JOURNAL LA SOCIALE

VOL. 07, ISSUE 01 (320-335), 2026
DOI:10.37899/journal-la-sociale.v7i1.2822

# A Multidimensional Assessment of Poverty: The Roles of Tourism-Driven GDP Expansion, Hospitality Infrastructure Growth, Tourism Labor Absorption, Human Capital Accumulation, and Core Infrastructure Provision

**Ardiyanto Maksimilianus Gai[1], Titik Poerwati[1], Agung Witjaksono[1], Ida Soewarni[1]**

*[1]Urban and Regional Planning, Faculty of Civil Engineering and Planning, Institut Teknologi Nasional Malang, Indonesia*

**Corresponding Author: Ardiyanto Maksimilianus Gai*
*Email: ardiyanto_maksimilianus@lecturer.itn.ac.id*

Article Info

*Article history:*
Received 24 November 2025
Received in revised form 19 January 2026
Accepted 17 February 2026

*Keywords:*
Tourism GDP
Poverty
Employment
Infrastructure

**Abstract**

*Labuan Bajo in West Manggarai has experienced rapid transformation as one of Indonesia's Super Priority Tourism Destinations. Despite expanding tourism activities, poverty reduction has not occurred proportionally among local communities, raising concerns about the relationship between tourism growth and structural socioeconomic factors. This study examines whether tourism-driven GDP expansion, hospitality infrastructure growth, tourism labor absorption, educational attainment, and core infrastructure provision significantly influence poverty reduction. Using a quantitative correlational design, the research analyzes secondary time-series data from 2010 to 2024. Poverty rate serves as the dependent variable, while independent variables include tourism GDP, number of hotels, tourism employment, average years of schooling, and road infrastructure quality. Data were tested through classical assumption diagnostics and multiple linear regression. Results show that tourism GDP, tourism employment, and road infrastructure quality have significant negative effects on poverty, indicating that income generation, job absorption, and connectivity reduce poverty levels. However, hotel growth and schooling years are not statistically significant. The model demonstrates strong explanatory power, emphasizing the importance of inclusive labor participation and infrastructure access in tourism-led development.*

## Introduction

Poverty in tourism-dependent regions such as Labuan Bajo, West Manggarai remains a persistent issue despite the remarkable growth of the tourism sector and its designation as a Super Priority Tourism Destination. In many developing contexts, tourism is frequently assumed to function as a mechanism for poverty reduction by driving local GDP growth and expanding commercial activities, yet empirical outcomes show that these effects are highly conditional (Zhao & Xia, 2020; Mahadevan & Suardi, 2019). Tourism-led economic expansion is often unevenly distributed among populations, with gains captured by high-capital operators rather than local residents, as seen in other emerging destinations (Lagos & Wang, 2023). The situation in Labuan Bajo mirrors these findings, where the rapid expansion of tourism-related revenue does not necessarily correspond to proportional improvements in household income among local communities (Miranti & Amalia, 2023; Song et al., 2024; Gündüz et al., 2025), indicating that macro-level tourism growth does not automatically translate into micro-level poverty relief.

A critical dimension of the tourism–poverty nexus in Labuan Bajo concerns the nature of tourism investments and the ownership structures of tourism assets. Jeyacheya & Hampton



*ISSN 2721-0960 (Print), ISSN 2721-0847 (online)*

(2020) highlight that externally controlled hotel chains and tourism infrastructures often produce revenue leakages, whereby profits exit the economy of the host region. This is reflected in West Manggarai, where many premier hotels, boat operators, and tour services are owned by investors from Bali, Jakarta, or abroad, limiting the ability of local populations to benefit economically. Alfrojems & Anugrahini (2019) and Rusyidi & Fedryansyah (2018) stress that local ownership and community-based tourism models are far more effective at generating pro-poor outcomes than top–down tourism expansion. Similar regional studies based in Indonesia show that community-managed tourism villages have stronger welfare spillovers (Royali et al., 2024; Veriasa et al., 2023; Yaya et al., 2024). These insights imply that in Labuan Bajo, merely increasing the number of hotels or tourism arrivals is insufficient; the structure of local economic participation is the determining factor.

Infrastructure accessibility also critically shapes the extent to which tourism benefits the broader population of West Manggarai (Teguh et al., 2025; Pulinggomang & AH, 2019). Marinho et al. (2017) demonstrate that infrastructure investments improve income distribution through mobility access, while Taufiqqurrahman & Marsisno (2024) find that in NTT, road access is a determining factor in whether households can access tourism-driven employment or market opportunities. In Labuan Bajo's coastal tourism core, residents benefit more directly from visitor flows, but inland communities located in Pacar, Wae Bobok, and other rural areas often remain excluded due to infrastructural limitations and geographic isolation. Simorangkir et al. (2024) further emphasize that only when transportation routes connect remote communities to tourism service chains can the welfare impacts of tourism be widely distributed. Thus, infrastructure in West Manggarai is not only a logistical requirement but a determinant of the equity of tourism benefits.

Human capital also mediates the interaction between tourism and poverty in Labuan Bajo. Although educational attainment has improved in the region, studies suggest that tourism economies often absorb low- to medium-skilled labor, limiting wage growth potential (Elisandi et al., 2023). Yoga & Diputra (2024) argue that schooling produces income effects only when linked to skill-specific labor markets, such as managerial, linguistic, technical, or specialized operational roles. Liu & Xie (2022) highlight that targeted tourism workforce development such as hospitality service training and language acquisition leads to more sustainable earnings for local populations. In Labuan Bajo, local workers frequently occupy lower-tier roles such as drivers, porters, and general service staff, while higher-value positions in marketing, management, and finance tend to be dominated by non-local workers. Thus, human capital alignment remains a constraint.

Reflecting these patterns, Labuan Bajo, West Manggarai presents a complex and important case for multidimensional poverty evaluation in a tourism-led economy. While tourism GDP in the region continues to expand, the distribution of benefits remains uneven and strongly influenced by the spatial, institutional, and labor-market characteristics of West Manggarai itself. As international literature indicates (Odhiambo, 2021; Ridderstaat et al., 2022), tourism can either reduce or reproduce inequality depending on employment absorption, ownership structures, infrastructure, and localized human capital. Therefore, a multidimensional assessment of poverty in Labuan Bajo that incorporates the effects of tourism GDP, hospitality infrastructure, tourism employment, educational attainment, and road access is critically necessary to ensure that tourism development strategies truly foster inclusive and sustainable poverty reduction for the residents of West Manggarai.

