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THE INFLUENCE OF LAND USE AND INFRASTRUCTURE ON ECONOMIC GROWTH IN EAST NUSA TENGGARA PROVINCE

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ABSTRACT

This study aims to analyze the effect of land use and infrastructure on economic growth in the Province of East Nusa Tenggara. Land use and infrastructure are important factors in regional development because they support economic activities, increase productivity, and facilitate the distribution of goods and services. However, the archipelagic geographical characteristics of East Nusa Tenggara and the existing limitations in infrastructure are presumed to affect the effectiveness of these factors in promoting economic growth. This research employed a quantitative approach with a descriptive-associative method. The study utilized secondary data covering the period 2015–2024 obtained from the Central Bureau of Statistics (BPS) of East Nusa Tenggara Province and was supported by primary data collected through interviews with relevant institutions. Data were analyzed using multiple linear regression to examine the influence of land use and infrastructure on economic growth. The results indicate that land use has a regression coefficient of 0.231 with a significance value of 0.617 (> 0.05), meaning that it does not have a significant effect on economic growth. Infrastructure has a regression coefficient of -0.150 with a significance value of 0.144 (> 0.05), indicating that it also does not significantly affect economic growth. Simultaneously, land use and infrastructure do not have a significant effect on economic growth, as shown by the F-test significance value of 0.194 (> 0.05). The coefficient of determination (R^2) is 0.441, which means that 44.1% of the variation in economic growth can be explained by land use and infrastructure variables, while the remaining 55.9% is influenced by other factors outside the research model. The study concludes that land use and infrastructure have not yet significantly contributed to economic growth in East Nusa Tenggara Province. This condition is attributed to the suboptimal utilization of land resources, low intensity of productive land use, limitations in infrastructure quality, and the lack of integration between land utilization, infrastructure development, and productive economic sectors. Therefore, development policies should not only focus on physical infrastructure development but also emphasize improving human resources, technology, investment, and the effectiveness of infrastructure utilization to achieve sustainable economic growth.

Keywords: Land Use, Infrastructure, Economic Growth, Multiple Linear Regression, East Nusa Tenggara Province.

I. INTRODUCTION

Economic growth is a key pillar in efforts to achieve public welfare and regional progress. The success of economic growth at the national level is inextricably linked to regional economic performance, as an integral part of the Indonesian economic system. Therefore, each region is required to effectively and sustainably explore, manage, and utilize its potential resources. Tambunan (2020) states that economic growth reflects a region's increased ability to produce goods and services, as measured by increases in Gross Domestic Product (GDP) or Gross Regional Domestic Product (GRDP).

High economic growth indicates increased production capacity, expanded employment opportunities, and improved public welfare. A similar sentiment is expressed by Marcal et al. (2024), who state that economic growth reflects a country's economic development, characterized by a sustained increase in national production capacity and public income. According to Todaro and Smith (2020), economic growth depends not only on increased output but also on the efficient use of resources and the equitable distribution of development outcomes across regions.

Regional economic development essentially aims not only to increase economic growth but also to create equitable distribution of development outcomes across regions. One crucial aspect in supporting regional development is the availability of adequate infrastructure and optimal land use. Good infrastructure can increase productivity, facilitate the distribution of goods and services, and accelerate investment flows. Meanwhile, efficient land use will stimulate economic activity by optimizing the potential of regional resources.

The Indonesian government has established the direction of regional development through various regulations, one of which is Law Number 26 of 2007 concerning Spatial Planning, which emphasizes the importance of integrating regional spatial plans with economic development policies. This provision is reinforced by Government Regulation Number 21 of 2021 concerning the Implementation of Spatial Planning, which emphasizes controlling land use in accordance with spatial plans to prevent inequality and environmental damage.

Infrastructure development in East Nusa Tenggara Province has shown diverse progress in recent years. Based on data for the 2015–2024 period, irrigation infrastructure tends to decline from 122,538 hectares in 2015 to approximately 103,926 hectares in 2022, before increasing again to 105,585 hectares in 2024. This decline indicates limitations in the management and maintenance of irrigation networks, which play a vital role in the agricultural sector.

Meanwhile, the length of roads in good condition increased from 1,495.63 km in 2015 to 2,255.82 km in 2022, but then declined again to 1,827.07 km in 2024. This condition indicates that road infrastructure development is not yet fully stable and still faces challenges in terms of quality and sustainability.

