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The Role and Function of The Sumatra Toll Road in Supporting The Regional Economy of Lampung Province

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Abstract: This study examines the effects of the transportation and warehousing sector, tourism, and agriculture, forestry, and fisheries on economic growth, with Local Own-Source Revenue (PAD) serving as an intervening variable in regencies traversed by the Trans-Sumatra Toll Road (JTTS) in Lampung Province. The research covers six regencies—South Lampung, Central Lampung, Mesuji, Pesawaran, Tulang Bawang, and West Tulang Bawang—over the period 2020–2024, producing a balanced panel dataset of 30 observations. Panel data regression is applied using the Random Effects Model (REM), selected through Chow, Hausman, and Lagrange Multiplier tests. The mediating role of PAD is analyzed using the Sobel test. The results indicate that transportation and warehousing have a positive and statistically significant effect on economic growth. Similarly, agriculture, forestry, and fisheries also show a positive and significant direct effect on economic growth. In contrast, tourism exhibits a negative and significant direct effect, suggesting limited multiplier effects during the observation period. PAD does not have a statistically significant direct effect on economic growth. In the PAD model, only agriculture, forestry, and fisheries demonstrate a positive and significant influence, while transportation and warehousing and tourism do not significantly affect regional revenue. Mediation analysis reveals that PAD significantly mediates the relationship between transportation and warehousing and economic growth, as well as between agriculture and economic growth. However, PAD does not mediate the effect of tourism on economic growth. Overall, the findings suggest that the economic impact of the Trans-Sumatra Toll Road in Lampung Province operates primarily through improvements in logistics efficiency and enhanced agricultural distribution networks, with selective fiscal transmission effects. These results highlight the importance of integrating infrastructure development with sectoral upgrading and effective fiscal management to ensure sustainable and inclusive regional economic growth.

Keywords: Economic Growth, Local Revenue, Transportation and Warehousing, Tourism, Agriculture, Forestry, and Fisheries.

PENDAHULUAN

Indonesia, as the largest archipelagic country in the world with more than 17,000 islands, faces significant challenges in building interregional connectivity to promote equitable development and economic growth. Transportation infrastructure, particularly toll roads, has become a strategic instrument in accelerating the mobility of goods, services, and people. In the 2020–2024 National Medium-Term Development Plan (RPJMN), the Government of Indonesia placed infrastructure development as a national priority to enhance competitiveness and improve national logistics efficiency (Coordinating Ministry for Economic Affairs, 2023). The development of the Trans Sumatra Toll Road (JTTS) is part of this strategy, aimed at connecting economic growth centers across Sumatra Island.

At the national level, infrastructure development contributes to improved connectivity and the reduction of logistics costs, which remain relatively high compared to other ASEAN countries. Indonesia's logistics costs are estimated at around 23–24 percent of GDP, higher than those of Singapore and Malaysia (Bappenas, 2023). Toll road infrastructure is believed to accelerate goods distribution, shorten travel time, and reduce transportation operational costs. Therefore, the JTTS has been designated as a National Strategic Project intended to enhance the efficiency of Sumatra's integrated logistics system.

Sumatra Island is the second-largest contributor to Indonesia's economy after Java. According to Statistics Indonesia (BPS, 2024), Sumatra's Gross Regional Domestic Product (GRDP) contributes approximately 21–23 percent of the national GDP in recent years. The island possesses abundant natural resources, including palm oil, rubber, coffee, coal, and natural gas. However, these economic potentials have not been fully optimized due to limitations in infrastructure and interregional connectivity.

Lampung Province, as the gateway to Sumatra Island, holds a strategic position within the national logistics system because it serves as the main link between Sumatra and Java through Bakauheni Port. Geographically, Lampung is located at the southern tip of Sumatra and covers an area of approximately 35,376 km² (BPS Lampung Province, 2025). Recent data indicate that Lampung's population in 2024 exceeded 9.2 million people, with a relatively stable growth rate. This demographic condition reflects a considerable market potential and labor force capable of supporting regional economic development.



Figure 1. Trans Sumatra Toll Road

The economic structure of Lampung Province is still dominated by the agriculture, forestry, and fisheries sectors, followed by manufacturing and wholesale-retail trade (BPS Lampung Province, 2025). The reliance on primary sectors highlights the urgent need for distribution infrastructure to expand market access and increase product value added. Without adequate connectivity, the distribution costs of agricultural commodities remain high, thereby reducing the competitiveness of local products.

