Sustainable Development Insights
Vol. 01, No. 04, November 2025, pp. 129-137

The Impact of Eco-Tourism Development and Community Empowerment on the Sustainability of Tourism Villages in Indonesia

Dony Andrasmoro[1], Ilham Akbar Bunyamin[2], Salwa Aulia Novitasari[3]
[1] Universitas PGRI Pontianak
[2,3] Universitas Nusa Putra

Article Info

Article history:

Received Nov, 2025
Revised Nov, 2025
Accepted Nov, 2025

Keywords:

Ecotourism Development
Community Empowerment
Tourism Village Sustainability
Rural Tourism
Sustainable Development

ABSTRACT

This study investigates the impact of ecotourism development and community empowerment on the sustainability of tourism villages in Indonesia. Employing a quantitative approach, data were collected from 125 respondents involved in tourism village activities using a structured questionnaire with a five-point Likert scale. Data analysis was performed using SPSS version 25, including descriptive statistics, validity and reliability tests, classical assumption tests, and multiple linear regression analysis. The results indicate that both ecotourism development ($\beta = 0.421$, $p < 0.001$) and community empowerment ($\beta = 0.438$, $p < 0.001$) have significant positive effects on tourism village sustainability. Collectively, these variables explain 55.1% of the variance in sustainability, demonstrating a strong combined influence. The findings highlight that sustainable tourism villages require the integration of environmentally and culturally conscious tourism practices with active community participation and empowerment. This study provides valuable insights for policymakers, village managers, and stakeholders in designing strategies that promote sustainable rural tourism in Indonesia.

Corresponding Author:

Name: Dony Andrasmoro
Institution: Universitas PGRI Pontianak
Email: donny.andrasmara@gmail.com

1. INTRODUCTION

Tourism villages have become one of Indonesia's strategic approaches to fostering sustainable rural development, preserving cultural heritage, and promoting community-based tourism. As the tourism sector diversifies beyond mainstream destinations, ecotourism has gained prominence for its focus on environmental conservation, community participation, and socio-economic empowerment [1]–[3]. Through ecotourism, tourism villages are expected to generate alternative livelihood opportunities while ensuring that natural and cultural resources are responsibly managed for long-term sustainability.

Efforts by the Indonesian government and local stakeholders to strengthen tourism villages have increasingly emphasized the incorporation of ecotourism principles. Conservation-oriented planning, environmentally friendly practices, and visitor education contribute significantly to enhancing the sustainability and

competitiveness of these destinations [4], [5]. However, the successful implementation of ecotourism still depends on meaningful community empowerment. Local residents, as custodians and beneficiaries of tourism resources, play a central role through decision-making involvement, capacity building, economic participation, and strengthening social capital.

Tourism village sustainability rests on three interrelated dimensions: environmental protection, socio-cultural preservation, and economic viability. Achieving these outcomes requires synergy between ecotourism development and community empowerment [4], [6]. When communities are actively engaged and empowered, they tend to support conservation initiatives, improve service quality, and preserve cultural identity—factors that reinforce sustainable tourism. Conversely, limited participation can hinder ecotourism initiatives and undermine long-term sustainability goals.

Despite its strategic relevance, empirical research exploring the combined effects of ecotourism development and community empowerment on tourism village sustainability in Indonesia remains scarce. This study addresses that gap by examining how both variables influence sustainability outcomes using a quantitative approach with 125 respondents analyzed through SPSS version 25. The findings are expected to enrich existing literature and offer practical guidance for policymakers, tourism managers, and local communities in designing effective ecotourism and empowerment strategies. Ultimately, the study underscores the importance of community-driven ecotourism as a foundation for achieving sustainable tourism villages that can benefit present and future generations.

