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Analysis Of The Effect Of Electricity Infrastructure, Road Infrastructure, Local Own-Source Revenue, And Labor Force Participation Rate On Domestic Investment In Java Province

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Abstract

This study aims to analyze the effect of electricity infrastructure, road infrastructure, Regional Original Revenue, and the Labor Force Participation Rate on Domestic Investment in East Java Province. Using time series data from East Java Province for the 2014–2023 period, the analysis was conducted through multiple linear regression analysis, accompanied by classical assumption tests, the F-test, and the t-test using SPSS to determine both the simultaneous and partial effects among variables. The results show that road infrastructure and Regional Original Revenue have a significant positive effect on Domestic Investment, while electricity infrastructure and the Labor Force Participation Rate do not have a significant effect on Domestic Investment. These findings indicate that the quality of regional connectivity and regional fiscal capacity play an important role in attracting domestic investment.

Keywords: Electricity Infrastructure, Road Infrastructure, Regional Original Revenue, Labor Force Participation Rate, Domestic Investment.

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INTRODUCTION

Investment plays a crucial role in encouraging economic growth, creating employment opportunities, and increasing competitiveness, particularly in developing countries such as Indonesia. Theoretically, investment contributes to capital accumulation, productivity improvement, and innovation, making it an important component of Gross Domestic Product (GDP) and sustainable economic growth. In Indonesia, Domestic Investment serves as an important indicator because it reflects local investors' confidence in economic conditions, stability, and the business climate.

East Java Province, as one of the largest contributors to the national economy, has high investment potential supported by a diverse economic structure and relatively developed infrastructure. Nevertheless, investment realization in this region still faces several challenges, such as unequal investment distribution, infrastructure limitations in certain areas, as well as bureaucratic efficiency and labor productivity issues.

In this context, factors such as electricity infrastructure, road infrastructure, regional fiscal capacity reflected in Local Own-Source Revenue, and labor dynamics measured through the Labor Force Participation Rate are assumed to play an important role in influencing domestic investment. These four factors represent the main dimensions of regional competitiveness, namely energy availability, regional connectivity, fiscal capability, and the quality of human resources.

Therefore, this study aims to analyze the effect of electricity infrastructure, road infrastructure, Local Own-Source Revenue, and Labor Force Participation Rate on Domestic Investment in East Java Province during the 2018–2023 period. This research is expected to provide empirical contributions to the development of regional development policies and the strengthening of a more effective and data-driven investment climate.

LITERATUR REVIEW HARROD-

Domar Theory

The Harrod-Domar Theory states that economic growth is highly determined by the level of investment, because investment plays a role in increasing production capacity and creating new output. Meanwhile, endogenous growth theory emphasizes the importance of internal factors such as infrastructure, human resources, and government policies in promoting long-term economic growth.

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Domestic Investment

Domestic Investment refers to investment activities carried out by domestic business actors using resources originating from within the country. Domestic Investment has a strategic role in encouraging economic growth because it contributes to fixed capital formation, job creation, and the improvement of regional production capacity. Theoretically, Domestic Investment is influenced by various factors such as economic stability, infrastructure availability, regional fiscal capacity, and labor conditions. In investment theory, investment decisions are determined by the expected rate of return compared to the costs incurred. Therefore, regions with adequate infrastructure, sound fiscal policies, and productive labor forces tend to be more attractive to domestic investors.Domestic Investment also reflects the level of business actors' confidence in regional economic conditions. The higher the Domestic Investment value, the greater the confidence of local investors in the stability and economic prospects of the region. Thus, Domestic Investment becomes an important indicator in measuring the success of regional economic development.

Electricity Infrastructure

Electricity infrastructure is one of the essential components in supporting economic activities, particularly in the industrial, trade, and service sectors. Adequate and stable electricity supply is a key factor in ensuring smooth production processes and improving operational efficiency.

In economic growth theory, electricity is categorized as basic infrastructure that plays a strategic role in increasing productivity. Without sufficient electricity supply, economic activities will be disrupted and production costs will rise. Therefore, regions with good access to electricity tend to be more attractive to investors.

In addition, improvements in electricity capacity and distribution can encourage the development of industrial sectors and small and medium enterprises. Electricity infrastructure not only functions as support for economic activities but also as an indicator of a region's readiness to receive investment. Therefore, electricity infrastructure is assumed to have a positive influence on increasing domestic investment.