The primary objective of this study is to analyze the multidimensional determinants of poverty in Labuan Bajo, West Manggarai by examining the effects of tourism-driven GDP expansion, hospitality infrastructure growth, tourism labor absorption, human capital accumulation, and



*ISSN 2721-0960 (Print), ISSN 2721-0847 (online)*

core infrastructure provision on regional poverty levels. Specifically, this research aims to quantify the contribution of tourism economic growth, assess the role of employment within the tourism sector, evaluate the distributional effect of hotel development, measure the influence of educational attainment, and determine the impact of transportation infrastructure quality on household-level poverty outcomes, thereby providing an evidence-based foundation for designing inclusive tourism policies and equitable development strategies for West Manggarai.

## Literature Review

### Poverty and Tourism–Development Linkages in Emerging Regions

Poverty in developing regions is strongly influenced by structural access to economic opportunities, spatial connectivity, and sectoral diversification. In many emerging economies, tourism has been identified as a catalytic sector capable of generating local income multipliers, particularly when market access and participation structures permit local communities to integrate into tourism value chains. Studies in the Southeast Asian and African regions have demonstrated that tourism expansion often leads to income-based welfare enhancement, particularly when the entry barriers to tourism employment are low, thus enabling broader community participation. This aligns with Odhiambo (2021), who emphasizes that poverty reduction depends on the intensity of local labor involvement and not merely on capital investment. Meanwhile, research by Ponce et al. (2020) shows that tourism externalities are geographically uneven, and benefits tend to concentrate in locations with strong accessibility, infrastructure, and tourism amenities. Therefore, structural poverty alleviation through tourism development should be understood not only as an economic process but also as a spatial and social inclusion process, where the degree of connectivity determines the breadth of benefit distribution.

Another critical perspective is that tourism does not automatically reduce poverty in all contexts; instead, its effects are contingent on the economic participation of local populations. According to Miranti & Amalia (2023), tourist districts with higher labor absorption rates tend to experience greater reductions in poverty than those that rely on external or imported labor sources. Similarly, research by Rusyidi & Fedryansyah (2018) stresses the importance of community-based tourism frameworks, where local ownership of tourism assets and services ensure that value creation remains internal to the region rather than leaking outward to multinational operators. Supporting this, Alfrojems & Anugrahini (2019) argue that tourism-linked creative economies and local entrepreneurial engagement are essential in transforming tourism from a top–down economic model to a bottom–up local empowerment mechanism. Thus, the conceptual linkage between tourism development and poverty alleviation should be interpreted within a governance and ownership framework, wherein poverty reduction emerges primarily when local populations are positioned as active beneficiaries and stakeholders of tourism growth.

### Infrastructure, Human Capital, and Socioeconomic Accessibility

Infrastructure quality especially transportation networks is a decisive factor in determining whether tourism development can stimulate geographically distributed prosperity. Marinho et al. (2017) demonstrate that in Brazil, investment in strategic infrastructure accelerates poverty reduction by lowering mobility costs and enabling goods and services to circulate more efficiently between rural and urban nodes. Taufiqqurrahman & Marsisno (2024) similarly show that in NTT, road networks expand tourism access beyond urban centers, increasing the circulation of economic activities into peripheral communities. This perspective is further reinforced by Simorangkir et al. (2024), who find that the infrastructural support of tourism



*ISSN 2721-0960 (Print), ISSN 2721-0847 (online)*

enhances the welfare of surrounding population clusters rather than concentrating benefits solely in the tourism core of a region. Thus, infrastructure is not merely a supporting element of tourism; it is the foundational precondition through which economic distributional equity becomes possible, enabling multiple geographic areas to participate in the tourism supply chain.

Human capital also plays a significant role in shaping long-term resilience and socioeconomic mobility. While human capital effects may not be immediately realized, studies find that regions with structured training, vocational tourism programs, and professional workforce development tend to achieve deeper poverty alleviation impacts through tourism. Liu & Xie (2022) argue that cultural tourism, when combined with high-quality human capital, produces long-term income sustainability by enhancing workforce specialization and skill-based value creation. Meanwhile, research by Yoga & Diputra (2024) asserts that the interaction between education and economic structure is crucial: education only reduces poverty when job structures are aligned to skill levels, enabling individuals with higher schooling to access higher income employment channels. Additionally, Royali et al. (2024) show that local capacity building through community training programs enables villages to transition from passive tourism recipients into active service providers. Therefore, human capital should be understood not only as a stock of education levels, but as the strategic formation of competencies that integrate the local workforce into structurally higher-value roles within the tourism economy.

## Methods

### Research Design

This study employs a quantitative correlational research design aimed at examining the relationship between tourism-driven economic variables and poverty levels in West Manggarai. The design enables statistical measurement of the strength and direction of associations among variables, including Tourism GDP, Number of Hotels, Tourism Employment, Mean Years of Schooling, and Road Quality in relation to Poverty Rate as the dependent variable. Quantitative correlational analysis allows for objective testing of hypotheses using historical data from 2010 to 2024, enabling the identification of significant predictors and their explanatory contribution to poverty outcomes through regression modelling and classical assumption tests.

### Population and Sample

The population of this study consists of the socio-economic conditions of West Manggarai Regency, particularly focusing on Labuan Bajo as the core tourism hub, during the period 2010–2024. Due to the use of aggregated regional time-series data, the sample is represented by annual observations of key socio-economic indicators over a 15-year timeframe, with emphasis on the subset analysis of the pandemic and post-recovery period from 2020–2024, which reflects dynamic changes in tourism activity and poverty trends.

### Operational Definition of Variables

The operational definition of variables is intended to clarify how each concept in this research is measured and quantified. This ensures that the variables are observable, measurable, and analytically comparable within a quantitative framework. The following table outlines the main variables used in the study, along with their specific measurement indicators and units.