2. LITERATURE REVIEW

2.1 Ecotourism Development

Ecotourism is widely defined as a responsible form of travel to natural areas that conserves the environment, sustains the well-being of local people, and involves interpretation and education, with The International Ecotourism Society (TIES) emphasizing its low-impact activities that contribute to both conservation and community development [7], [8]. Within tourism villages, ecotourism development encompasses the creation of environmentally friendly tourism products, the application of conservation-based management practices, and the integration of local culture into tourism experiences. Previous studies show that ecotourism strengthens environmental sustainability by promoting biodiversity protection, reducing pollution, and encouraging the sustainable use of natural resources, while economically it provides new livelihood opportunities through homestays, guiding services, handicrafts, and various ecotourism activities. Culturally, ecotourism plays a crucial role in preserving traditional practices, rituals, and local wisdom that define the identity of tourism villages, thereby contributing to sustainable rural tourism and enhancing long-term destination competitiveness.

2.2 Community Empowerment

Community empowerment refers to enhancing the skills, knowledge, autonomy, and participation of local communities in development processes, which in the context of tourism villages includes involvement in planning and decision-making, access to training and resources, capacity building, and opportunities for economic participation. Empowered communities are

more capable of managing tourism resources effectively, preserving cultural and environmental integrity, and taking ownership of tourism initiatives [9], [10]. Research shows that empowerment significantly contributes to sustainable tourism development, as empowered residents develop a stronger sense of responsibility and commitment to tourism management, leading to improved service quality, better resource utilization, and stronger community cohesion. Moreover, empowerment enhances social capital by fostering trust, collaboration, and collective action among community members, making it a key determinant of successful community-based tourism, especially in rural areas.

2.3 Sustainability of Tourism Villages

Sustainability in tourism villages is generally assessed through three main pillars—environmental, socio-cultural, and economic sustainability—where the environmental dimension emphasizes the preservation of natural resources such as forests, rivers, wildlife, and landscapes; the socio-cultural dimension focuses on maintaining cultural heritage, traditional practices, local identity, and social cohesion; and the economic dimension relates to long-term income generation, employment opportunities, and fair distribution of economic benefits for community members [11], [12]. A sustainable tourism village strives to balance tourism activities with the capacity of local resources and the well-being of residents, requiring active participation from stakeholders and the community to prevent environmental degradation, cultural disruption, and economic inequality. Research consistently shows that tourism villages with strong sustainability practices tend to achieve higher levels of community welfare, destination attractiveness, and visitor satisfaction.

3. METHODS

This study employed a quantitative research design to analyze the influence of ecotourism development and community empowerment on the sustainability of tourism villages in Indonesia. A quantitative approach was selected because it enables systematic measurement of variables, statistical testing of relationships, and generalization of findings. Data were collected using a cross-sectional survey administered at a single point in time to community members residing in designated tourism villages. Using purposive sampling, 125 respondents were selected based on specific criteria: being 18 years or older, actively participating in tourism village operations, and having familiarity with ecotourism activities. A sample size of 125 is considered adequate for regression analysis with two independent variables, satisfying minimum requirements for robust quantitative research. Data collection was conducted using a structured questionnaire, distributed both physically and online, employing a five-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). The instrument measured three constructs—ecotourism development, community empowerment, and tourism village sustainability—through indicators related to environmental conservation, eco-friendly practices, decision-making involvement, capacity building, cultural preservation, and economic viability.

Before analysis, the questionnaire underwent validity and reliability testing using SPSS version 25. Validity was assessed through Pearson correlation, requiring each item to exceed the r-table threshold of 0.176 (N = 125, α = 0.05), with items below the cutoff removed from the instrument. Reliability testing using Cronbach's Alpha confirmed that all variables met the minimum coefficient requirement of 0.70, indicating consistent measurement of each construct. Ecotourism Development (X1) captured environmentally responsible tourism activities and cultural preservation efforts; Community Empowerment (X2) assessed autonomy, skills, participation, and access to resources; while Tourism Village Sustainability (Y) measured long-term environmental, socio-cultural, and economic resilience. These variables were operationalized using multiple Likert-scale indicators adapted from previously validated instruments in related studies.

Data analysis was conducted using SPSS version 25 through a series of statistical procedures. Descriptive statistics were used to summarize respondent demographics and variable tendencies, followed by validity and reliability testing to assess instrument accuracy. Classical assumption tests were conducted, including the Kolmogorov–Smirnov normality test, multicollinearity testing using tolerance and VIF values, and heteroscedasticity testing via scatterplot analysis. The primary analytical technique was multiple linear regression to assess the effects of ecotourism development (X1) and community empowerment (X2) on tourism village sustainability (Y). The regression model used was: $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + e$, where Y represents tourism village sustainability, X_1 ecotourism development, X_2 community empowerment, β_0 the constant, β_1 and β_2 the regression coefficients, and e the error term.

