

Analysis of the Relationship of Land Transportation with GDP Regional in the Construction Sector in Indonesia

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Abstract

As the world's population increases, the need for a mode of transportation will increase, and the amount of transportation currently has positive and negative impacts. The positive impact is to help mobilize goods, people, and services. Negative impacts are traffic jams, air pollution, and accidents. This study aims to determine the relationship between land transportation and GDP Regional in the construction sector in Indonesia. The findings in this study indicate that (1) The relationship between GDP Regional for Construction and the length of State/National roads according to paved road surface has a deficient correlation level with a correlation interval value (0.105) with a Sig value ($0.559 < 0.05$). (2) The relationship between GDP Regional of construction and the length of provincial roads according to asphalt surface has a moderate relationship with a correlation interval value (0.527) with a Sig value ($0.002 < 0.05$), GDP Regional construction with a length of provincial roads according to gravel surface has a deficient relationship level with a correlation interval value (-0.271) with a Sig value ($0.127 < 0.05$).

Keywords: Land Transportation, GDP Regional, Construction, Road Length.

1. Introduction

Developing Indonesia's economy and social media has increased the need for Indonesian people for transportation, especially in big cities. Lack of services and limited information on road transportation causes people to prefer private vehicles, primarily cars. Therefore the traffic conditions are becoming increasingly unstopable.

Land transportation in each region has its advantages and disadvantages; for everyone, transportation is a critical need in everyday life; in the field of transportation services, it also plays a vital role in shipping. Transportation operates in many fields and is divided according to individual needs; public transportation includes buses, trains, boats, planes, taxis, grab, and others, while private transportation includes motorbikes and cars, which most people use to travel every day.

The Gross Regional Domestic Product (GDP Regional) in recent years has decreased significantly due to COVID-19; the Government of Indonesia is aware that there has been a decline in any sector in recent years. The construction sector was also affected by COVID-19, which caused the project to not go according to plan.

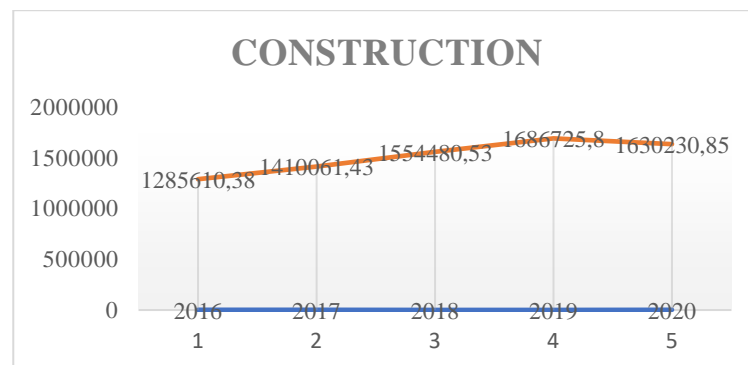


Fig 1. GDP regional construction data for 2016-2020



Based on the data described above, the authors are interested in conducting research titled "Analysis of the Relations of Land Transportation with GDP Regional in the Construction Sector in Indonesia." Research purposes: (1) Analyzing the relationship between the length of the State/National road surface to the GDP Regional of construction; (2) Analyzing the relationship between the length of provincial roads and the GDP Regional of construction; (3) Analyzing the relationship between the surface length of Regency/Municipal roads to the GDP Regional of construction?