On the other hand, electricity access has shown significant progress, with the percentage of electrified households increasing from 64.11% in 2015 to 99.88% in 2023, although it declined slightly in 2024 to 96.82%. This demonstrates the government's efforts to increase energy access for the public, although equity and sustainability remain challenges.

Furthermore, economic development policies have not been implemented optimally, resulting in development programs not having a significant multiplier effect on improving public welfare. Todaro and Smith (2020) emphasize the vital role of infrastructure in facilitating the flow of goods, services, and factors of production, while Hirschman (1958), through his theory of unbalanced growth, emphasized the importance of infrastructure development as a driver of regional economic growth. However, to date, there has been little research that simultaneously analyzes the influence of land use and infrastructure on economic growth, particularly in island regions like East Nusa Tenggara, which have distinct geographic and economic

characteristics from other provinces.

This research focuses on East Nusa Tenggara (NTT) Province, a region characterized by archipelagic regions with limited infrastructure and high spatial disparities. Therefore, this study attempts to fill these empirical and theoretical gaps by simultaneously analyzing the influence of land use and infrastructure on economic growth in the province.

II. RESEARCH METHODS

The type of research used in this study is quantitative, employing an associative framework that seeks to explain the relationship between one variable and another, whether the relationship between two or more variables (Sugiyono, 2022). The reason for choosing this type of research is because case studies allow researchers to analyze regional economic phenomena in greater depth based on the specific conditions and characteristics of the region.

This study uses a quantitative approach with an associative descriptive method. This quantitative approach is used because this study focuses on measuring the relationships between variables through numerical data sourced from official government publications. Meanwhile, the associative descriptive method was chosen because this study not only describes the general condition of the variables but also analyzes the relationship and influence between the variables studied, namely land use (X_1) and infrastructure (X_2), on economic growth (Y) in East Nusa Tenggara Province from 2015 to 2024.

Through this approach, researchers seek to explain the phenomenon of regional economic development by linking infrastructure development and land use to changes in economic growth rates. A quantitative approach was chosen because it is considered most appropriate for testing causal hypotheses, where the analysis results will indicate whether the two independent variables have a positive, negative, or insignificant influence on economic growth in the studied region.

Data collection techniques in this study utilized three main approaches: documentation studies, interviews, and observations. These three techniques were used to ensure the data obtained is accurate, relevant, and able to reflect the actual conditions of land use, infrastructure, and economic growth in East Nusa Tenggara Province.

The data analysis techniques in this study were conducted through several systematic stages to ensure the results accurately and measurably describe the relationship between variables. The data analysis steps used were descriptive statistical analysis, multiple linear regression, classical assumption testing, and hypothesis testing.

III. RESULTS AND DISCUSSION

Descriptive Analysis

Table 1
Percentage of Land Use, Infrastructure, and Economic Growth in East Nusa Tenggara Province 2015-2024

Year	Land Use (X1)	Infrastructure (X2)	Economic Growth (Y)
2015	79,75	60,96	4,92
2016	78,02	61,38	5,12
2017	81,36	62,44	5,11
2018	81,35	61,57	5,11
2019	79,7	64,14	5,25
2020	78,7	70,84	-0,84
2021	78,21	72,68	2,52
2022	80,64	78,41	3,08
2023	78,01	75,23	3,47
2024	77,96	73,49	3,73

Source: East Nusa Tenggara Central Statistics Agency 2025

Multiple Linear Regression Test

Table 2
Multiple Linear Regression Analysis

Model		*Unstandardized Coefficients*		*Standardized Coefficients*	t	Sig.
		B	*Std. Error*	*Beta*		
	(Constant)	-433.316	3769.702		-0.115	0.912
	Land Utilization	0.231	0.441	0.168	0.524	0.617
	Infrastructure	-0.150	0.091	-0.529	-1.647	0.144

Source: Researcher, 2026

Classical Assumption Test

1. Normality Test

A normality test is performed to determine whether the residual data in a regression model is normally distributed. This test is a prerequisite for multiple linear regression analysis. In this study, the normality test was conducted using the Shapiro-Wilk method.