Lampung's economic growth during the 2022–2024 period shows a post-pandemic recovery trend; however, it remains below the national average (BPS, 2024). Furthermore, several regencies and municipalities in Lampung recorded relatively low economic growth rates. This regional disparity indicates the necessity for infrastructure development interventions capable of creating new growth centers and generating spillover effects.

In this context, the development of the Trans Sumatra Toll Road within Lampung Province—particularly the Bakauheni–Terbanggi Besar and Terbanggi Besar–Pematang Panggang sections—plays a crucial role in strengthening regional connectivity. The toll road significantly reduces logistics travel time; for instance, the journey from Central Lampung to Bakauheni now takes approximately 2–3 hours compared to 4–5 hours via arterial roads (Ministry of Transportation, 2023). This time efficiency directly contributes to reductions in fuel costs, vehicle maintenance expenses, and other logistics-related costs.

Beyond logistics, toll road development also influences regional development, land value appreciation, industrial zone growth, and the expansion of MSMEs and the creative economy. According to the Regional Development Planning Agency (Bappeda) of Lampung Province (2024), industrial and tourism areas connected to the JTTS have demonstrated significant increases in economic activity. The toll road functions as a catalyst for regional growth by enhancing accessibility and attracting investment.

Nevertheless, the effectiveness of toll road infrastructure in stimulating regional economic growth requires comprehensive empirical analysis. Challenges such as toll tariffs, the readiness of supporting infrastructure, integration with ports and industrial zones, and land-use changes must be examined thoroughly. Therefore, research on the role and function of the Trans Sumatra Toll Road in supporting the regional economy of Lampung Province is essential to provide an objective assessment of its contribution to economic growth, logistics efficiency, and regional development. Ultimately, this study is expected to contribute academically and offer policy recommendations for optimizing the JTTS as a strategic infrastructure that supports a more inclusive and sustainable economic transformation in Lampung Province.

Based on the literature review, a significant research gap can be identified in the limited number of studies that integrate real-sector economic activities with regional fiscal capacity within a comprehensive causal framework. Previous studies have generally examined the effects of logistics costs, regional development, land-use change, and economic growth in a fragmented manner (Sharipbekova, 2018; Munim & Schramm, 2018; Iqbal & Muhammad, 2020), and have not explicitly positioned Local Own-Source Revenue (PAD) as the linking mechanism between toll road development and regional economic growth. This study contributes to the literature on fiscal decentralization and regional development by demonstrating that the effectiveness of the Trans-Sumatra Toll Road development is reflected not only in improved connectivity and logistics efficiency but also in the ability of local governments to capture economic benefits through increased PAD, which subsequently stimulates regional economic growth. Consequently, this study not only fills an empirical gap in the context of Lampung Province but also provides policy implications regarding the importance of aligning national infrastructure development with the strengthening of regional fiscal capacity to maximize multiplier effects and spread effects.

a.