2. Literature Review

Table 1. State of The Art

No	Journal/Researcher	Researcher Title	Similarity/Difference	Research Result
1	Jurnal Kolaborasi Resolusi Konflik/ [1]	Conflict Management Strategy for a State-Owned Land Transportation Company During the Covid-19 Pandemic: A Case Study of Pt Kereta Api Indonesia in the Implementation of PSBB Volume I	The method used is qualitative, while the method used by the author is quantitative.	So, in line with the policy requiring being free from COVID-19, prospective passengers must take an Antigen Rapid Test, PT.KAI can run it by getting subsidies from the government so that prices remain affordable for the community
2	Jurnal Ilmiah MEA Vol 5 No 3/ [2]	Analysis of Total Land Transportation, Infrastructure and Population Effect on Indonesia's Gross Regional Domestic Product (GDP Regional).	The method used is the same, namely, quantitative.	Variables that have an influence are the amount of transportation and the length of the road, while the number of residents does not. Influential.
3	Management Studies and Entrepreneurship Journal/ [3]	Analysis of the linkages of Land Transportation with Economic Growth in Ambon City for the 2012-2021 period	The method used is the same, namely, quantitative.	The development of land transportation in the increasing length of roads has a very close and interrelated relationship with economic growth in Ambon.
4	Warta penelitian pehubungan volume 1/ [4]	Correlation analysis of the number of vehicles and their influence on GDP Regional in East Java Province	The method used is the same, namely, quantitative.	The number of vehicles in East Java continues to increase, especially the type of R2 vehicle; it is suggested that all Regencies and Cities in East Java limit their circulation by implementing a mass public transportation system.
5	Jurnal Indonesia Sosial Teknologi/ [5]	The Impact of the COVID-19 Pandemic on the Land Transportation Mode Sector (AKAB BUS)	The method used is descriptive qualitative, while the method used by the author is quantitative.	Based on the results of the analysis, COVID-19 has an impact on land transportation due to limited activities.
6	Journal of Infrastructural in Civil Engineering (JICE)/ [6]	Study on Compilation of Land Transportation Database for In-dragiri Hulu Regency	The method used is descriptive qualitative, while the method used by the author is quantitative.	The profit obtained in Alternative 1 is IDR 1,909,355,133, and the profit obtained in Alternative 2 is IDR 1,689,479,487.
7	Jurnal Universitas Muhammadiyah Sumatra Utara/ [7]	Analysis of the Selection of Land Transportation Modes in the Pattern of Movement of Goods on the Medan-Banda Aceh Route	The method used is the same, namely, quantitative.	The results of observing the three types of modes of delivery of goods, Bus, SiCepat Express, and Travel, mean that Travel is 66% while Bus is 23.4% and SiCepat Express is 59.7%
8	Jurnal Indonesia Sosial Sains/ [8]	The Influence of the Transportation and Communication Sector on GDP Regional in DKI Jakarta City	The method used is the same, namely, quantitative.	In 2019, the transportation sector earned revenue of 3.44%. Therefore, it needs to be increased again so that in the future,

				it can help regional growth to be better.
9	Jurnal FEB Universitas Mulawarman/ [9]	Analysis of Land Transportation on economic growth in East Kalimantan Province	The method used is the same, namely, quantitative.	Road length has no significant effect on economic growth in East Kalimantan Province for the 2006-2017 period.
10	Jurnal Teknik Sipil Universitas Andi Djemma/ [10]	The Effect of Road Infrastructure Length on GDP Regional and Economic Growth in Palopo City	The method used is the same, namely, quantitative.	The results for the GDP Regional value, which is a reference in knowing economic growth, show significant results.
11	Jurnal Ilmiah Mahasiswa/ [11]	Analysis of the relationship between the construction sector and GDP Regional in Indonesian provinces	The method used is the same, namely, quantitative.	In all provinces in Indonesia, construction variables are positively related to regional GDP.
12	Jurnal Indonesia Sosial Teknologi/ [12]	The influence of the transportation and warehousing sector on GDP Regional in the city of Padang for the 2018-2020 period	The method used is the same, namely, quantitative.	Based on the analysis of the transportation and warehousing sector in 2018-2020, it had a perfect effect.
13	Jurnal Imperium/ [13]	Analysis of the effect of the development of transportation infrastructure on the gross regional domestic product of Way Kan district, Lampung province	The method used is the same, namely, quantitative.	Based on the analysis of the influence of transportation infrastructure development, it is very influential in economic growth and GDP.
14	Jurnal Ilmiah Universitas Brawijaya/ [14]	Analysis of the Effect of GDP Regional in the Agricultural, industrial, and transportation sectors on Carbon Dioxide Emissions in East Java Province	The method used is the same, namely, quantitative.	Based on the analysis of the influence of GDP Regional in the agricultural, industrial, and transportation sectors, this dramatically influences carbon dioxide emissions, and the results are significant.
15	Jurnal Ekonomi Bisnis Universitas Udayana/ [15]	Analysis of the Influence of Road, Electricity, and FDI Infrastructure Development on GDP Regional Growth in Bali Province 1993-2014	The method used is the same, namely, quantitative.	Based on the analysis results, the effect of road infrastructure development, electricity, and FDI is significant on GDP Regional growth.
16	International Journal of Scientific & Technology Research/ [16]	Analyzing public infrastructure and economic Growth in Indonesia	The method used is the same, namely, quantitative	Infrastructure development significantly improves people's welfare, as reflected in the increase in regional GDP in eastern Indonesia.
17	Jurnal Economic & Sociology/ [17]	The Role of Infrastructure in economic growth and income inequality in Indonesia	The method used is the same, namely, quantitative.	Based on the analysis results, the development of infrastructure in Indonesia has a very positive effect on the economy because the two are interrelated and need each other.
18	International Journal of Advances in Scientific Research and Engineering/ [18]	The Role of Infrastructure in Indonesia's Economic Growth	The method used is the same, namely, quantitative	Based on the results of infrastructure analysis, it has a positive impact on economic growth.
19	Journal Engineering and Technology/ [19]	Impact of Information and Communication Technology (ICT) Infrastructure on Economic Growth and Income Inequality in Indonesia	The method used is the same, namely, quantitative.	The results of the ICT Infrastructure analysis provide significant results for economic growth in Indonesia.