Road Infrastructure

Road infrastructure is a transportation facility that plays an important role in supporting the mobility of goods and services as well as regional connectivity. Good road conditions can reduce logistics costs, accelerate distribution, and improve the efficiency

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of economic activities. According to industrial location theory, transportation costs are one of the main factors in determining investment locations. The better the road conditions, the lower the distribution costs borne by business actors, thereby increasing the attractiveness of a region to investors.

In addition, road infrastructure also plays a role in opening access to previously isolated areas, thereby encouraging equitable development and investment distribution. Thus, improvements in road quality and length can have a positive impact on investment growth in a region.

Local Own-Source Revenue

Local Own-Source Revenue is a source of regional income derived from regional economic potential, such as local taxes, service charges, and returns from the management of regional assets. Local Own-Source Revenue reflects the fiscal capacity and level of regional independence in financing development.

In fiscal decentralization theory, Local Own-Source Revenue plays an important role in providing flexibility for local governments to allocate budgets according to local needs. Regions with high Local Own-Source Revenue have greater capacity to provide infrastructure, improve public services, and create a conducive investment climate.

In addition, Local Own-Source Revenue also serves as an indicator of investor confidence in the quality of regional financial governance. The higher the Local Own-Source Revenue, the greater the ability of local governments to support economic activities and attract investment. Therefore, Local Own-Source Revenue is assumed to have a positive relationship with increasing Domestic Investment.

Labor Force Participation Rate

The Labor Force Participation Rate is an indicator that shows the percentage of the working-age population actively involved in economic activities. Labor force participation rate reflects the availability of labor that can be utilized in the production process. In human capital theory, the quality and quantity of labor are important factors in increasing economic productivity. Regions with abundant and productive labor forces tend to be more attractive to investors because they can ensure the continuity of production activities.

In addition, an increase in labor force participation rate indicates that more people are involved in economic activities, which can encourage regional economic growth. The relationship between labor force participation rate and investment is reciprocal, where

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increased investment can create new job opportunities, while the availability of sufficient labor can attract investors to invest their capital.

Objectives

This article intends

1. To analyze the effect of Electricity Infrastructure on Domestic Investment in East Java.
2. To analyze the effect of Road Infrastructure on Domestic Investment in East Java.
3. To analyze the effect of Local Own-Source Revenue on Domestic Investment in East Java.
4. To analyze the effect of the Labor Force Participation Rate on Domestic Investment in East Java.

RESULT

Selection of Time Series Data Regression Model Techniques

Normality Test

One-Sample Kolmogorov-Smirnov Test

N	10
Asymp. Sig (2-tailed)	0.200

Based on the results presented in Table 4.6, the Asymp. Sig. (2-tailed) value obtained is 0.200, which is greater than the significance level of 0.05. This indicates that the residual data are normally distributed. Therefore, the normality assumption in the regression model is fulfilled, meaning that the model is appropriate for further analysis.

Multicollinearity Test

Variable	*Tolerance*	Provision	VIF	Provision
X1	0,377	≥ 0,010	2.651	≤ 10
X2	0,508	≥ 0,010	1.968	≤ 10
X3	0,595	≥ 0,010	1.680	≤ 10

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X4	0,365	≥ 0,010	2.740	≤ 10

Based on the results obtained from the multiple linear regression analysis, it is known that the four independent variables (Electricity Infrastructure, Road Infrastructure, Local Own-Source Revenue, and Labor Force Participation Rate) in the analysis of Domestic Investment in East Java Province have VIF values less than 10. Therefore, it can be concluded that there is no multicollinearity among the independent variables.

Heteroscedasticity Test

Variable	Prob.	Provision
Ln_X1	0.421	> 0,05
Ln_X2	0.899	> 0,05
Ln_X3	0.312	> 0,05
Ln_X4	0.609	> 0,05

Based on the table above, the significance level of the Spearman Rank correlation coefficient for the dependent variable, Domestic Investment, shows that all residual values are greater than 0.05. This indicates that there is no significant correlation between the residual values and the independent variables. Therefore, it can be concluded that heteroscedasticity does not occur in the regression model.

Autocorrelation Test

R	R Square	Adjusted R Square	Std. Error	Durbin-Watson
0.914	0.836	0.705	0.14224	1.748

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Durbin Watson Chart



The Durbin-Watson value obtained is 1.748. In this regression model, the number of independent variables (k) is 4 and the number of observations (n) is 10, resulting in Durbin-Watson table values of dL = 0.3760 and dU = 2.4137. The test results show that the dW value lies in the area indicating no autocorrelation, namely between dL < dW < dU (0.3760 < 1.748 < 2.4137).