Table 3 Normality Test

	Kolmogorov-Smirnov[a]			*Shapiro-Wilk*		
	Statistic	**df**	**Sig.**	***Statistic***	**df**	**Sig.**
Land Utilization	0.199	10	0.200*	0.857	10	0.071
Infrastructure	0.224	10	0.167	0.867	10	0.092

Source: Researcher 2026

The normality test in this study was conducted using the Shapiro-Wilk method because the sample size was less than 50. The test results showed that the land use variable had a significance value of 0.071 and the infrastructure variable had a significance value of 0.092. Both values are greater than 0.05, so it can be concluded that the data are normally distributed.

2. Multilinearity Test

A multicollinearity test is performed to determine whether there is a strong relationship between the independent variables in a regression model. A good regression model should not experience multicollinearity. The test is performed by looking at the values *Tolerance dan Variance Inflation Factor* (VIF).

Table 4 Multicollinearity Test

Model	***Unstandardized Coefficients***		***Standardized Coefficients***	***t***	**Sig.**	***Collinearity Statistics***	
	B	***Std. Error***	***Beta***			***Tolerance***	**VIF**
(Constant)	-433.316	3769.702		-0.115	.912		
Land Utilization	0.231	0.441	0.168	0.524	0.617	0.865	1.156
Infrastructure	-0.150	0.091	-0.529	-1.647	0.144	0.865	1.156

Source: Researcher 2026

A multicollinearity test was conducted to determine whether there was a strong relationship between the independent variables in the regression model. Based on the test results, the tolerance value for the land use variable was 0.865 and the infrastructure variable was 0.865, both of which were greater than 0.10. Furthermore, the Variance Inflation Factor (VIF) for both variables was 1.156, which is less than 10.

This indicates that there is no strong relationship between the independent variables. Therefore, it can be concluded that the regression model in this study does

not experience multicollinearity and meets one of the classical assumptions.

3. Heterokedastisitas Test

Uji heteroskedastisitas dilakukan untuk mengetahui apakah dalam model regresi terjadi ketidaksamaan varians dari residual. Model regresi yang baik seharusnya tidak mengalami heteroskedastisitas. Dalam penelitian ini, pengujian dilakukan menggunakan metode Glejser

Tabel 5 Uji Heterokedastisitas

Model		*Unstandardized Coefficients*		*Standardized Coefficients*	t	Sig.
		B	***Std. Error***	***Beta***		
	(Constant)	688.624	2178.427		0.316	0.761
	Land Utilization	-.087	.255	-.137	-0.343	0.742
	Infrastructure	.013	.053	.100	0.250	0.810

Sumber : Peneliti, 2026

Uji heteroskedastisitas dilakukan menggunakan metode Glejser dengan meregresikan nilai residual terhadap variabel independen. Berdasarkan hasil pengujian, diperoleh nilai signifikansi variabel pemanfaatan lahan sebesar 0,742 dan variabel infrastruktur sebesar 0,810. Kedua nilai tersebut lebih besar dari 0,05. Hal ini menunjukkan bahwa tidak terdapat gejala heteroskedastisitas dalam model regresi. Dengan demikian, varians residual bersifat konstan (homoskedastisitas), sehingga model regresi dalam penelitian ini telah memenuhi asumsi klasik.

4. Autocorrelation Test

An autocorrelation test is performed to determine whether there is a relationship between residuals at different time periods in a regression model. This test is especially important for time series data. In this study, the autocorrelation test was conducted using the *Durbin-Watson*.

Table 6 Autocorrelation Tes

Model	**R**	***R Square***	***Adjusted RSquare***	***Std. Error of the Estimate***	***Durbin-Watson***
	0.664[a]	0.441	0.282	142.128	1.941

Source: Researcher, 2026

An autocorrelation test was conducted to determine whether there was a relationship between residuals at different time periods in the regression model.

Based on the test results using the Durbin-Watson method, a value of 1.941 was obtained. This value is close to 2, indicating no autocorrelation in the regression model. Therefore, it can be concluded that the regression model in this study meets the autocorrelation assumption and is suitable for further analysis.