20	International Journal of Environmental Research and Public Health/ , Zebin Zhao, Zeyu Wang, 2018	The Impacts of Transportation Infrastructure on Sustainable Development: Emerging Trends And Challenges	The method used is the same, namely, quantitative	that impact assessment has a significant role in research in the field of transportation infrastructure. This study provides valuable information for researchers and practitioners to understand transportation infrastructure's substantial and complex impacts.
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2.1. Land Transportation

In essence, transportation is crucial in carrying out various daily activities and liaising with parties who need each other. Transportation is also a bridge in marketing that channels producers to consumers. Transportation and communication are some of the factors that significantly affect the income of a region or a country [20]. As the economy grows and human civilization develops, everyone depends on transportation. Transportation is carried out because the value of the goods being transported aims to make the value higher than the initial place. The transportation function certainly impacts agriculture, industry, health, education, tourism, construction, and other sectors. The availability of road infrastructure affects the sectors mentioned so that they can increase production in many areas that support this aspect but lack infrastructure. They can also be marketed to urban areas to help the regional economy and increase profits.

2.2. Long Surface Road

Infrastructure development affects the increase in economic growth (access to clean water, electricity, and roads). Roads have a more significant influence than other essential infrastructure. The construction of highways allows for increased connectivity between regions, thereby encouraging economic activities that can boost economic growth in Indonesia. Further findings show that the availability of infrastructure in the form of proper sanitation, electricity distribution, and road density affects economic growth. Roads are general bridges allowing the community to reach their desired destination. For the construction sector, roads are also the primary means of sending or ordering goods so that activities in the construction sector themselves are maintained and smooth. Roads can also be viewed from various aspects so that when repairs are more straightforward, the road can be seen from the surface conditions and how long the road is. The following are the types of roads and road surfaces according to [21]:

Road types

1. National roads are arterial and collector roads in the primary road network system that connects provincial capitals, national strategic routes, and toll roads.
2. Provincial roads are collector roads in the primary road network system that connect provincial capitals to district/city capitals and regional strategic roads.
3. Regency roads are local roads in the primary road network system that connect the district capital to the sub-district capital, between sub-district capitals, district capitals, and regional activity centers, as well as public roads in the secondary road network system within the district area, and district strategic roads.
4. City roads are public roads in the secondary road network system that connect service centers in the city and residential centers within the city.

Road surface

1. An asphalt road has a surface coated with asphalt.
2. A gravel road is a road whose surface has been paved and covered with gravel.
3. A dirt road is a road whose surface has not been paved and consists of a layer of ordinary soil.

2.3. GDP Regional of the Construction Sector

GDP Regional is the total net value of goods and services obtained by the number of economic activities in a region or country in several periods. GDP Regional can be used as a general description of economic growth in the area from how to manage the natural resources owned by the area. Therefore, the GDP Regional value of each region is generated by the many factors of production within a country, especially the economy of each sector, which is interconnected with other sectors due to the mutual need for materials and services. Just as the construction sector needs encouragement from the transportation sector, the mobility of transportation and movement in this city dramatically increases the movement of passengers and goods and can affect economic growth and regional income [22]. This construction sector activity is crucial because it involves government and private spending. This sector is also a basic need for the general public due to the many activities that depend on this sector. In addition, the construction sector influences related industrial economic activities such as wood, cement, iron, steel, and the need for building and house construction. However, several factors indirectly influence demographic variables, such as the growth in the number of households and the magnitude of migration flows. The regional GDP of the construction sector itself has a sizeable impact every year, with an average of 10% and above. The calculation of GDP Regional is divided into two methods, namely:

1. The Direct Method

The direct method is divided into three approaches, including:

- a. Production Approach

GDP Regional that produces the total value of goods and services that create economic activity in a region is reduced by production costs with total gross production each year for various sectors, which are divided into 17 sectors, namely: (1) agriculture, forestry, fisheries; (2) mining and quarrying; (3) processing industry; (4) electricity and gas procurement; (5) water supply, waste management, waste, and recycling; (6) construction; (7) wholesale and retail trade, car and motorcycle repair; (8) Transportation and warehousing; (9) provision of accommodation and food and drink; (10) information and communication; (11) financial and insurance services; (12) real estate; (13) corporate services; (14) government administration, defense, and mandatory social security; (15) educational services; (16) health services and social activities; (17) other services.

- b. Expenditure Approach

The following are some of the components of GDP spending:

1. Consumption expenditure of households and private institutions.
 2. Government consumption.
 3. Formation of gross domestic fixed capital.
 4. Stock changes.
 5. Net exports.
- c. Revenue Approach

GDP Regional is the amount of remuneration received by factors of production in an area at a particular time, namely wages or salaries, house rent, interest on capital, and profits.

2. Indirect Method

In this method, regional GDP is obtained by allocating regional GDP more broadly to regional GDP using gross or net production value for each sector/sub-sector, total physical production, population, labor, and other indirect allocators.

3. Research Methodology

3.1. Research Data

1. Observational data is a data collection technique to observe something. The data obtained is used so that the authors understand the research object; observation data is not used in testing.
2. Secondary data is obtained from various sources, such as previous research, to meet further research needs. Usually, this data is in books, papers, charts, graphs, or tables. Secondary data in this study were taken from regional review books based on GDP Regional for 2016-2020 in Sumatra, Java-Bali, Kalimantan, Sulawesi, Nusa Tenggara, Maluku, and Papua, a total of 34 provinces. As well as a land transportation statistics book for 2020 for road surface length data.

3.2. Research Variable

This study has two variables: land transportation, which focuses on the extended surface of the road, and regional GDP in the construction sector. Here's a picture of the Variable schema:

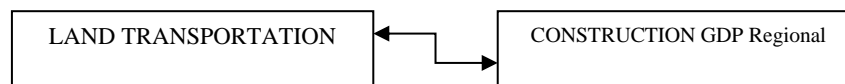


Fig 2. Variable image

3.3. Data Analysis

The data analysis technique in this study uses correlation, which is quantitative descriptive and has two stages, namely the prerequisite test, in which there is a normality test, a linearity test, and the second stage, a correlation hypothesis test. Here's an explanation.

A. Stage 1: Prerequisites

The prerequisite test aims to determine whether there are deviations in the correlation model used or not. In it, there is a Normality Test and a linearity Test.

a. Normality test

The normality test aims as a reference for assessing a data or variable whether the data and variables have a relationship or not.

The testing technique in this normality test uses the Kolmogorov Smirnov test, with the help of SPSS for Windows 25.0 Version.

If the distribution value is $p > 0.05$, then the distribution value is standard and vice versa.

b. Linearity test

The linearity test determines whether the linear relationship between variables has a direct or inverse relationship. Linearity refers to whether variable X can predict variable Y with a $p\text{-value} > 0.05$.

B. Stage 2: Significant Correlation Hypothesis Test

a. Product moment correlation test

Product moment correlation is a parametric measurement that can produce a correlation coefficient that functions as the strength of the relationship between two variables, namely variables X and Y. Variable X is land transportation as seen from the surface length of the road, and variable Y is GDP Regional in the construction sector. The following is the product correlation formula moment:

$$r_{XY} = \frac{n \sum XY - (\sum X)(\sum Y)}{\sqrt{[n \sum X^2 - (\sum X)^2][n \sum Y^2 - (\sum Y)^2]}} \quad (1)$$

Where:

r_{XY} = Coefficient between X and Y variables

n = Variable value

$\sum X$ = value of Variable X

$\sum Y$ = value of Variable Y

XY = Sum of total scores

$\sum XY$ = The number of times the value of X is multiplied by the value of Y

$he \sum X^2$ = Sum of squared values of X

$\sum Y^2$ = Sum of squared Y values

b. Correlation test

Correlation analysis finds the relationship or influence between variables X and Y. The following are the guidelines for the correlation table:

Table 2. Correlation intervals

Correlation intervals	Relationship level
0 – 0.2	Very low
0.2 – 0.4	Low
0.4 – 0.6	Currently
0.6 – 0.8	Strong
0.8 – 1	Very strong

Source: Sugiono 2013; 250

c. Hypothesis testing

Hypothesis testing is a procedure to decide whether to accept or reject the population parameter hypothesis. Before buying or rejecting the theory, the researcher must test its validity. The parametric statistic used is the product-moment correlation.