Multiple Linear Regression Analysis

Variable	Regression Coefficient
Ln_X1	-0.148
Ln_X2	10.904
Ln_X3	0.531
Ln_X4	1.322
Dependent Variable: Domestic Investment Constant = -39.759	

Based on the table above, the multiple linear regression equation can be formulated as follows:

$$LnDDI = -39.759 - 0.148LnEI + 10.904LnRI + 0.531LnLGR + 1.322LnLFPR$$

From the regression equation above, the results can be interpreted as follows:

CONSTANT (A) = -39.759

This constant value indicates that if all independent variables, namely electricity infrastructure (X1), road infrastructure (X2), Local Own-Source Revenue (X3), and Labor

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Force Participation Rate (X4), remain constant or do not change, then the value of Domestic Investment (Y) is -39.759 billion rupiah.

Electricity Infrastructure Coefficient (LnEI) = -0.148

The coefficient of electricity infrastructure indicates that every increase of 1 GWh in electricity supply will reduce Domestic Investment by 0.148 billion rupiah, assuming other variables remain constant.

Road Infrastructure Coefficient (LnRI) = 10.904

The coefficient of road infrastructure indicates that every increase of 1 km in road length will increase Domestic Investment by 10.904 billion rupiah, assuming other variables remain constant.

1. **Local Own-Source Revenue Coefficient (LnLGR) = 0.531** The coefficient of Local Own-Source Revenue indicates that every increase of 1 billion rupiah in local own-source revenue will increase Domestic Investment by 0.531 billion rupiah, assuming other variables remain constant.
2. **Labor Force Participation Rate Coefficient (LnLFPR) = 1.322** The coefficient of the Labor Force Participation Rate indicates that every 1% increase in labor force participation will increase Domestic Investment by 1.322 billion rupiah, assuming other variables remain constant.

Hypotesis Testing
F-Test (Simultaneous Test)

F-Statistik	6.372
Prob (F-statistic)	0.034

Based on the ANOVA test results, the Prob (F-statistic) value is 0.034, which is smaller than the significance level of 0.05 (0.034 < 0.05). This indicates that all independent variables, namely Electricity Infrastructure (X1), Road Infrastructure (X2), Local Own-Source Revenue (X3), and Labor Force Participation Rate (X4), simultaneously have a significant effect on the dependent variable, namely Domestic Investment (Y).

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t-Test (Partial Test)

Variable	t	Sig.
Electricity Infrastructure	-0.369	0.725
Road Infrastructure	2.617	0.040
Local Own-Source Revenue	2.262	0.064
Labor Force Participation Rate	0.493	0.640

Based on the t-test results in the table above, the first step is to determine the t-table value. The calculation is conducted at a significance level of 0.05 using a two- tailed test (0.05/2 = 0.025) and degrees of freedom (df) of n – k – 1 or (10 – 4 – 1) = 5. Based on this calculation, the t-table value is 1.571.

Effect of Electricity Infrastructure (X1) on Domestic Investment (Y)

Based on the t-test results, Electricity Infrastructure has a significance value of 0.725 > 0.05 and t-count -0.369 < t-table 1.571, therefore H0 is accepted. It can be concluded that Electricity Infrastructure does not have a significant partial effect on Domestic Investment in East Java Province.

Effect of Road Infrastructure (X2) on Domestic Investment (Y)

Based on the t-test results, Road Infrastructure has a significance value of 0.40 0.05 and t-count 2.617 > t-table 1.571, therefore H0 is rejected. It can be concluded that Road Infrastructure has a significant partial effect on Domestic Investment in East Java Province.

Effect of Local Own-Source Revenue (X3) on Domestic Investment (Y)

Based on the t-test results, Local Own-Source Revenue has a significance value of 0.064 > 0.05 and t-count 2.262 > t-table 1.571, therefore H0 is accepted. It can be concluded that Local Own-Source Revenue does not have a significant partial effect on Domestic Investment in East Java Province.

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Effect of Labor Force Participation Rate (X4) on Domestic Investment (Y)

Based on the t-test results, Labor Force Participation Rate has a significance value of 0.640 > 0.05 and t-count 0.493 < t-table 1.571, therefore H0 is accepted. It can be concluded that Labor Force Participation Rate does not have a significant partial effect on Domestic Investment in East Java Province.