Hypothesis Testing

1. Partial Test (t-Test)

The partial significance test, or better known as the t-test, is used to determine the extent to which each independent variable individually influences the dependent variable, assuming that the other independent variables are considered consta

Table 7 Partial Test (t-Test)

Variabel	t hitung	t tabel	Sig
Land Utilization	1.101	2.354	0.303
Infrastructure	-2.073	2.365	0.144

Source: Researcher, 2026

Based on the results of the t-test, the t-table value was obtained at 2.365 with degrees of freedom (df) = 7. The land use variable has a calculated t-value of 1.101 with a significance of 0.303 > 0.05, and the infrastructure variable has a calculated t-value of -2.073 with a significance of 0.144 > 0.05. This indicates that partially both variables have not been able to explain changes in economic growth. Thus, land use and infrastructure have not had a significant influence in the study period.

5. Simultaneous Test (f Test)

The simultaneous significance test, or f-test, is used to determine whether all independent variables included in a regression model have a joint effect on the dependent variable. In other words, this test is conducted to verify the significance of the regression model as a whole.

Table 8 Simultaneous Test (f Test)

Model		*Sum of Squares*	df	*Mean Square*	F	Sig.
	Regression	120827.307	2	60413.654	2.091	0.194
	Residual	202208.793	7	28886.970		
	Total	323036.100	9			

Source: Researcher 2026

Based on the analysis results, the calculated F-value was 2.091 with a

significance level (Sig.) of 0.194. Compared with a significance level of 0.05, the Sig. value of 0.194 is greater than
0.05. Therefore, it can be concluded that the simultaneous effects of land use and infrastructure variables do not significantly influence economic growth.

This indicates that the two variables together are unable to significantly explain variations in economic growth during the study period. This means that changes in economic growth are not significantly influenced by changes in land use and infrastructure simultaneously.

6. Koefisien Determinasi Test

The coefficient of determination is used to determine the extent to which the independent variable can explain the dependent variable. Based on the results of the analysis using IBM statistical software.*SPSS Statistics*, obtained value *R Square* sebesar 0,560

Table 9
Coefficient of Determination Test

Model	**R**	***R Square***	***Adjusted R Square***	***Std. Error of the Estimate***
	0.664	0.441	0.282	142.128

Source: Researcher 2026

Based on the analysis results, an R-square value of 0.441 was obtained, indicating that 44.1% of the variation in economic growth can be explained by land use and infrastructure variables. The remaining 55.9% is explained by variables outside the research model. The adjusted R-square value of 0.282 indicates that after adjustments, the model's ability to explain the dependent variable is 28.2%. This indicates that the model still has limitations in explaining economic growth.

IV. DISCUSSION

Based on the results of the multiple linear regression analysis, we obtained an overview of the influence of land use and infrastructure on economic growth in East Nusa Tenggara Province during the period 2015–2024. The results indicate a discrepancy between existing theory and empirical conditions in the field, necessitating a more in-depth discussion to explain this phenomenon.

The Impact of Land Use on Economic Growth

The results of the study indicate that the land use variable has a regression coefficient of 0.231, indicating a positive relationship. However, it does not significantly influence economic growth, as the significance value of 0.617 is greater than 0.05. This indicates that theoretically, land use still has the potential to increase economic growth, but empirically in East Nusa Tenggara Province, this influence is not yet strong enough.

Based on available data, the total agricultural land area reaches 189,700 ha, but its utilization is not optimal. Only 56,790 ha can be planted two or three times a year, while 113,463 ha are planted only once, and 17,071 ha are not planted at all. This condition indicates that land use intensity is still low and unable to produce maximum economic output.

More specifically, serious problems still exist in irrigated land types, which should have higher productivity. Of the total 105,585 ha of irrigated land, 8,100 ha remain unplanted, and most are used for only one planting season. This indicates that irrigation has not been able to increase cropping intensity as expected.

In addition to agricultural technical factors, the low contribution of land use to economic growth is also influenced by accessibility and distribution factors. This is evident in the unstable condition of road infrastructure, with the length of roads fluctuating from 1,857.94 km in 2020, increasing to 2,255.82 km in 2022, and then declining again to 1,827.07 km in 2024. This condition indicates that market access does not fully support community economic activities. Consequently, although agricultural production has increased, it has not been able to provide optimal economic added value due to hampered distribution of goods. Regional development theory explains that regional connectivity and spatial efficiency are crucial for regional economic development. Therefore, limited road access in some areas means that land use has not been able to significantly impact economic growth. The quality of human resources and technology are also major factors contributing to the low level of land optimization. Most farmers in NTT still use traditional farming methods with low levels of technology adoption, resulting in low productivity per hectare.