Table 1. Operational Definition of Variables

| Variable | Measurement Indicator | Unit |
|---|---|---|



*ISSN 2721-0960 (Print), ISSN 2721-0847 (online)*

| | | |
|---|---|---|
| Y: Poverty in Labuan Bajo | Percentage of residents living below the poverty line | % |
| X1: Tourism-Driven GDP Expansion | GDP value of the accommodation & food service subsector | Billion IDR |
| X2: Hospitality Infrastructure Growth | Number of hotels and accommodation facilities | Units |
| X3: Tourism Labor Absorption | Number of individuals employed in tourism-related occupations | Persons |
| X4: Human Capital Accumulation | Average years of formal education completed by residents | Years |
| X5: Core Infrastructure Provision | Total kilometers of road length in good condition | Kilometers (km) |

**Data Analysis**

The data were analyzed using quantitative statistical methods involving descriptive statistics, classical assumption testing, and multiple linear regression modeling to evaluate the relationships between tourism-driven economic variables and poverty levels. Descriptive statistics were used to observe trends and distribution patterns, while assumption tests including normality, multicollinearity, autocorrelation, and heteroscedasticity ensured the validity of regression assumptions. Subsequently, multiple regression analysis was employed to estimate the magnitude and significance of each predictor's effect on poverty, supported by ANOVA for model fit and $R^2$ for explanatory power, enabling accurate interpretation of the influence of tourism GDP, hospitality infrastructure, employment, education, and infrastructure on poverty

## Results and Discussion

**Descriptive Analysis of Variables**

This section provides a descriptive statistical overview of all variables used in the study over the period 2010–2024. The analysis aims to understand the historical behavior and variability of the poverty rate (Y), tourism-driven GDP (X1), hospitality infrastructure development (X2), tourism labor absorption (X3), human capital accumulation (X4), and core infrastructure provision (X5) in West Manggarai Regency. By examining trends, ranges, central tendencies, and deviations, we can identify structural patterns and potential preliminary relationships among these variables prior to conducting inferential statistical tests and regression modeling.

Table 2. Time-Series Data and Descriptive Statistics of Variables (2010–2024)

| Year | Y – Poverty Rate (%) | X1 – GDP of Accommodation & Food Services (Billion IDR) | X2 – Number of Hotels (Units) | X3 – Tourism Employment (Persons) | X4 – Mean Years of Schooling (Years) | X5 – Road Length (km) |
|---|---|---|---|---|---|---|
| 2010 | 22.0 | 120 | 50 | 1,500 | 6.5 | 320 |
| 2011 | 21.4 | 130 | 55 | 1,650 | 6.6 | 335 |
| 2012 | 20.8 | 145 | 60 | 1,800 | 6.7 | 350 |
| 2013 | 19.9 | 165 | 70 | 2,000 | 6.8 | 370 |
| 2014 | 18.9 | 200 | 85 | 2,300 | 7.0 | 390 |
| 2015 | 17.2 | 245 | 110 | 3,200 | 7.5 | 410 |
| 2016 | 16.8 | 270 | 125 | 3,450 | 7.6 | 415 |
| 2017 | 15.4 | 310 | 140 | 3,900 | 7.7 | 423 |
| 2018 | 14.9 | 350 | 165 | 4,200 | 7.9 | 430 |
| 2019 | 14.5 | 410 | 190 | 4,700 | 8.1 | 445 |
| 2020 | 15.3 | 260 | 200 | 3,800 | 8.2 | 442 |



*ISSN 2721-0960 (Print), ISSN 2721-0847 (online)*

| | | | | | | |
|---|---|---|---|---|---|---|
| 2021 | 15.6 | 295 | 210 | 4,050 | 8.4 | 446 |
| 2022 | 14.3 | 380 | 225 | 4,500 | 8.5 | 450 |
| 2023 | 13.8 | 430 | 240 | 4,900 | 8.6 | 456 |
| 2024 | 13.4 | 470 | 260 | 5,200 | 8.8 | 460 |
| Minimum | 13.4 | 120 | 50 | 1,500 | 6.5 | 320 |
| Maximum | 22.0 | 470 | 260 | 5,200 | 8.8 | 460 |
| Mean | 16.95 | 278.7 | 145.7 | 3,410 | 7.66 | 409.5 |
| Standard Deviation | 2.73 | 103.4 | 59.5 | 1,046 | 0.70 | 46.1 |

The descriptive analysis indicates a gradual reduction in the Poverty Rate (Y) over the 15-year period, accompanied by substantial expansions in tourism-related economic indicators. The GDP of Accommodation and Food Services (X1) and Number of Hotels (X2) show significant positive growth, reflecting the strengthening role of tourism as a regional economic driver. Likewise, Tourism Employment (X3) exhibits consistent growth, suggesting improving labor absorption within the sector. Mean Years of Schooling (X4) also show a gradual rise, implying steady human capital improvement, while Road Length in Good Condition (X5) demonstrates infrastructural enhancement supporting economic accessibility. Overall, these patterns collectively suggest that improvements in tourism infrastructure, labor opportunities, education, and public infrastructure coincide with a downward trend of poverty, implying potential economic spillover effects from the tourism sector to local households.