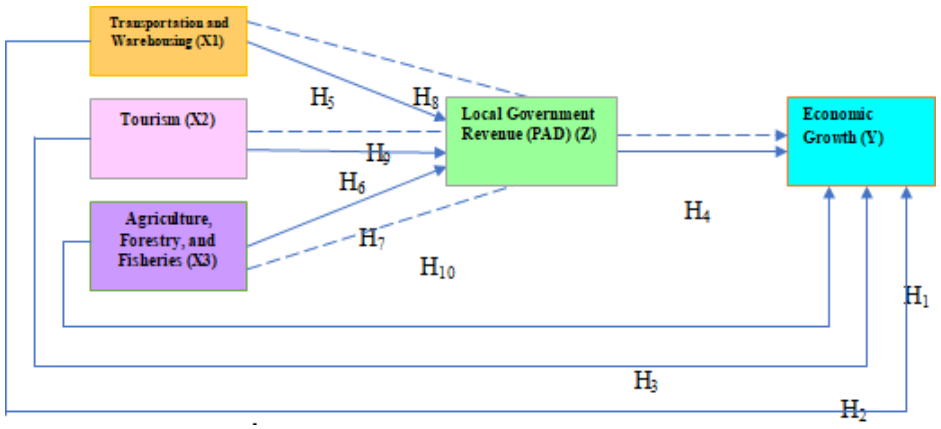

Figure 2. conceptual framework

Drawing upon infrastructure-led growth theory**,** New Economic Geography**,** and fiscal decentralization theory**,** this study develops a conceptual framework explaining that the presence of the Trans-Sumatra Toll Road enhances the performance of the transportation and warehousing, tourism, and agriculture, forestry, and fisheries sectors through improved accessibility and logistics efficiency. The increased activities in these sectors broaden the regional economic and fiscal base, as reflected in higher Local Own-Source Revenue (PAD). PAD subsequently serves as a mediating mechanism that transmits the impact of toll road development to regional economic growth. In addition to these indirect effects through PAD, certain sectors are also expected to exert direct effects on economic growth. This framework yields ten hypotheses encompassing the direct effects of sectoral performance on PAD and economic growth, the effect of PAD on economic growth, and the indirect effects of sectoral performance on economic growth through PAD, as supported by previous empirical studies (Sharipbekova, 2018; Munim & Schramm, 2018; Kandiyoh & Asad, 2021; Salim & Uly, 2022).

METHOD

This study utilizes district-level data as its population, focusing on sectors closely related to the Trans Sumatra Toll Road (JTTS) in Lampung Province, particularly the Bakauheni–Terbanggi Besar and Terbanggi Besar–Pematang Panggang sections. The data include variables on transportation and warehousing, tourism, agriculture, forestry and fisheries, economic growth, and Regional Original Income (PAD) derived from the financial reports of both regency governments and the Lampung Provincial Government. The sample is obtained through a documentation review method, drawing from official financial statements and toll traffic data provided by the Ministry of Transportation, the Ministry of Public Works and Housing (PUPR), and PT Hutama Karya. The research covers six regencies/cities traversed by the JTTS—South Lampung (Lamsel), Central Lampung (Lamteng), Mesuji, Pesawaran, Tulang Bawang, and West Tulang Bawang—over a five-year period from 2020 to 2024, resulting in 30 observations (6 regencies × 5 years).

This research adopts a quantitative approach aimed at examining the empirical relationship between key economic sectors and regional economic performance. Specifically, the study analyzes how transportation and warehousing, tourism, and agriculture, forestry and fisheries influence Regional Original Income and economic growth at the regency level in Lampung Province. The secondary data collected annually for each regency enable the identification of sectoral contributions and the extent to which the presence of the Trans Sumatra Toll Road supports regional economic dynamics.

To analyze the data, this study applies panel data regression using EViews version 13. Panel data techniques are selected because they integrate cross-sectional and time-series

dimensions, allowing for a more comprehensive evaluation of variations across regions and over time. The estimation process includes Pooled Ordinary Least Squares (Pooled OLS), Fixed Effects Model (FEM), and Random Effects Model (REM). Model selection is conducted through the Chow test, Hausman test, and Lagrange Multiplier test to identify the most suitable specification. This methodological framework enhances the robustness of the empirical findings by controlling for unobserved heterogeneity and minimizing potential estimation bias, thereby providing stronger evidence regarding the relationship between independent and dependent variables.

RESULT AND DISCUSSION

Result

Table 1. Descriptive Statistics of Variables (N = 30)

Variable	Mean	Std. Dev.	Min	Max
Economic Growth (Y, %)	3.34	2.27	-1.69	5.02
Local Own-Source Revenue / PAD (Z)	148.62	107.46	41.67	356.91
Transportation & Warehousing (X1)	873.67	571.75	183.00	2,124.42
Tourism (X2)	309.84	182.34	96.00	690.91
Agriculture, Forestry & Fisheries (X3)	7,129.06	2,564.18	3,692.00	11,215.69

The descriptive statistics show substantial variation across districts and time periods, particularly in the transportation and warehousing sector (X1) and agriculture, forestry, and fisheries (X3). Local Own-Source Revenue (PAD) also demonstrates considerable dispersion, indicating differences in fiscal capacity among regencies. Economic growth (Y) exhibits both positive and negative values, reflecting heterogeneous regional economic performance during the 2020–2024 observation period.