Hypothesis 1:

Ho: "There is no positive relationship between the surface length of the national road (X) and the GDP Regional of the construction sector (Y)."

Ha: "There is a positive relationship between the length of the national road (X) and the GDP Regional of the construction sector (Y)."

Hypothesis 2:

Ho: "There is no positive relationship between the length of the provincial road (X) and the GDP Regional of the construction sector (Y)."

Ha: "There is a positive relationship between the length of the provincial road (X) and the GDP Regional of the construction sector (Y)."

Hypothesis 3:

Ho: "There is no positive relationship between the surface length of Regency/City roads (X) to the GDP Regional of the construction sector (Y)."

Ha: "There is a positive relationship between the surface length of Regency/City roads (X) to the GDP Regional of the construction sector (Y)."

4. Results and Discussion

4.1. Research Result

A. Stage 1: Prerequisite Test

a. Normality test

1. Long Surface Normality Test of State/National Roads

Table 3. One-sample kolmogorov-smirnov test

	Length of National Roads According to Asphalt Roads	Length of National Road According to Unasphalt Roads
N	34	34
Kolmogorov-Smirnov Z	,915	,450
Symp. Sig. (2-tailed)	,372	,987

Source: SPSS analysis results 2023

The length of the National road according to the asphalted surface can be said to be expected and meets the test requirements with the Asymp Sig value ($0.372 > 0.05$), while the length of the National road according to the unpaved surface can be said to be expected and not feasible to be tested with the Asymp Sig value ($0.987 > 0.05$).

2. Extended Surface Normality Test of Province Roads

Table 4. One-sample kolmogorov-smirnov test

	Length of Provincial Road According to Asphalt Surface	Length of Provincial Road According to Gravel Surface	Length of Provincial Road According to Ground Level
N	34	34	34
Kolmogorov-Smirnov Z	,829	,697	1.025
Symp. Sig. (2-tailed)	,497	,716	,244

Source: SPSS analysis results 2023

The length of provincial roads according to the asphalted surface can be said to be expected and meet the test requirements. The size of regional roads according to the gravel surface is standard and meets the test requirements, while the length of provincial roads according to the soil surface can be said to be normal and feasible to be tested. With Asymp Sig values ($0.497; 0.716; 0.244 > 0.05$).

3. Long Surface Normality Test for District/City Roads

Table 5. One-sample kolmogorov-smirnov test

	Length of Re- gency/City Road Ac- cording to Asphalt Surface	Length of Re- gency/City Road Ac- cording to Gravel Surface	Length of Re- gency/City Road According to Ground Level
N	34	34	34
Kolmogorov-Smirnov Z	,416	,922	,948
Symp. Sig. (2-tailed)	,995	,363	,330

Source: SPSS analysis results 2023

The length of Regency/City roads according to the asphalted surface can be expected to meet the test requirements. The size of Regency/City roads according to the gravel surface is said to be expected and meets the test requirements. Meanwhile, according to the soil surface, the length of Regency/City roads can be considered regular and suitable for testing. With Asymp Sig values (0.995; 0.363; 0.330 > 0.05).

b. Linearity Test

1. GDP Regional Linearity Test – National road surface length

Table 6. Anova linearity table

			df	F	Sig.
Length of National Roads, Asphalt Roads – GDP Re- gional	Between Groups	Deviation from Linearity	9	1.032	,447
	Within Groups		22		
Length of State Roads, Roads Not Asphalt - GDP Regional	Between Groups	Deviation from Linearity	9	1.059	,428
	Within Groups		22		

Source: SPSS analysis results 2023

GDP Regional of construction with the length of national roads according to asphalted and unpaved surfaces can be linear and meets the test requirements with a value *deviation from fromLinearitySig* (0.447; 0.428 > 0.05). With an F value <2.397).