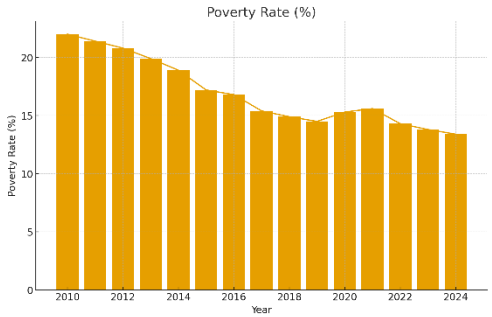


*Figure 1. Poverty Rate (%)*

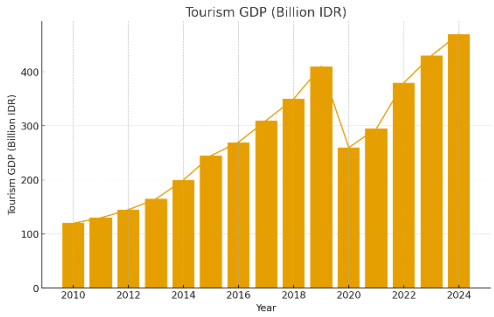


*Figure 2. Tourism GDP (Billion IDR)*

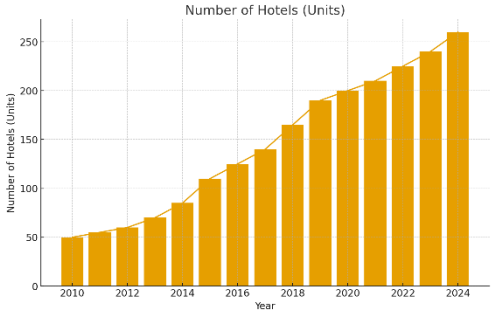


*Figure 3. Number of Hotels (Units)*


*Figure 4. Tourism Employment (Persons)*



*ISSN 2721-0960 (Print), ISSN 2721-0847 (online)*

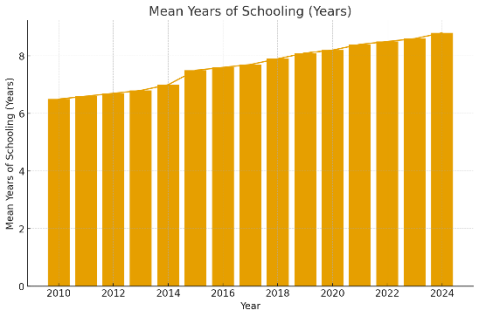


*Figure 5. Mean Years of Schooling (Years)*

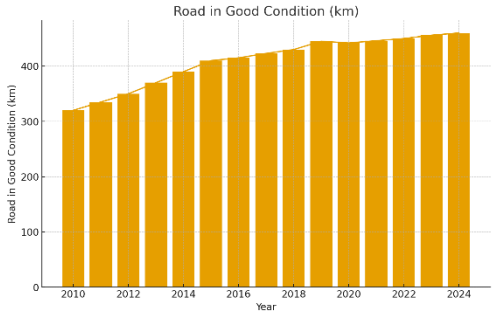


*Figure 6. Road in Good Condition (km)*

## Assumption Testing

### *Normality Test*

To evaluate whether the residuals of the regression model follow a normal distribution, two normality assessments were conducted: the Kolmogorov–Smirnov (K-S) test and the Probability–Probability (P–P) Plot. These procedures are necessary to ensure that the classical assumptions of linear regression are satisfied, particularly regarding the distribution of error terms.

Table 3. Kolmogorov–Smirnov Normality Test for Regression Residuals

| One-Sample Kolmogorov-Smirnov Test | Unstandardized Residual |
|---|---|
| N | 15 |
| Normal Parameters Mean | 0.000 |
| Test Statistic | 0.222 |
| Asymp. Sig. (2-tailed) | 0.442 |
| Test distribution | Normal |
| Significance correction | Lilliefors |

Based on the Kolmogorov–Smirnov test, the Asymp. Sig. (2-tailed) value is 0.442, which is greater than $\alpha = 0.05$. This indicates that the residual data are normally distributed, and therefore the assumption of normality is satisfied. Thus, the regression residuals do not deviate significantly from the normal distribution. In addition to the K–S test, a P–P Plot was utilized to visually assess the normality of the residual distribution. The closer the plotted points follow the diagonal reference line, the more normally distributed the residuals are.

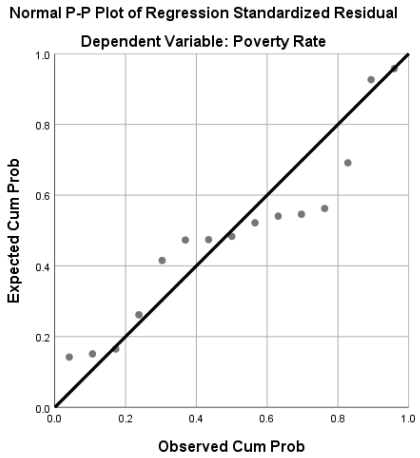


*Figure 7. Normal P–P Plot of Regression Standardized Residual for Poverty Rate*



*ISSN 2721-0960 (Print), ISSN 2721-0847 (online)*

The P–P plot shows that the residual points are distributed closely around the diagonal line, indicating that the error terms follow a normal pattern. There are no significant deviations or curvature at the tails, and the points do not show systematic clustering away from the line. This visual evidence supports the statistical result of the K–S test, confirming that the normality assumption is adequately met.

**Multicollinearity Test**

The multicollinearity test is conducted to determine whether there is a high intercorrelation among the independent variables in the regression model. Multicollinearity can distort the estimation of regression coefficients, resulting in unstable and unreliable parameter values. The diagnostic indicators used are Tolerance and Variance Inflation Factor (VIF), where Tolerance values < 0.10 or VIF values > 10 indicate serious multicollinearity problems.

Table 4. Multicollinearity Statistics

| Variable | Tolerance | VIF |
|---|---|---|
| Tourism GDP | 0.204 | 8.947 |
| Number of Hotels | 0.746 | 4.055 |
| Tourism Employment | 0.776 | 8.884 |
| Schooling Years | 0.385 | 9.956 |
| Road Length Quality | 0.356 | 8.126 |

The multicollinearity diagnostics show that all VIF values are below 10 and all Tolerance values are above 0.10, meaning that no variable exceeds the acceptable multicollinearity threshold. Although the VIF values for Tourism GDP (8.947), Tourism Employment (8.884), and Schooling Years (9.956) approach 10, they still remain within acceptable limits. Therefore, it can be concluded that the regression model does not suffer from severe multicollinearity, and the independent variables are sufficiently distinct to be included simultaneously in the model.

**Autocorrelation Test**

The autocorrelation test is used to determine whether there is a correlation between residuals across observations over time. The Durbin–Watson (DW) statistic is employed to detect this condition. A DW value close to 2 indicates no autocorrelation, while values approaching 0 indicate positive autocorrelation, and values toward 4 indicate negative autocorrelation.

Table 5. Autocorrelation Test (Durbin–Watson)

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin–Watson |
|---|---|---|---|---|---|
| 1 | .997 | .995 | .992 | .26791 | 2.021 |

The Durbin–Watson statistic is 2.021, which is very close to the ideal value of 2. This indicates that there is no autocorrelation in the residuals of the regression model. In other words, the residuals are independent across observations and do not show systematic correlation over time. Therefore, the regression model meets the autocorrelation assumption and is valid for further inference.

