeared.

3. Correlation Analysis of Real Estate PDRB with Flow of Goods (Non-Containers and Containers) Domestic Shipping (Unloading)
   According to the table above, the correlation coefficient (r) shows a value of 0.251 for the correlation between real estate GRDP and the flow of goods (Non-container and container) domestic shipping (unloading). It can be concluded that there is a positive correlation between Real Estate GRDP and the Flow of Goods (Non-Containers and Containers) Domestic Shipping (Unloading) with a low level of relationship according to the value Pearson Correlation that appeared.
4. Correlation Analysis of Real Estate PDRB with Flow of Goods (Non-Container and Container) Domestic Shipping (Loading)
   According to the table above, the correlation coefficient (r) shows a value of 0.447 for the correlation between real estate GRDP and the flow of goods (Non-container and container) domestic shipping (Loading). It can be concluded that if there is a positive correlation between Real Estate GRDP and the Flow of Goods (Non-Containers and Containers) Domestic Shipping (Loading) with a moderate level of relationship according to the value Pearson Correlation that appeared.

4.3. Hypothesis testing

1. Test the Hypothesis of Domestic Vessel Visits (Unit) with Real Estate GRDP

(H_0): "There is no positive relationship between Sea Transportation Domestic Vessel Visits (Unit) (X) to GRDP Real Estate (Y)."
(H_1): "There is a positive relationship between Sea Transportation Domestic Vessel Visits (Unit) (X) to Real Estate Sector GRDP (Y)."

Table 13. Hypothesis Test Results for Domestic Vessel Visits (Units) with Real Estate GRDP

Independent Variable (X)	Bound Variable (Y)	Amount of data	Correlation Coefficient (r)	Significance	Decision
Domestic Vessel Visit (Unit)	Real Estate Sector GRDP	88	0.331	0.002	Hypothesis Accepted (H1)

Source: SPSS, 2023

Table 13 shows a positive relationship between domestic ship visits (units) and real estate GRDP with a correlation coefficient of 0.331 and a significance value of 0.002. According to this data analysis, the accepted hypothesis is (H_1) because the significance value is less than 0.05, indicating a positive relationship between the two variables. The conclusion is that increased domestic ship visits (units) will affect the rise in real estate GRDP.

2. Test the Hypothesis of Domestic Vessel Visits (GT) with Real Estate Sector GRDP

(H_0): "There is no positive relationship between Domestic Vessel Visits Sea Transportation (GT) (X) to the GRDP of the Real Estate Sector (Y)."
(H_1): "There is a positive relationship between Domestic Vessel Visits Sea Transportation (GT) (X) to the GRDP of the Real Estate Sector (Y)."

Table 14. Hypothesis Test Results for Domestic Vessel Visits (GT) with Real Estate GRDP

Independent Variable (X)	Bound Variable (Y)	Amount of data	Correlation Coefficient (r)	Significance	Decision
Domestic Vessel Visit (GT)	Real Estate Sector GRDP	88	0.504	0.000	Hypothesis Accepted (H1)

Source: SPSS, 2023

Table 14 shows a positive relationship between domestic ship visits (GT) and real estate GRDP with a correlation coefficient of 0.504 and a significance value of 0.000. According to this data analysis, the accepted hypothesis is (H_1) because the significance value is less than 0.05; that is, there is a positive relationship between the two variables. The conclusion is that increased domestic ship visits (gt) will affect the rise in real estate GRDP.

3. Test the Hypothesis of the Flow of Goods (Non-Container and Container) Domestic Shipping (Unloading) with GRDP of the Real Estate Sector

(H_0): "There is no positive relationship between Sea Transportation of Goods Flow (Non-Container and Container) Domestic Shipping (Unloading) (X) to the GRDP of the Real Estate Sector (Y)."
(H_1): "There is a positive relationship between Sea Transportation of Goods Flow (Non-Container and Container) Domestic Shipping (Unloading) (X) to the GRDP of the Real Estate Sector (Y)."

Table 15. Results of Hypothesis Testing of the Flow of Goods (Non-Container and Container) Domestic Shipping (Unloading) with GRDP of the Real Estate Sector

Independent Variable (X)	Bound Variable (Y)	Amount of data	Correlation Coefficient (r)	Significance	Decision
Flow of Goods (Non-Container and Container) Domestic Shipping (Unloading)	Real Estate Sector GRDP	225	0.251	0.018	Hypothesis Accepted (H1)

Source: SPSS, 2023

Table 15 shows a positive relationship between the flow of goods (non-container and container) for domestic shipping (unloading) and real estate GRDP with a correlation coefficient of 0.251 and a significance value of 0.018. According to this data analysis, the accepted hypothesis is (H_1) because the significance value is less than 0.05, indicating a positive relationship between the two variables. The conclusion is that an increase in the flow of goods (non-container and container) for domestic shipping (unloading) will affect the rise in real estate GRDP.

4. Test the Flow of Goods Hypothesis (Non-Container and Container) Domestic Shipping (Loading) with GRDP of the Real Estate Sector

(H_0): "There is no positive relationship between Sea Transportation of Goods Flow (Non-Container and Container) Domestic Shipping (Loading) (X) to the GRDP of the Real Estate Sector (Y)."
(H_1): "There is a positive relationship between Sea Transportation of Goods Flow (Non-Container and Container) Domestic Shipping (Loading) (X) to the GRDP of the Real Estate Sector (Y)."