Table 2. Panel Data Model Selection Summary

Test	Decision Rule	Model 1 (Dependent: Z)	Model 2 (Dependent: Y)
Chow Test	Prob < 0.05 → FEM	Prob = 0.0000 → FEM	Prob = 0.0000 → FEM
Hausman Test	Prob < 0.05 → FEM	Prob = 0.6292 → REM	Prob = 0.4160 → REM
LM Test	Prob < 0.05 → REM	Prob (Both) = 0.0000 → Panel Model	Prob (Both) = 0.0000 → Panel Model
Final Model		**Random Effects Model (REM)**	**Random Effects Model (REM)**

The panel data selection process was conducted using the Chow test, Hausman test, and Lagrange Multiplier (LM) test. The Chow test results indicate that Fixed Effects are initially preferred in both models. However, the Hausman test shows probabilities greater than 0.05 for both Model 1 and Model 2, suggesting that the Random Effects Model (REM) is more appropriate. Furthermore, the LM test confirms the presence of panel effects in both models, indicating that panel estimation is superior to Pooled OLS. Therefore, the Random Effects Model is selected as the final estimation model for both Model 1 and Model 2.

Table 3. Panel Regression Results for Local Own-Source Revenue (Random Effects Model)

Dependent Variable: Local Own-Source Revenue (Z)

Variable	Coefficient	t-Statistic	p-value	Conclusion
Transportation & Warehousing (X1)	0.065767	1.1662	0.2541	Not Significant
Tourism (X2)	0.162764	0.6917	0.4952	Not Significant
Agriculture, Forestry & Fisheries (X3)	0.021313	2.2037	0.0366**	Significant
Constant	-111.2150	-2.0536	0.0502	Marginal

Model Statistics:

$R^2 = 0.7139$

Adjusted $R^2 = 0.6809$

F-statistic = 21.6358 (Prob = 0.0000)

Observations = 30

Model = Random Effects

The results indicate that only agriculture, forestry, and fisheries (X3) have a statistically significant positive effect on PAD at the 5% level. Transportation and tourism do not significantly influence PAD. The model explains approximately 71.4% of the variation in regional revenue.

Table 4. Panel Regression Results for Economic Growth (Random Effects Model)

Dependent Variable: Economic Growth (Y)

Variable	Coefficient	t-Statistic	p-value	Conclusion
Transportation & Warehousing (X1)	0.002344	3.2274	0.0035***	Significant
Tourism (X2)	-0.012379	-3.7997	0.0008***	Significant (Negative)
Agriculture, Forestry & Fisheries (X3)	0.000857	6.3738	0.0000***	Significant
Local Own-Source Revenue (Z)	0.002958	1.5573	0.1320	Not Significant
Constant	-1.416670	-1.2436	0.2252	Not Significant

Model Statistics:

$R^2 = 0.7576$

Adjusted $R^2 = 0.7189$

F-statistic = 19.5378 (Prob = 0.0000)

Observations = 30

Model = Random Effects

The findings reveal that transportation & warehousing (X1) and agriculture (X3) positively and significantly affect economic growth. Tourism (X2) has a significant but negative effect. Meanwhile, PAD (Z) does not significantly influence economic growth in this model. The model explains approximately 75.8% of the variation in economic growth.

Table 5. Sobel Test Results for the Mediating Effect of PAD

Mediation Path	a	b	Indirect Effect (a×b)	Sobel z-value	Conclusion
X1 → Z → Y	0.140	0.003	0.00042	5.366	Significant
X2 → Z → Y	-0.065	0.003	-0.00019	-0.706	Not Significant
X3 → Z → Y	0.017	0.003	0.00005	4.253	Significant

The Sobel test results indicate that PAD significantly mediates the relationship between transportation (X1) and economic growth, as well as between agriculture (X3) and economic growth. However, PAD does not significantly mediate the relationship between tourism (X2) and economic growth.

Overall, the findings suggest that infrastructure-related sectors and primary sectors play a critical role in regional economic performance in Lampung Province, while the mediating role of PAD is selective depending on the sector involved.