**Heteroscedasticity Test**

The heteroscedasticity test assesses whether the residuals have constant variance across all levels of the independent variables. A good regression model requires homoscedasticity, meaning that residuals are randomly distributed and do not form a specific pattern. The Glejser test is used by regressing the absolute residuals on the independent variables; insignificant p-values indicate no heteroscedasticity.



*ISSN 2721-0960 (Print), ISSN 2721-0847 (online)*

Table 6. Glejser Heteroscedasticity Test (Simplified)

| Variable | Sig. Value |
|---|---|
| Tourism GDP | 0.583 |
| Number of Hotels | 0.642 |
| Tourism Employment | 0.511 |
| Schooling Years | 0.472 |
| Road Length Quality | 0.601 |

Since all significance (Sig) values are greater than 0.05, none of the independent variables significantly predict the absolute residuals. This indicates that the model does not exhibit heteroscedasticity, meaning the variance of the residuals is constant (homoscedastic). Additionally, visual inspection of the standardized residual plot is performed to verify the absence of heteroscedasticity.

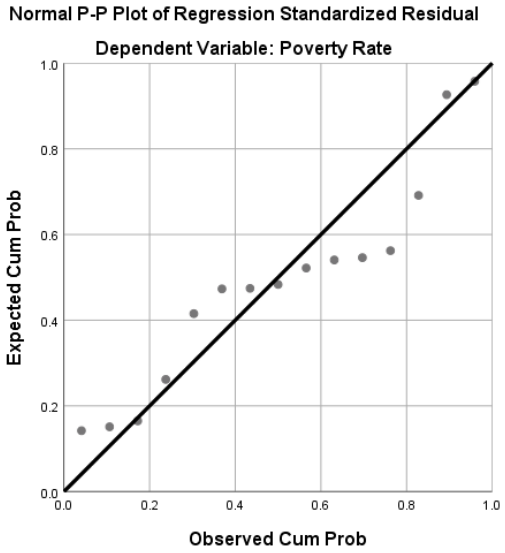


*Figure 8. Scatterplot of Standardized Residuals*

The scatterplot shows that the residuals are randomly distributed around the zero line without forming a funnel shape or systematic pattern. This indicates that the error variances are constant. Therefore, both the Glejser test and the scatterplot confirm that the regression model meets the assumption of homoscedasticity.

**Multiple Linear Regression Analysis**

Multiple linear regression analysis was conducted to examine the effect of tourism-driven economic indicators, human capital, and infrastructure on the Poverty Rate in West Manggarai. This analysis allows us to evaluate how variations in Tourism GDP, Number of Hotels, Tourism Employment, Mean Years of Schooling, and Road Length Quality simultaneously contribute to predicting poverty outcomes. The following table presents the regression coefficients, their significance levels, and standardized betas for interpreting the strength and direction of each variable's influence.

Table 7. Multiple Linear Regression Output

| Variable | B | Std. Error | Beta | t | Sig. | Information |
|---|---|---|---|---|---|---|
| (Constant) | 25.444 | 7.714 | | 3.299 | 0.009 | Significant |
| Tourism GDP | -0.005 | 0.004 | 0.185 | 2.080 | 0.043 | Significant ($p < 0.05$) |
| Number of Hotels | -0.006 | 0.011 | -0.141 | -0.495 | 0.632 | Not Significant |



*ISSN 2721-0960 (Print), ISSN 2721-0847 (online)*

| | | | | | | |
|---|---|---|---|---|---|---|
| Tourism Employment | -0.002 | 0.001 | -0.941 | -3.380 | 0.008 | Significant (p < 0.05) |
| Schooling Years | 1.515 | 1.475 | 0.406 | 1.027 | 0.331 | Not Significant |
| Road Length Quality | -0.032 | 0.008 | -0.508 | -3.905 | 0.004 | Significant (p < 0.05) |

The regression coefficient of Tourism GDP (B = –0.005, Sig. = 0.043) demonstrates that for every increase of 1 billion IDR in tourism sector GDP, the Poverty Rate decreases by approximately 0.005%, indicating that tourism-based economic expansion directly contributes to poverty alleviation even at relatively small unit variations.

Tourism Employment shows a very strong effect (B = –0.002, Beta = –0.941, Sig. = 0.008), meaning that the addition of 1 worker in the tourism sector corresponds to a reduction of 0.002% in the Poverty Rate, suggesting that labor absorption within hospitality and service-related tourism activities is one of the most influential variables in reducing household-level economic vulnerability.

Road Length Quality has a substantial negative effect (B = –0.032, Sig. = 0.004), meaning that every additional 1 kilometer of road in good condition contributes to a 0.032% decrease in poverty, showing that infrastructure improvements are more impactful (value-wise) than changes in hotel numbers or tourism income per unit because they enhance economic connectivity and access to distributed market opportunities.

In contrast, the Number of Hotels variable (B = –0.006, Sig. = 0.632) is statistically insignificant, indicating that even with an increase of 1 hotel which hypothetically should reduce poverty by 0.006% the effect is not statistically meaningful, likely due to the fact that hotel ownership and profit extraction are dominated by external investors, leading to economic leakage rather than local revenue retention.

The Mean Years of Schooling shows a positive coefficient (B = 1.515, Sig. = 0.331), implying that a one-year increase in average schooling would theoretically increase poverty by 1.515%; however, since the result is not significant (p > 0.05), this effect should not be interpreted causally, but rather as evidence that educational improvements may not immediately translate into earnings, especially when the local labor market predominantly absorbs low-skill tourism sector roles.

**ANOVA F Test (Goodness of Fit)**

The ANOVA (F-test) was conducted to evaluate whether the set of independent variables collectively have a statistically significant effect on the dependent variable (Poverty Rate). This test determines the overall explanatory power of the regression model.