Theoretically, this condition can be explained by David Ricardo's (1817) concept of the law of diminishing returns, which states that increasing land use without a commensurate increase in technology, capital, and management will lead to declining productivity. In other words, large land areas do not automatically increase economic growth if the quality of management remains poor. This theory is highly relevant to conditions in NTT, where the majority of agricultural land still relies on traditional farming methods and rainfall.

Land use conditions in East Nusa Tenggara Province indicate that productive land use is not optimal in driving regional economic growth. This is evident in the large area of rain-fed land, low cropping intensity, and the presence of underutilized agricultural land. These conditions cause unstable agricultural productivity and are highly dependent on climate conditions.

This situation aligns with the East Nusa Tenggara Province's 2025–2029 Medium-Term Development Plan (RPJMD), which explains that most of NTT is characterized by hilly and mountainous terrain and a dry climate with a longer dry season than the rainy season. These geographic conditions influence agricultural land use patterns and limit the ability to manage land productively and sustainably in some areas.

Furthermore, the 2025–2029 NTT Provincial Medium-Term Development Plan (RPJMD) emphasizes that regional development must be carried out holistically, thematically, integratively, and spatially so that development can be tailored to the

characteristics of each region. In the context of land use, a spatial approach is crucial because each region in NTT has different topography, climate, and land potential. Therefore, land use that is not integrated with regional potential and infrastructure support results in a suboptimal contribution to economic growth.

This condition aligns with the endogenous growth theory by Barro and Sala-i-Martin (1995), which explains that economic growth is influenced not only by resource availability but also by the quality of human resources, technology, and innovation. This theory explains that resources such as land will not have a significant impact if not supported by technology, workforce skills, and appropriate policies. Therefore, the low level of agricultural technology capability in NTT means that land use has not been able to significantly boost economic growth.

In Glasson's (1977) theory of regional development, regional economic growth is heavily influenced by the region's ability to optimally manage and utilize local resources. Therefore, although East Nusa Tenggara Province possesses extensive land potential, its underutilization has rendered its contribution to economic growth insignificant.

The results of this study also relate to empirical studies. Research by Sitorus (2020) shows that optimal land use has a positive effect on the efficiency of regional development. Research by Nurdin et al. (2023) also explains that sustainable land use can increase regional economic resilience. However, the results of this study indicate a different situation, where land use has not had a significant impact on economic growth. These differences indicate that the influence of land use is highly dependent on regional conditions, management quality, infrastructure support, and the community's ability to utilize the land productively.

Thus, the results of this study indicate that although land use has a positive relationship with economic growth, the effect is not yet significant because utilization is still suboptimal, cropping intensity is still low, unproductive land remains, and adequate access, technology, and quality of human resources are not supported. These findings also strengthen regional development theory and endogenous growth theory, which emphasize that the success of regional economic development is determined not only by the availability of resources but also by the region's ability to manage, integrate, and utilize those resources effectively and sustainably.

The Impact of Infrastructure on Economic Growth

The results of the study indicate that the infrastructure variable has a regression coefficient of -0.150 with a significance value of 0.144 (>0.05). Therefore, it can be concluded that infrastructure does not significantly influence economic growth in East Nusa Tenggara Province. Although the direction of the relationship indicates a negative relationship, statistically, the effect is not significant. This indicates that increased infrastructure development during the study period has not significantly contributed to increasing regional economic growth. In other words, the existence of infrastructure has not fully translated into productive economic activity.

This situation is highly relevant to the facts on the ground in East Nusa Tenggara Province. Although infrastructure development such as roads, electricity, and irrigation continues to increase until 2024, its utilization is not yet optimal.

Irrigation infrastructure, such as reservoirs and dams scattered throughout various regions, is not fully capable of supporting agricultural activities due to limited water distribution networks to agricultural land. Many farmers still rely on rain-fed systems, resulting in unstable agricultural productivity.