H1: Transportation and Warehousing → Economic Growth

The empirical results show that transportation and warehousing (X1) have a positive and statistically significant direct effect on economic growth in Lampung regencies ($p < 0.01$). The positive coefficient indicates that improvements in logistics infrastructure—particularly through the Trans-Sumatra Toll Road (JTTS)—enhance distribution efficiency, reduce transportation costs, and improve supply chain connectivity. These improvements stimulate production activities, strengthen interregional trade flows, and increase regional productivity, which ultimately drives economic growth. The findings suggest that infrastructure development plays a critical role in accelerating economic expansion at the regional level.

This result is consistent with infrastructure-led growth theory, which emphasizes the importance of logistics efficiency in promoting economic performance. Munim and Schramm (2018) demonstrate that improvements in logistics performance significantly increase GDP growth across countries. Similarly, Zhang and Chen (2024) and Sharipbekova and Raimbekov (2018) confirm that transportation infrastructure investment enhances regional competitiveness and stimulates sustainable economic development through improved market accessibility.

H2: Tourism → Economic Growth

The results indicate that tourism (X2) has a statistically significant but negative direct effect on economic growth ($p < 0.01$). Although tourism activities are present in the observed regencies, the negative coefficient suggests that tourism development has not yet generated strong multiplier effects on output growth. This may reflect structural constraints such as limited diversification, seasonal demand patterns, leakage effects, or weak integration between tourism and other productive sectors.

This finding aligns with studies indicating that tourism does not automatically translate into economic growth, particularly in developing regions with limited infrastructure readiness. Welteji and Zerihun (2018) find that tourism has a weak and sometimes unstable relationship with economic growth in emerging economies. Similarly, Hidayat et al. (2020) argue that without adequate infrastructure and institutional support, tourism expansion may not significantly contribute to long-term economic growth.

H3: Agriculture, Forestry, and Fisheries → Economic Growth

Agriculture, forestry, and fisheries (X3) are found to have a positive and statistically significant direct effect on economic growth ($p < 0.01$). As dominant sectors in Lampung's regional economic structure, increases in agricultural productivity directly contribute to aggregate output. The presence of toll road infrastructure likely enhances market access and

distribution efficiency for agricultural commodities, thereby strengthening the growth impact of the primary sector.

This result supports empirical findings that primary-sector performance remains crucial for growth in resource-based regions. Valentino and Juwita (2023) demonstrate that agricultural output significantly influences regional economic growth in Indonesian provinces. Ahmad (2022) also finds that improvements in agricultural productivity positively affect regional GDP, particularly when supported by infrastructure development and improved logistics systems.

H4: Local Own-Source Revenue (PAD) → Economic Growth

The analysis shows that Local Own-Source Revenue (PAD) does not have a statistically significant direct effect on economic growth ($p > 0.05$). Although PAD reflects fiscal capacity, its impact on economic growth may depend on how effectively regional governments allocate and utilize these funds. The insignificant result suggests that fiscal revenue alone does not automatically translate into productive expenditure capable of stimulating economic expansion.

This finding partially contrasts with fiscal decentralization theory. Iek (2013) argues that stronger regional fiscal capacity supports economic growth through public investment and service provision. However, Marpaung et al. (2021) note that PAD may not significantly affect growth if regional spending is dominated by routine expenditures rather than capital investment. Therefore, fiscal management quality becomes a critical determinant of growth outcomes.

H5: Transportation and Warehousing → PAD

Transportation and warehousing do not have a statistically significant direct effect on PAD ($p > 0.05$). Although toll road infrastructure improves logistics performance and business efficiency, these economic benefits are not immediately reflected in increased regional revenue. This suggests that the fiscal capture of logistics-generated economic activity remains limited at the local government level.

Dwitasari et al. (2020) highlight that infrastructure benefits are often absorbed by private firms rather than local tax systems. Xu (2020) also emphasizes that improvements in logistics efficiency do not automatically increase local fiscal revenue unless supported by effective taxation mechanisms. This indicates the need for stronger institutional arrangements to convert infrastructure-led growth into fiscal gains.

H6: Tourism → PAD

Tourism does not have a statistically significant direct effect on PAD ($p > 0.05$). Although tourism-related activities potentially generate taxes and levies, the findings suggest that their fiscal contribution remains limited during the observation period. This may be due to informal sector dominance, small-scale tourism enterprises, or limited tax compliance in tourism-related businesses.