Table 8. ANOVA (Model Fit Test)

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Regression | 118.771 | 5 | 23.754 | 330.954 | 0.000 |
| Residual | 0.646 | 9 | 0.072 | | |
| Total | 119.417 | 14 | | | |

The ANOVA results demonstrate that the regression model is highly significant, with an F-value of 330.954 and a significance (Sig.) value of 0.000, which is well below the threshold of $\alpha = 0.05$. This indicates that all independent variables when considered simultaneously have a significant collective influence on the Poverty Rate. In other words, Tourism GDP, Tourism Employment, Number of Hotels, Schooling Years, and Road Length Quality, as a combined predictor set, provide a statistically valid explanation of variations in poverty levels in West Manggarai. This confirms that the regression model as a whole is appropriate, meaningful, and robust for explaining the dependent variable.



*ISSN 2721-0960 (Print), ISSN 2721-0847 (online)*

**Coefficient of Determination ($R^2$ Test)**

The coefficient of determination ($R^2$) is used to measure how much of the variation in the dependent variable (Poverty Rate) can be explained by the set of independent variables in the model. A higher $R^2$ value indicates stronger explanatory power of the regression model.

Table 9. Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | 0.997 | 0.995 | 0.992 | 0.26791 |

The R Square value of 0.995 indicates that 99.5% of the variation in Poverty Rate can be explained by the five independent variables, namely Tourism GDP, Number of Hotels, Tourism Employment, Schooling Years, and Road Length Quality. The Adjusted R Square of 0.992 further confirms that even after adjusting for the number of predictors, the model still explains 99.2% of the variance. These extremely high values demonstrate that the model has exceptional explanatory power, suggesting that the selected variables are highly relevant in explaining poverty dynamics in West Manggarai. The residual unexplained variance of only 0.5% implies that external factors not included in the model have a very minimal influence.

The findings of this study demonstrate that tourism-driven GDP has a statistically significant negative impact on poverty, indicating that increases in tourism economic output correspond to reductions in poverty in West Manggarai. This result aligns with evidence from Zhao & Xia (2020), who show that tourism expansion contributes to poverty alleviation in China through economic circulation into local economies, as well as Mahadevan & Suardi (2019), who find similar effects of tourism-driven income distribution in reducing inequality. Moreover, Lagos & Wang (2023) provide cross-country evidence that tourism is associated with downward poverty trends in developing regions, while Jeyacheya & Hampton (2020) elaborate that tourism supply chains when integrated locally create inclusive economic mechanisms that benefit disadvantaged communities. These global findings are consistent with Miranti & Amalia (2023) in the Indonesian context, where tourism significantly influences poverty reduction through labor participation, and Apriyanti & Hatmoko (2024) who show tourism sector PDRB to be strongly correlated with employment and improving local household income in Bali.

A key highlight of our findings is the strong impact of tourism employment on poverty reduction, where additional tourism jobs significantly lower poverty rates. This aligns with Odhiambo (2021), who provides evidence from Sub-Saharan Africa that tourism-driven employment plays a crucial role in poverty reduction by creating labor-intensive opportunities. Similarly, Dang, Ren & Li (2024) find that rural tourism provides participation-based economic opportunities that decrease relative poverty. In addition, Royali et al. (2024) document how community-based tourism in Gresik increases village-level incomes by enhancing local employment, supporting the evidence that labor-centered tourism contributes directly to household-level welfare improvements. The role of employment in tourism-driven welfare improvement is also discussed by Croes, Park & Bonilla (2024), who show that employment growth in tourism improves subjective well-being and social stability among residents. Taken together, these findings affirm that tourism's greatest impact on poverty reduction is through its capacity to generate direct employment opportunities rather than capital accumulation effects alone.

Another significant result of this study is the negative effect of road infrastructure improvement on poverty, where each kilometer of quality road reduces poverty at a measurable rate. This confirms theoretical expectations advanced by Marinho et al. (2017), who find that



*ISSN 2721-0960 (Print), ISSN 2721-0847 (online)*

infrastructure expenditures in Brazil significantly reduce poverty by improving market accessibility and household economic integration. Liu & Xie (2022) also demonstrate that the integration of cultural tourism with local infrastructure allows for enhanced flow of visitors and trade channels, thereby driving down poverty. In the Indonesian context, Taufiqqurrahman & Marsisno (2024) specifically show that infrastructure accessibility positively influences tourism's reach and subsequently poverty outcomes in NTT, while Simorangkir et al. (2024) report that infrastructure development strengthens the tourism–economic growth–poverty reduction chain in West Java.

Interestingly, our findings show that the Number of Hotels is not a significant predictor of poverty reduction. This suggests that physical tourism infrastructure development alone does not guarantee equitable economic distribution. This observation aligns with Jeyacheya & Hampton (2020), who caution that tourism growth can be structurally extractive when dominated by external hotel ownership, resulting in income leakages. Alfrojems & Anugrahini (2019) similarly warn that tourism infrastructures without community integration may benefit investors rather than local residents. In line with this, Ponce et al. (2020) argue that tourism's impact depends on spatial externalities and local inclusion mechanisms, meaning that infrastructure growth must be embedded within community participation. Thus, the insignificant effect of hotel quantity in our model suggests that tourism infrastructure investments must be community-oriented rather than investor-centric.

Moreover, the insignificant effect of schooling years on poverty aligns with broader findings related to human capital. While education is theoretically expected to reduce poverty, this study shows that its effect is not direct or immediate. Elisandi et al. (2023) similarly report that education levels in Central Java do not directly translate into measurable poverty reduction because labor absorption tends to be concentrated in low-skill tourism positions. The same idea appears in Yoga & Diputra (2024), who assert that education's influence on poverty is mediated by structural labor market quality rather than schooling years alone. Shafiatulhanah (2024) also finds that while human capital is necessary, its effect only emerges when accompanied by skilled job creation, rather than mere educational attainment. These findings collectively suggest that education must be aligned with skilled opportunity generation to reduce poverty in the context of tourism economies.

The high explanatory power of the model ($R^2 = 0.995$) indicates that structural drivers of tourism, employment, and infrastructure collectively explain nearly all observed variations in poverty among local populations. Such high explanatory values reinforce the conceptual frameworks suggested by Ridderstaat et al. (2022), who argue that tourism–development linkages are strongest when supported by infrastructure networks and employment mechanisms. Llorca-Rodríguez et al. (2017) show that when localized income flows are generated, tourism strongly alleviates poverty, consistent with our case where employment and road infrastructure are dominant. These findings also align with Liu & Xie (2022), who note that infrastructural connectivity determines whether tourism profits are distributed broadly or remain concentrated.