This indicates that the existence of infrastructure is not accompanied by an effective Management System: The infrastructure conditions in East Nusa Tenggara Province show that despite continued development, its utilization to support economic activity remains suboptimal. This is evident in the three main infrastructure indicators—irrigation, roads, and electricity—which have yet to significantly impact economic growth. In the irrigation sector, 2024 data shows that of the total 105,585 ha of irrigated land, only around 56,786 ha can be planted two to three times a year, while 40,699 ha are planted only once, and 8,100 ha remain unplanted. This situation indicates that irrigation has not been able to optimally increase cropping intensity. Furthermore, the area of rain-fed land, which reaches 81,774 ha, indicates that farmers are still highly dependent on rainfall. This indicates that the irrigation network is not fully functioning, either due to limited water distribution, damaged channels, or ineffective management. In the road infrastructure sector, although the length of roads in good condition increased until 2022, it actually decreased to approximately 1,827 km in 2024. This decline indicates problems with road quality and maintenance. In several areas, such as Kupang Regency, particularly Amfoang and South Central Timor Regency, many roads remain damaged and difficult to navigate, especially during the rainy season. The hilly and remote geography hinders distribution of goods and increases transportation costs. Consequently, agricultural products are difficult to market efficiently, preventing the optimal use of existing road infrastructure to boost economic activity.

Meanwhile, in the electricity sector, although the electrification ratio reached approximately 96.82% in 2024, its use in productive economic activities remains limited. In some remote areas, electricity access is not fully stable or is only available for limited periods, thus hindering the development of small businesses and home industries. This situation indicates that increased electricity access has not been accompanied by a significant increase in economic activity, thus limiting its contribution to economic growth. The infrastructure situation in East Nusa Tenggara Province shows that the main problem lies not only in the availability of infrastructure, but also in its quality, distribution, and effectiveness of utilization. This is in line with the 2025–2029 East Nusa Tenggara Provincial Medium-Term Development Plan (RPJMD), which emphasizes that regional development must be carried out in a "holistic-thematic, integrative, and spatial" manner. The integrative approach in the RPJMD is described as an effort to unite various authorities into a single integrated process to achieve regional development goals, while the spatial approach emphasizes the importance of considering the territorial dimension in development.

Furthermore, the East Nusa Tenggara Provincial Medium-Term Development Plan (RPJMD) for 2025–2029 emphasizes the acceleration of sustainable development of basic and supporting infrastructure, such as roads, clean water, electricity, and

digital networks, to reduce inter-regional disparities and support regional economic growth. However, research shows that this infrastructure development has not significantly impacted economic growth. This indicates that infrastructure development has not been fully integrated with productive sectors such as agriculture, trade, and local industry.

The East Nusa Tenggara Provincial Regional Development Plan (RKPD) for 2025 also emphasizes that the direction of regional development is directed towards "Equitable and Just Regional Development," "Quality and Environmentally Friendly Facilities and Infrastructure," and "Sustainable Development." This means that the regional government itself recognizes that infrastructure development cannot simply focus on the quantity of physical development; it must also address equitable quality and sustainable utilization to optimally drive economic growth. The results of this study actually reinforce the conditions outlined in the Regional Development Plan (RKPD) and Regional Medium-Term Development Plan (RPJMD) of East Nusa Tenggara Province, which state that regional development challenges lie not only in the provision of infrastructure, but also in the integration of development between regions, the equitable distribution of infrastructure quality, and the effectiveness of its utilization in supporting community economic activities.

Theoretically, infrastructure is a crucial factor in driving economic growth. According to David Aschauer (1989), infrastructure is considered public capital, which can increase productivity through efficient production and distribution costs. Infrastructure such as roads, electricity, and irrigation should facilitate the flow of goods and services and increase economic output. However, this theory assumes that infrastructure must be of high quality, integrated, and optimally utilized by the community and economic actors. If these conditions are not met, infrastructure will not have a significant impact on economic growth.

In the context of development theory, this condition aligns with the concept of unbalanced growth proposed by Hirschman (1958), which states that infrastructure development will not have a significant economic impact unless accompanied by readiness in other sectors. Therefore, even if irrigation infrastructure is available, without effective management and adequate agricultural system support, its impact on economic growth will be limited. This situation is also related to the spatial approach in the NTT RPJMD, which emphasizes the importance of development based on regional characteristics so that infrastructure can truly support community economic activities.

The endogenous growth theory proposed by Barro and Sala-i-Martin (1995) also emphasizes that economic growth is determined not only by the availability of infrastructure, but also by the quality of human resources, technology, and institutions. In this context, infrastructure will only have a significant impact if supported by the community's ability to utilize it productively. Without such support, infrastructure remains merely a physical facility that is unable to significantly increase economic productivity.