While previous studies such as Liyushiana et al. (2022) and Basalamah and Mawardi (2022) find that tourism significantly increases PAD in several Indonesian regions, the current findings suggest that tourism in Lampung has not yet reached a scale sufficient to substantially strengthen fiscal capacity. Institutional and structural improvements may be required to maximize tourism's fiscal contribution.

H7: Agriculture, Forestry, and Fisheries → PAD

Agriculture, forestry, and fisheries have a positive and statistically significant effect on PAD ($p < 0.05$). Given the dominance of the primary sector in Lampung, increases in agricultural production contribute to regional revenue through land taxes, production-based taxes, and related economic transactions. This confirms that the agricultural sector plays an important role in strengthening local fiscal capacity.

This finding is consistent with Aneldus and Dewi (2019), who show that agricultural productivity contributes to regional revenue formation in agrarian provinces. Valentino and Juwita (2023) further emphasize that value-added development in agriculture enhances both economic growth and fiscal performance at the regional level.

H8: Transportation and Warehousing → Economic Growth through PAD

The Sobel test results indicate that PAD significantly mediates the relationship between transportation and warehousing and economic growth. This suggests that improvements in logistics infrastructure not only directly stimulate economic growth but also indirectly enhance growth through increased fiscal capacity. Although the direct effect of PAD on growth is not statistically significant, the mediation pathway indicates that infrastructure development contributes to fiscal strengthening, which supports regional economic activities.

This result aligns with Munim and Schramm (2018), who emphasize that logistics improvements can generate both direct productivity effects and indirect fiscal spillovers. Kandiyoh et al. (2021) also argue that infrastructure development strengthens regional growth when supported by improved fiscal performance and effective public spending.

H9: Tourism → Economic Growth through PAD

The Sobel test shows that PAD does not significantly mediate the relationship between tourism and economic growth. This indicates that tourism's indirect contribution to growth through fiscal channels remains weak. Limited fiscal capture from tourism activities reduces its potential to influence economic growth via government spending mechanisms.

Welteji and Zerihun (2018) note that tourism's growth effects often depend on strong institutional and fiscal linkages. Without sufficient tax revenue and reinvestment capacity, tourism expansion may not significantly enhance aggregate economic performance.

H10: Agriculture, Forestry, and Fisheries → Economic Growth through PAD

The Sobel test results confirm that PAD significantly mediates the relationship between agriculture and economic growth. This indicates that improvements in agricultural performance strengthen fiscal capacity, which in turn supports regional development and economic expansion. Thus, the agricultural sector contributes to growth both directly and indirectly through PAD.

Ahmad (2022) and Valentino and Juwita (2023) emphasize that agricultural modernization combined with infrastructure support enhances both regional output and fiscal sustainability. The findings suggest that strengthening value-added agricultural industries and improving tax collection mechanisms can maximize the economic benefits of the Trans-Sumatra Toll Road in Lampung Province.

Disscusion

The empirical findings provide important economic interpretations regarding the magnitude and direction of sectoral impacts on regional economic growth. The Random Effects estimation indicates that a one-unit increase in the transportation and warehousing sector (X1) increases economic growth by approximately 0.0023 units, ceteris paribus, highlighting the crucial role of logistics efficiency and connectivity improvements generated by the Trans-Sumatra Toll Road. Likewise, agriculture, forestry, and fisheries (X3) exhibit a positive and statistically significant effect on economic growth, suggesting that primary-sector productivity remains an important growth driver in Lampung Province. In contrast, tourism (X2) shows a negative and statistically significant coefficient, implying that expansion in tourism activities during the observation period has not translated into proportional aggregate growth. Furthermore, PAD does not exhibit a statistically significant direct effect on economic growth, indicating that fiscal capacity alone does not automatically stimulate output expansion without effective and productive expenditure allocation.

These results are broadly consistent with international evidence emphasizing the role of transportation infrastructure in stimulating economic growth through reduced logistics costs and improved market accessibility (Calderón & Servén, 2010; Munim & Schramm, 2018; Zhang & Chen, 2024). Similar findings suggest that logistics-intensive sectors tend to benefit more immediately from infrastructure expansion than tourism-based activities. The positive contribution of agriculture to growth also aligns with empirical studies in developing regions where primary-sector output remains a core contributor to regional GDP (Ahmad, 2022; Valentino & Juwita, 2023). Meanwhile, the insignificant direct role of PAD suggests that fiscal decentralization outcomes depend heavily on expenditure effectiveness rather than revenue magnitude alone, as noted by Marpaung et al. (2021).