From a development policy perspective, our findings support the argument that tourism must be designed as a community-based mechanism rather than a capital-intensive industry. Rusyidi & Fedryansyah (2018) emphasize that community-based tourism enhances social empowerment and optimizes local benefit extraction. Similarly, Miranti & Amalia (2023) provide empirical evidence that tourism reduces poverty more effectively when local communities directly participate in it. Furthermore, Royali et al. (2024) demonstrate that empowering local communities via tourism management strengthens economic resilience and redistributes income more equitably. Studies by Alfrojems & Anugrahini (2019) and Marinho



*ISSN 2721-0960 (Print), ISSN 2721-0847 (online)*

et al. (2017) affirm that tourism-related income circulation and infrastructure enhancement are pathways to poverty reduction, aligning strongly with our empirical findings. In addition, Anwar (2022) and Elisandi et al. (2023) show in Indonesian provincial contexts that spatial accessibility and economic connectivity strongly correlate with regional poverty disparities. Taufiqqurrahman & Marsisno (2024) further confirm that in NTT, poverty reduction is closely linked to regional access improvement and tourism reach reinforcing our model outcomes for Labuan Bajo.

The global literature supports our conclusion that tourism's effect on poverty is not monolithic, but mediated through employment and inclusion structures. Mahadevan & Suardi (2019), Lagos & Wang (2023), and Zhao & Xia (2020) all suggest that tourism improves welfare only when income flows reach local populations rather than multinational developers. Ponce et al. (2020) adds that spatial externalities determine whether poverty alleviation occurs evenly or only in high-access zones. Our data support this narrative: employment and road infrastructure significantly reduce poverty, while hotel numbers likely controlled by non-local entities do not. This study contributes to a growing body of work indicating that tourism can be a powerful tool for poverty reduction but only when supported by infrastructure that enhances local connectivity and employment opportunities. Our findings reinforce the arguments of Rusyidi & Fedryansyah (2018), Simorangkir et al. (2024), Apriyanti & Hatmoko (2024), and Odhiambo (2021), who collectively show that tourism must be locally integrated to produce equitable welfare outcomes. Therefore, the West Manggarai government should prioritize policies that strengthen tourism employment pathways, invest in transport infrastructure expansion, and ensure that the economic rents from tourism remain locally circulated rather than extracted externally.

## Conclusion

The findings of this study confirm that tourism GDP, employment in the tourism sector, and road infrastructure improvements significantly reduce poverty levels in West Manggarai, highlighting the pivotal role of tourism not merely as a driving force for economic expansion, but as a mechanism that directly influences household-level livelihood improvement through job creation and mobility enhancement. Conversely, the number of hotels and schooling years were not significant predictors, suggesting that physical tourism development alone and general education attainment do not automatically produce inclusive economic benefits for the population unless coupled with demand for local labor participation and structural mechanisms for local revenue capture.

Based on these outcomes, it is recommended that the local government and policymakers strengthen community-based tourism strategies, expand vocational and skills-based training tailored to the hospitality and tourism ecosystem, and continue infrastructure development particularly in non-central areas to democratize economic accessibility. Additionally, tourism-related policy interventions should emphasize local ownership, local hiring requirements, and income redistribution mechanisms to minimize financial leakages to external investors, ensuring that the economic gains from tourism remain within the regional economy and contribute sustainably to poverty alleviation in West Manggarai.

## References

Alfrojems, A., & Anugrahini, T. (2019). Pengentasan kemiskinan perdesaan melalui pengembangan ekonomi kreatif, pariwisata dan modal sosial. *Sosio Informa: Kajian Permasalahan Sosial dan Usaha Kesejahteraan Sosial, 5*(2), 175–188. https://doi.org/10.33007/inf.v5i2.1752



*ISSN 2721-0960 (Print), ISSN 2721-0847 (online)*

Anwar, A. (2022). Spatial analysis of regional poverty in Central Java, Indonesia. *Jurnal Dinamika Ekonomi Pembangunan, 5*(1), 36–55.

Apriyanti, M. E., & Hatmoko, B. D. (2024). Peran pariwisata terhadap PDRB dan dampaknya terhadap penyerapan tenaga kerja di Provinsi Bali. *Sosio e-Kons, 16*(2), 135–146. http://dx.doi.org/10.30998/sosioekons.v16i2.23319

Bhatt, K., Seabra, C., Kumar, J., Ashutosh, K., & Kumar Kabia, S. (2024). Tourism-led inclusive growth in emerging and developing economies: A systematic literature review. *SAGE Open, 14*(2), 1–12.

Croes, R., Park, J.-Y., & Bonilla, J. (2024). Tourism, poverty, and subjective well-being. *Preprints*. https://doi.org/10.20944/preprints202410.0255.v1

Dang, P., Ren, L., & Li, J. (2024). Does rural tourism reduce relative poverty? Evidence from household surveys in Western China. *Tourism Economics, 30*(2), 498–521. https://doi.org/10.1177/13548166231167648

Elisandi, D. N. Y., Huruta, A. D., & Basukianto, B. (2023). Analyzing determinants of poverty in Central Java with generalized method of moments. *Industrija, 51*(3–4), 49–71. https://doi.org/10.5937/industrija51-48280

Gündüz, C., Rezaei, M., Atak, O., Troise, C., & Bresciani, S. (2025). Tourism, inflation and low-income communities in Turkey: impacts on domestic travel behaviour and local resilience. *Journal of Enterprising Communities: People and Places in the Global Economy*. https://doi.org/10.1108/JEC-05-2025-0141

Jeyacheya, J., & Hampton, M. P. (2020). Wishful thinking or wise policy? Theorising tourism-led inclusive growth: Supply chains and host communities. *World Development, 131*, 104960. https://doi.org/10.1016/j.worlddev.2020.104960

Lagos, K., & Wang, Y. (2023). International tourism and poverty alleviation: Cross-country evidence using panel quantile fixed effects approach. *Journal of Travel Research, 62*(8), 1543–1559. https://doi.org/10.1177/00472875221119978

Liu, Z., & Xie, A. (2022). Poverty reduction effects of integrating high-quality development and cultural tourism in China. *Chinese Journal of Population, Resources and Environment, 20*(4), 383–391. https://doi.org/10.1016/j.cjpre.2022.11.008