2. GDP Regional Linearity Test - The extended surface of provincial roads

Table 7. Anova linearity table

			df	F	Sig.
Length of Asphalt Sur- face Province Road	Between Groups	Deviation from Linearity	9	1.318	,283
	Within Groups		22		
Length of Provincial Road with Gravel Sur- face	Between Groups	Deviation from Linearity	9	,572	,806
	Within Groups		22		
Length of Provincial Road with Ground Sur- face	Between Groups	Deviation from Linearity	9	2.118	,073
	Within Groups		22		

Source: SPSS analysis results 2023

Construction GDP Regional with the length of provincial roads according to asphalt, gravel, and soil surfaces can be linear and meets the requirements for testing with a value *deviation fromLinearitySig* (0.283; 0.806; 0.073 > 0.05). With an F value <2.397).

3. GDP Regional Linearity Test - Surface length of District/City roads

Table 8. Anova linearity table

			df	F	Sig.
Length of Regency/City Road with Asphalt Surface	Between Groups	Deviation from Linearity	9	1,054	,432
	Within Groups		22		
Length of Regency/City Road with Ground Surface	Between Groups	Deviation from Linearity	9	1.223	,331
	Within Groups		22		

Source: SPSS analysis results 2023

Construction GDP Regional with the length of Regency/City roads according to the paved surface can be considered Linear and meets the requirements for testing by value *Deviation fromLinearitySig* (0.432 > 0.05). The GDP Regional of Construction with the length of Regency/City roads according to the ground level can be considered normal and worth testing with values *Deviation from fromLinearitySig* (0.331 > 0.05). With an F value <2.397).

B. Stage 2: Significant Correlation Hypothesis Test

a. Product Moment Correlation Test

1. GDP Regional Significance Correlation Analysis – Surface length of State/National roads

Table 9. Country/national significance correlation analysis
National Correlations

National Correlations	
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		CONSTRUCTION GDP Regional	PAVE- MENT	ROADS ARE NOT ASPHALT
GDP Regional Construc- tion	Pearson Correlation	1	,105	,302
	Sig. (2-tailed)		,559	,087
	N	34	34	34

Source: SPSS analysis results 2023

Construction GDP Regional with the length of State/National roads according to the surface of the paved road is indicated to have a deficient level of relationship with the value of the correlation interval (0.105). Meanwhile, GDP Regional for Construction with the length of State/National roads according to unpaved surfaces indicated a low relationship level with the correlation interval's value (0.302).

GDP Regional for Construction with the length of State/National roads according to the surface of the paved road is indicated to have a positive relationship (Ho) and reject (Ha) with a Sig value (0.559 < 0.05), while the unpaved surface is shown to have a positive relationship (Ho) and leave (Ha) with a Sig value (0.087 < 0.05).

2. GDP Regional Significance Correlation Analysis – Provincial road length surface

Table 10. Provincial significance correlation analysis

		Provincial Correlations			
		CONSTRUCTION GDP Regional	PAVE- MENT	CIRCLE ROAD	GROUND ROAD
GDP Regional Con- struction	Pearson Correlation	1	0.527	-,271	-,084
	Sig. (2-tailed)		,002	,127	,641
	N	34	34	34	34

Source: SPSS analysis results 2023

Construction GDP Regional with the length of provincial roads according to Asphalt surface is indicated to have a moderate relationship with the correlation interval value (0.527).

PDRB Construction with the length of provincial roads according to Asphalt surface indicated to have a positive relationship (Ha) and rejected (Ho) with a Sig value (0.002 < 0.05), Gravel Surface showed to have a positive relationship (Ho) and dismissed (Ha) with a Sig value (0.127 < 0.05) Land Surface indicated to have a positive relationship (Ho) and rejected (Ha) with a Sig value (0.641 < 0.05).

3. GDP Regional Significance Correlation Analysis – Surface length of District/City roads

Table 11. Regency/city significance correlation analysis

		District/City Correlations		
		CONSTRUCTION GDP Regional	PAVEMENT	GROUND ROAD
GDP Regional Construc- tion	Pearson Correlation	1	0.65	-,106
	Sig. (2-tailed)		,000	,557
	N	34	34	34

Source: SPSS analysis results 2023

The PDRB of Construction with the length of Regency/City roads according to Asphalt surface indicates a strong relationship with the correlation interval value (0.650), while the GDP Regional of Construction with the length of Regency/City roads according to the Soil surface indicates a very low correlation with the correlation interval value (-0.106).