Table 16. Results of Hypothesis Testing of the Flow of Goods (Non-Container and Container) Domestic Shiping (Loading) with GRDP of the Real Estate Sector

Independent Variable (X)	Bound Variable (Y)	Amount of data	Correlation Coefficient (r)	Significance	Decision
Flow of Goods (Non-Container and Container) Domestic Navigation (Load)	Real Estate Sector GRDP	88	0.447	0.000	Hypothesis Accepted (H1)

Source: SPSS, 2023

Table 16 shows a positive relationship between the flow of goods (non-container and container) and domestic shipping (loading) to real estate GRDP with a correlation coefficient of 0.447 and a significance value of 0.000. According to this data analysis, the accepted hypothesis is (H_1) because the significance value is less than 0.05, indicating a positive relationship between the two variables. The conclusion is that an increase in the flow of goods (non-container and container) for domestic shipping (loading) will affect the rise in real estate GRDP.

4.4. Discussion

1. Real Estate GRDP with Domestic Vessel Visits (Unit) and (GT)

According to the analysis results in this study, the Domestic Ship Visits (Unit) variable positively correlates with the Real Estate GRDP variable. The correlation value shows the number 0.331, which lies between the intervals (0.20 – 0.399), where the relationship between the two variables is at a low level of relationship according to a significance value of 0.002, which fulfills the provisions of the correlation test, likewise with the Domestic Vessel Visit (GT) variable. The domestic Vessel Visits (GT) variable positively correlates with the Real Estate GRDP variable. The correlation value shows the number 0.504, which lies between the intervals (0.40 – 0.599), meaning that the relationship between the two variables is at the moderate level of relationship according to a significance value of 0.000, which fulfills the provisions of the correlation test. If the significance value is <0.05, accept (H_1) and reject (H_0). It can be concluded that the higher the number of Domestic Vessel Visits (Unit) (GT), the higher the Real Estate GRDP value. Meanwhile, the lower the number of Domestic Vessel Visits (Unit) (GT), the lower the Real Estate GRDP value.

Domestic ship visits (units) and domestic ship visits (GT) positively correlate with Real Estate GRDP. One effect is that an increase in domestic ship visits (units) and (GT) can advance the real estate sector, such as hotels, shopping centers, and residences. The more visits of ship units, which usually carry loads of goods and passengers, the more the activity of distributing goods will increase and also enable the development of the tourism sector in line with the increasing demand for accommodation, restaurants, and other tourism facilities. This can encourage the development of property and real estate in the tourism sector.

Likewise with domestic ship visits (GT). The effect of the number of gross tonnage ship visits to real estate is the higher the number of awful tonnage ship visits, the more likely it is that, in that area, there is high economic activity at a port where the value of real estate GRDP tends to increase. Another possibility is that the area is underdeveloped, but increased ship visits will make the area more developed. The heavy traffic of ship visits can bring investors and the government to create in the area because it has significant potential. This factor will also increase economic growth.

If the business of a growing area requires a lot of space, an increase in demand for real estate will occur due to economic growth. This can impact increasing demand for domestic sea transportation because more goods are produced and transported [18]. Sea transportation can be considered as a means of mobilization that, once sailed, can carry relatively large quantities of large goods.

2. GRDP of Real Estate with Flow of Goods (Non-Containers and Containers) Domestic Shipping (Unloading) (Loading)

According to the analysis results in this study, the variable Flow of Goods (Non-Container and Container) Domestic Shipping (Unloading) positively correlates with the Real Estate GRDP variable. The correlation value shows the number 0.251, which lies in the interval (0.20 – 0.539), meaning that the relationship between the two variables is at a low level of relationship with a significance value of 0.018, which fulfills the correlation test requirements. At the same time, the variable Flow of Goods (Non-Container and Container) Domestic Shipping (Loading) positively correlates with the Real Estate GRDP variable. The correlation value shows the number 0.447, which lies in the interval (0.40 – 0.599), meaning that the relationship between the two variables is at the moderate level of relationship with a significance value of 0.000, which fulfills the correlation test requirements. If the significance value is <0.05, accept (H_1) and reject (H_0). It can be concluded that the higher the number of Flow of Goods (Non-Container and Container) Domestic Shipping (Unloading) (Loading), the higher the Real Estate GRDP value. Meanwhile, the lower the number of domestic shipping (unloading) (Loading) and flow of goods (Non-container and container), the lower the real estate GRDP value.

A relationship can be drawn between the flow of Non-Container and Container (unloading) (loading) goods for domestic shipping and the GRDP of the real estate sector, namely that Non-Container and Container loading and unloading activities often require warehouses and temporary storage facilities such as stacking yards to store goods before distribution. In the construction of warehousing, this can impact the amount of real estate GRDP. If the flow of Non-Container and Container arrivals in an area flows rapid-

ly, then the need for warehousing and industrial complexes will increase and trigger various parties to establish their properties and increase investment in the real estate sector.

Logistics infrastructure such as ports, cargo terminals, and loading and unloading facilities are also essential things that should be developed because they are part of the port. Meanwhile, investment in ports also needs to be done to improve infrastructure. To encourage growth in the flow of Non-Container and Container goods, adequate infrastructure is required to facilitate the flow of goods movement. This statement aligns with previous research by [22], where investment in ports provides the most significant benefits for the production of all industries throughout Indonesia, including Indonesia's GDP and income.

5. Conclusion

Based on the results of the data analysis carried out in the study above, it can be concluded that sea transportation affects real estate GRDP. Also, there is a relationship between sea transportation variables and real estate GRDP, as indicated by the significance value that appears. Suppose sea transportation is given more attention and its infrastructure is improved. In that case, the number of visits and the flow of goods will increase, and the value of real estate GRDP in several regions in Indonesia will also improve. Later, this will strengthen and enhance the national economy. It is a means of transportation capable of transporting goods in large quantities at an estimated cost that is cheaper because sea transportation is an alternative to inter-island mobilization and connectivity in Indonesia.

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