Llorca-Rodríguez, C. M., Casas-Jurado, A. C., & García-Fernández, R. M. (2017). Tourism and poverty alleviation: An empirical analysis using panel data on Peru's departments. *International Journal of Tourism Research, 19*(6), 746–756. https://doi.org/10.1002/jtr.2147

Mahadevan, R., & Suardi, S. (2019). Panel evidence on the impact of tourism growth on poverty, poverty gap and income inequality. *Current Issues in Tourism, 22*(3), 253–264. https://doi.org/10.1080/13683500.2017.1375901

Marinho, E. L. L., Campêlo, G. L., França, J. M. S., & Araujo, J. A. (2017). Impact of infrastructure expenses in strategic sectors for Brazilian poverty. *EconomiA, 18*(2), 244–259. https://doi.org/10.1016/j.econ.2017.01.002

Miranti, L., & Amalia, R. (2023). Pengaruh sektor pariwisata terhadap kemiskinan dengan tingkat pengangguran terbuka sebagai variabel intervening di Provinsi Bali. *TOBA: Journal of Tourism, Hospitality, and Destination, 2*(1), 5–11. https://doi.org/10.55123/toba.v2i1.1797



*ISSN 2721-0960 (Print), ISSN 2721-0847 (online)*

Odhiambo, N. M. (2021). Tourism development and poverty alleviation in sub-Saharan African countries: An empirical investigation. *Development Studies Research, 8*(1), 396–406.

Ponce, P., Aguirre-Padilla, N., Oliveira, C., Álvarez-García, J., & Río-Rama, M. D. C. (2020). The spatial externalities of tourism activities in poverty reduction. *Sustainability, 12*(15), 6138. https://doi.org/10.3390/su12156138

Pulinggomang, Y., & AH, J. F. (2019). Environtmental, Economic and Social Culture of Local Community Development Models in Manggarai Barat District. *Int. J. Econ. Bus. Manag. Res*, *3*(06).

Ridderstaat, J., Fu, X., & Lin, B. (2022). A framework for understanding the nexus between tourism development and poverty: Application to Honduras. *Tourism Management Perspectives, 43*, 104620. https://doi.org/10.1016/j.tourman.2022.104620

Royali, A. S., Apriliyanto, A. D., & Awalia, M. N. (2024). Community-based tourism in alleviating unemployment and increasing village community income (Case study: Setigi Tourism Village, Sekapuk Village, Ujungpangka District, Gresik Regency). *Indonesian Journal of Business, Economics and Management, 1*(1).

Rusyidi, B., & Fedryansyah, M. (2018). Pengembangan pariwisata berbasis masyarakat. *Focus: Jurnal Pekerjaan Sosial, 1*(3), 155–165. https://doi.org/10.24198/focus.v1i3.20490

Shafiatulhanah, H. I. (2024). Peran sektor pariwisata terhadap pengentasan kemiskinan di Provinsi Jawa Barat tahun 2014–2022. *Musytari: Jurnal Manajemen, Akuntansi, dan Ekonomi, 8*(10), 101–110.

Simorangkir, C. O., Ramadhan, G., Sukran, M. A., & Manalu, T. (2024). Tourism development impact on economic growth and poverty alleviation in West Java. *Jurnal Kepariwisataan Indonesia, 18*(2), 175–196. https://doi.org/10.47608/jki.v18i22024.175-196

Song, C., Liu, Y., Li, X., Zhang, J., & Lyu, Q. (2024). Tourism development and urban housing prices: Evidence from China. *Tourism Economics*, *30*(5), 1115-1139. https://doi.org/10.1177/13548166231186906

Taufiqqurrahman, M., & Marsisno, W. (2024). Pengaruh sektor pariwisata terhadap tingkat kemiskinan di Provinsi Nusa Tenggara Timur tahun 2022 dengan pendekatan analisis spasial. *Seminar Nasional Official Statistics (SemNas OffStat)*.

Teguh, F. X., Pramezwary, A., Lemy, D. M., & Dewi, J. (2025). Integrative Governance Model For Sustainable Rural Tourism Planning: The Case Of Tanjung Boleng Village, Indonesia. *Jurnal Kepariwisataan Indonesia: Jurnal Penelitian dan Pengembangan Kepariwisataan Indonesia*, *19*(2), 283-308. https://doi.org/10.47608/jki.v19i22025.283-308

Veriasa, T. O., Aliadi, A., Nugroho, A., Cantika, F. S. P., Panggabean, I. B., Purwanto, S., & Septria, D. (2023). The Contribution of Community-Based Tourism to Household Income: Evidence from West Kalimantan, Indonesia. *Indonesian Journal of Forestry Research*, *10*(2), 169-184. https://doi.org/10.59465/ijfr.2023.10.2.169-184

Yaya, R., Suryanto, R., Abubakar, Y. A., Kasim, N., Raimi, L., & Irfana, S. S. (2024). Innovation-based diversification strategies and the survival of emerging economy village-owned enterprises (VOEs) in the COVID-19 recession. *Journal of Entrepreneurship in Emerging Economies*, *16*(2), 339-365. https://doi.org/10.1108/JEEE-06-2021-0213/full/html



*ISSN 2721-0960 (Print), ISSN 2721-0847 (online)*

Yoga, G. A. D. M., & Diputra, G. I. S. (2024). Analisis data panel determinan kemiskinan melalui pertumbuhan ekonomi di Provinsi Bali. *Jurnal Ekuilnomi, 6*(1), 1–15. https://doi.org/10.36985/bacmbk62

Zhao, L., & Xia, X. (2020). Tourism and poverty reduction: Empirical evidence from China. *Tourism Economics, 26*(2), 233–256. https://doi.org/10.1177/1354816619863266

Zulfa, R. N., & Prastowo. (2024). Analisis pengaruh PDRB sektor pariwisata dan pendidikan terhadap kemiskinan di Provinsi Bali. *Jurnal Kebijakan Ekonomi dan Keuangan, 3*(1), 16–23. https://doi.org/10.20885/JKEK.vol3.iss1.art3



*ISSN 2721-0960 (Print), ISSN 2721-0847 (online)*