GDP Regional Construction with the length of Regency/City roads according to Asphalt surface has a positive relationship (Ha) rejects (Ho) with a Sig value (0.000 < 0.05), while the Land surface is indicated to have a positive relationship (Ho) and leaves (Ha) with a Sig value (0.557 < 0.05).

4.2. Discussion

A. GDP Regional of Construction – surface length of State/National Roads

From the results of the correlation test above, it can be concluded that the PDRB of Construction with the length of State/National roads according to the surface of the paved road is indicated to have a deficient level of relationship with the correlation interval value (0.105), while the GDP Regional of Construction with the length of State/National roads according to the surface not paved is indicated to have a low level of relationship with the correlation interval value (0.302). From the results of the correlation above, it can be explained that the more paved roads, the higher the PDRB of construction will be. Although the two variables have a shallow relationship, it is essential to remember that other factors affect GDP Regional for construction besides the length of paved National/National roads. In statistical analysis, it is crucial to consider different variables that may influence the observed results. For example, construction investment, government policies, and other economic factors can also affect the Construction GDP region.

The results of the Significance test above can be concluded that the Construction GDP Regional with the length of State/National roads according to the road surface indicates asphalt has no relationship with the Sig value (0.559 < 0.05), while the surface is not asphalt indicated has no relationship with the Sig value (0.087 < 0.05).

B. GDP Regional of Construction – Surface Length of Provincial Roads

Other factors other than the length of provincial roads according to gravel and soil surfaces may contribute more to the regional GDP of construction, such as political, economic, or demographic factors. A more in-depth analysis needs to be carried out to identify these factors.

The results of the Significance test above can be concluded that the GDP Regional of Construction with the length of provincial roads according to the Asphalt surface indicated to have a relationship with the Sig value (0.002 < 0.05), while the gravel and soil surfaces

shown had no relationship with the Sig value ($0.127 < 0.05$), while the ground surface indicated had no relationship with the Sig value ($0.641 < 0.05$).

C. GDP Regional of Construction – Surface Length of District/City Roads

From the results of the correlation test above, it can be concluded that the PDRB of Construction with the length of Regency/City roads according to the surface of asphalt is indicated to have a strong relationship with the correlation interval value (0.650), while the PDRB of Construction with the length of Regency/City roads according to the surface of the Land is indicated to have a shallow level of relationship with the correlation interval value (-0.106). It is essential to consider other factors affecting the relationship between these two variables. For example, unfavorable road conditions affect the distribution process and other activities that use land routes.

The results of the Significance test above can be concluded that the GDP Regional of Construction with the length of Regency/City roads according to the Asphalt surface has a relationship with the Sig value ($0.000 < 0.05$), while the indicated Land surface has no relationship with the Sig value ($0.557 < 0.05$).

5. Conclusion

- a. The relationship between GDP Regional for Construction and the length of State/National roads according to paved road surface indicated a shallow relationship with the value of the correlation interval (0.105). 2) The results of the Construction GDP Regional Significance test with the length of State/National roads according to the surface of the unpaved road indicated that they had a cheerful (Ho) and rejected (Ha) relationship with a Sig value ($0.087 < 0.05$).
- b. The relationship between GDP Regional Construction and the length of provincial roads according to the Asphalt surface indicated a moderate relationship with the value of the correlation interval (0.527). The PDRB of construction with the length of provincial roads according to the gravel surface is indicated to have a shallow correlation level with the correlation interval value (-0.271) and indicated positive (Ho) rejects (Ha) Sig ($0.127 < 0.05$), while the construction GDP Regional with the length of provincial roads according to the land surface indicates a shallow correlation level with the correlation interval value (-0.084) and indicates cheerful (Ho) rejects (Ha) Sig ($0.641 < 0.05$).
- c. The relationship between GDP Regional for Construction and the length of Regency/City roads according to Asphalt surface indicated a substantial degree of relationship with the correlation interval value (0.650).) Sig ($0.557 < 0.05$).
- d. In all cases above, the significance test found that the relationship between GDP Regional Construction and road length has a positive (Ha) and rejects (Ho) relationship with different Sig values. This shows that even though the relationship between these variables is low, there is an indication that there is a positive relationship between construction GDP Regional and road length.

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