Coefficient of Determination Test (R^2)

R-Square	0.856
Adjusted R-Square	0.760

Based on the results in Table 4.11, the R Square value is 0.856 or 85.6%. This indicates that Electricity Infrastructure (X1), Road Infrastructure (X2), Local Own-Source Revenue (X3), and Labor Force Participation Rate (X4) are able to explain 85.6% of the variation in Domestic Investment (Y). Meanwhile, the remaining 14.4% is influenced by other variables outside the scope of this study.

DISCUSSION

Effect of Electricity Infrastructure on Domestic Investment

The results indicate that Electricity Infrastructure has no significant effect on Domestic Investment in East Java Province, meaning the hypothesis is not supported. This suggests that electricity availability is no longer a key consideration for domestic investors in determining investment locations, as electrification in East Java has already reached a very high and evenly distributed level of around 99.68%, with nearly all villages having access to electricity. As a result, electricity is no longer a differentiating factor among regions, and investors tend to prioritize other factors such as market access, transportation infrastructure, labor availability, and proximity to industrial zones. This finding is consistent with the theoretical view that infrastructure supports economic activity, but in more developed regions it functions mainly as a basic requirement rather than a main driver of investment decisions, as also supported by previous studies showing similar results in advanced industrial areas.

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Effect of Road Infrastructure on Domestic Investment

The results indicate that Road Infrastructure has a positive and significant effect on Domestic Investment in East Java Province, meaning the hypothesis is supported. This shows that better road quality and network expansion improve regional accessibility, reduce logistics costs, and enhance the efficiency of production and distribution activities, which in turn attract more investment. With most provincial and national roads in East Java already in good condition, connectivity between industrial zones, ports, and production areas becomes smoother supporting major industrial centers such as Surabaya, Gresik, Sidoarjo,

Pasuruan, and Mojokerto. This strong transportation network facilitates supply chain efficiency and strengthens market access for investors. Consistent with economic theory, infrastructure development— especially transport—plays a key role in reducing costs and increasing regional competitiveness, making road infrastructure an important determinant of Domestic Investment in East Java.

The Effect of Local Own-Source Revenue on Domestic Investment in East Java Province

The results show that Local Own-Source Revenue has a positive but weak effect on Domestic Investment in East Java Province, meaning the hypothesis is supported in direction but not strong statistically at the 5% level. Although Local Own-Source Revenue's contribution is relatively small compared to central government transfers, it still plays an important role in financing local development such as infrastructure improvement, public services, and support facilities for industrial areas. In East Java, Local Own-Source Revenue shows a positive growth trend, indicating increasing fiscal capacity that can improve the investment climate. Regions with higher Local Own-Source Revenue are able to provide better public facilities, reduce business risks, and create a more conducive environment for investors. This finding is consistent with fiscal decentralization theory (Oates, 1972), which explains that stronger local fiscal capacity improves public service provision and supports economic activity. However, its effect remains weaker compared to factors such as infrastructure and market access, as also supported by previous studies. Overall, Local Own-Source Revenue contributes positively to investment attraction in East Java, but its influence is relatively limited and works more as a supporting factor rather than a main driver.

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The Effect of Labor Force Participation Rate on Domestic Investment

The results indicate that the Labor Force Participation Rate has no significant effect on Domestic Investment in East Java Province, meaning the hypothesis is not supported. Although LFPR reflects the availability of labor, it only measures quantity, not the quality or skills required by industries. In East Java, LFPR is relatively stable, while most investments are capital-intensive and rely more on technology and efficiency than labor abundance. As a result, investors prioritize skilled labor, infrastructure, and industrial support rather than the size of the labor force. This is consistent with human capital theory, which emphasizes the importance of labor quality over quantity. Therefore, LFPR does not play a significant role in influencing domestic investment in East Java.

CONCLUSION

The Labor Force Participation Rate does not have a significant effect on Domestic Investment in East Java Province. This is because LFPR only reflects the quantity of labor force participation, not the quality, skills, or industrial suitability of workers. Since most investments in East Java are capital-intensive and rely more on technology and efficiency, investors place greater emphasis on skilled labor, infrastructure, and industrial support rather than labor quantity. Therefore, LFPR is not a determining factor in attracting domestic investment in the region.

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