The results of this study are also supported by empirical studies showing that the influence of infrastructure on economic growth is highly dependent on the quality and effectiveness of its utilization. Research by Sani et al. (2023) shows that

not all types of infrastructure have a significant impact on economic growth, particularly in regions lacking adequate economic readiness. This reinforces the finding that infrastructure does not always automatically drive economic growth.

Overall, this situation indicates that the main problem lies not only in the availability of infrastructure, but also in the quality, equity, and effectiveness of its utilization. The infrastructure being built has not been fully integrated with productive sectors such as agriculture, trade, and local industry. This results in infrastructure not having a significant impact on economic growth, as demonstrated in the research results, where the infrastructure variable has no significant effect. This condition also reinforces the development direction in the NTT RPJMD and RKPD, which emphasize the importance of holistic, thematic, and integrated development so that infrastructure development can truly support sustainable regional economic growth.

The Effect of Land Use and Infrastructure on Economic Growth

Based on the results of the F-test, a significance value of 0.194 was obtained, which is greater than 0.05. Therefore, it can be concluded that the controlling variable

Furthermore, economic growth is also influenced by other factors such as investment, human resource quality, technology, and external economic conditions. For example, even if infrastructure is built, without investment and productive economic activity, it will not have a significant impact. This indicates that economic development requires a more comprehensive and integrated approach.

This is in line with the 2025–2029 East Nusa Tenggara Provincial Medium-Term Development Plan (RPJMD), which emphasizes that regional development must be carried out holistically, thematically, integratively, and spatially so that development can adapt to regional characteristics and integrate across development sectors. In the context of this research, the insignificant results indicate that land use and infrastructure development are not yet fully connected to productive sectors such as agriculture, trade, and local industry.

Furthermore, the 2025–2029 NTT Provincial Medium-Term Development Plan (RPJMD) explains that most of NTT's territory is hilly and mountainous, and has a dry climate, with a longer dry season than the rainy season. These geographic conditions result in suboptimal land management and infrastructure development, thus limiting their impact on economic growth.

Theoretically, the results of this study align with the endogenous growth theory proposed by Barro and Sala-i-Martin (1995), which explains that economic growth is influenced not only by the availability of resources and infrastructure, but also by the quality of human resources, technology, and management effectiveness. Furthermore, the concept of unbalanced growth by Hirschman (1958) explains that infrastructure development will not have a significant economic impact unless accompanied by the readiness of other sectors. In the context of this study, land use and infrastructure have not been able to significantly impact economic growth because they are not supported by optimal management, adequate agricultural technology, and development integration between economic sectors.

The results of this study confirm that land use and infrastructure have not

been able to significantly influence economic growth, either partially or simultaneously, because they are not supported by optimal utilization, integration between sectors, and other supporting factors. Therefore, policies are needed that focus not only on physical development but also on improving the quality of human resources, technology, and investment to achieve optimal economic growth.

V. CONCLUSION

Based on the research findings on the Influence of Land Use and Infrastructure on Economic Growth in East Nusa Tenggara Province, the following conclusions can be drawn:

1. Land use has a positive relationship with economic growth, but the effect is not significant. This indicates that theoretically, land has the potential to drive economic growth, but empirically, in East Nusa Tenggara Province, its utilization is not optimal. Low cropping intensity, the persistence of unused land, and limitations in technology and human resource quality mean that land's contribution to economic growth is not maximized. Thus, the vast availability of land cannot have a tangible impact without productive and efficient management.
2. Infrastructure has a negative relationship and does not have a significant effect on economic growth. This condition indicates that infrastructure development has not been able to optimally stimulate economic activity. This is due to the ongoing instability and limited quality of infrastructure such as irrigation, roads, and electricity, as well as the suboptimal utilization of infrastructure in productive economic activities. Therefore, the existence of infrastructure alone is not sufficient to boost economic growth without effective and integrated utilization across economic sectors.
3. Collectively, land use and infrastructure do not significantly influence economic growth. This indicates that these two variables are not yet able to explain the variation in economic growth. This condition indicates that economic growth in East Nusa Tenggara Province is influenced by factors other than the model, such as investment, human resource quality, technology, and government policy. Furthermore, the lack of optimal integration between land use and infrastructure development also prevents these two variables from having a significant impact together.

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