The heterogeneous effects observed across sectors reflect the structural characteristics of regencies in Lampung Province. Transportation and warehousing benefit directly from toll road development due to their strong integration with interregional trade networks and supply chains, enabling immediate efficiency gains. Agriculture also gains from improved distribution access, which enhances market reach and reduces post-harvest logistical constraints. In contrast, tourism demonstrates weaker—and even negative—growth effects, potentially due to limited diversification, spatial concentration, and leakage effects that reduce its multiplier impact. Additionally, although agriculture contributes positively to PAD and economic growth, fiscal transmission mechanisms remain partially constrained, as PAD itself does not significantly influence growth.

Consistent with New Economic Geography theory, these findings imply that spatial connectivity improvements generated by the Trans-Sumatra Toll Road should be complemented by sectoral upgrading strategies to maximize agglomeration effects. Policy priorities should focus on strengthening logistics hubs, agro-processing industries, and integrated supply chains to amplify productivity spillovers. From a fiscal decentralization perspective, improving the efficiency and targeting of PAD allocation is crucial to ensure that regional revenues translate into productive public investment. Tourism policy should emphasize value-added development, destination clustering, and stronger linkages with local industries to reverse its negative growth contribution. Meanwhile, agriculture, forestry, and fisheries require modernization, downstream processing, and institutional strengthening to enhance both output growth and fiscal sustainability. Overall, a coordinated policy framework that integrates infrastructure development, sectoral upgrading, and fiscal effectiveness is essential to ensure that toll road investments generate inclusive and sustainable economic growth in Lampung Province.

CONCLUSION

This study provides updated empirical evidence on the economic impacts of the Trans-Sumatra Toll Road (JTTS) by analyzing the roles of transportation and warehousing, tourism, agriculture–forestry–fisheries, and Local Own-Source Revenue (PAD) in influencing regional economic growth in Lampung Province. The results indicate that transportation and warehousing have a positive and statistically significant direct effect on economic growth, confirming the critical importance of logistics efficiency and improved connectivity in infrastructure-led development. Agriculture, forestry, and fisheries are also found to significantly and positively affect economic growth, demonstrating that the primary sector remains a fundamental driver of regional output in Lampung. In contrast, tourism shows a significant but negative direct effect on economic growth, suggesting that tourism development during the observation period has not yet generated strong multiplier effects or sustainable output expansion.

Regarding fiscal capacity, PAD does not have a statistically significant direct effect on economic growth. This finding indicates that increased regional revenue alone does not automatically translate into higher economic performance, particularly if public spending is not

effectively allocated toward productive investment. However, agriculture, forestry, and fisheries significantly increase PAD, while transportation and warehousing as well as tourism do not show a significant direct contribution to local revenue. These results imply that the fiscal benefits of toll road development are uneven across sectors and depend heavily on the structure of regional economic activities.

The mediation analysis further reveals that PAD significantly mediates the relationship between transportation and warehousing and economic growth, as well as between agriculture and economic growth. This indicates that infrastructure improvements not only stimulate growth directly through productivity gains but also indirectly through enhanced fiscal capacity in certain sectors. Conversely, PAD does not mediate the effect of tourism on economic growth, reinforcing the conclusion that tourism's contribution to the regional economy remains structurally constrained.

Overall, the findings demonstrate that the effectiveness of toll road development in promoting regional economic growth is sector-specific and structurally contingent. The Trans-Sumatra Toll Road primarily strengthens economic growth through logistics efficiency and improved agricultural distribution networks, while tourism remains limited in its growth impact. To maximize long-term economic benefits, policymakers should prioritize strengthening logistics ecosystems, modernizing agriculture through value-added processing, and improving the effectiveness of fiscal management. An integrated approach that combines infrastructure development with sectoral upgrading and efficient fiscal allocation is essential to ensure inclusive, balanced, and sustainable regional growth in Lampung Province

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