4. RESULTS AND DISCUSSION

4.1 Descriptive Statistics

Descriptive statistics were conducted to provide an overview of respondents' characteristics and the general tendencies of the research variables—Ecotourism Development (X1), Community Empowerment (X2), and Tourism Village Sustainability (Y)—using SPSS version 25. A total of 125 respondents participated in the study, consisting of both male (58%) and female (42%) individuals actively engaged in tourism village activities. Most respondents were aged 25–45 years (65%), representing a productive demographic with direct involvement in tourism operations. In terms of education, 67% had at least a senior high school background, while others held diplomas or bachelor's degrees. Their occupations varied, including tourism operators, homestay managers, craft producers, tour guides, and village committee members, indicating that the sample had adequate knowledge and practical experience related to tourism village management. These descriptive findings confirm that the respondents were well-positioned to provide informed assessments of ecotourism development, empowerment activities, and sustainability practices in their respective villages.

The descriptive statistics for each variable, measured on a five-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree), show consistently high levels of agreement among respondents. Ecotourism Development (X1) recorded a mean score of 4.12, reflecting strong implementation of conservation practices, eco-friendly tourism services, cultural preservation, and active community involvement. Community Empowerment (X2) achieved a mean score of 4.18, indicating substantial participation in decision-making, access to training, capacity building initiatives, and autonomy in managing tourism-related activities. Tourism Village Sustainability (Y) obtained the highest mean score of 4.20, suggesting that respondents perceived their villages to be operating sustainably across environmental, socio-cultural, and economic dimensions; this included high ratings for natural resource preservation, cultural protection, visitor satisfaction, and income generation. These results collectively demonstrate that the tourism villages sampled in this study exhibit

strong alignment with sustainable rural tourism principles.

4.2 Validity and Reliability Analysis

To ensure the accuracy and consistency of the measurement instrument, the study conducted validity and reliability analyses for all variables using SPSS version 25. Validity testing was carried out using the Pearson Product–Moment Correlation, where each item was correlated with the total score of its corresponding variable. An item is deemed valid if its correlation coefficient exceeds the critical r-value of 0.176 at the 0.05 significance level (N = 125). The results show that all items for Ecotourism Development (X1), Community Empowerment (X2), and Tourism Village Sustainability (Y) met this criterion, with r-values ranging from 0.462 to 0.772. These findings indicate that every questionnaire item successfully measures its intended construct, confirming the overall validity of the instrument.

Reliability analysis was performed using Cronbach's Alpha to evaluate the internal consistency of the questionnaire items, with a threshold value of 0.70 indicating acceptable reliability. All three variables demonstrated strong reliability, with Cronbach's Alpha values of 0.889 for Ecotourism Development (X1), 0.903 for Community Empowerment (X2), and 0.912 for Tourism Village Sustainability (Y). These results confirm that the instrument consistently measures the underlying constructs and that the items within each variable are stable and dependable. Together, the validity and reliability outcomes affirm that the measurement tool used in this study is both accurate and methodologically sound.

4.3 Classical Assumption Tests

Before performing multiple linear regression analysis, classical assumption tests were conducted to ensure that the data meet the necessary requirements for valid regression results. These tests included normality, multicollinearity, heteroscedasticity. All analyses were performed using SPSS version 25.

1. Normality Test

The normality of residuals was assessed using the Kolmogorov–Smirnov (K–S) test to determine whether the data distribution approximated a normal curve, which is an essential assumption for regression analysis. The results show that Ecotourism Development (X1) had a K–S statistic of 0.073 with a significance value of 0.200, Community Empowerment (X2) had a K–S statistic of 0.079 with a significance value of 0.200, and Tourism Village Sustainability (Y) had a K–S statistic of 0.081 with a significance value of 0.200. Since all significance values exceed 0.05, the data for all variables are considered normally distributed, thereby fulfilling the normality assumption required for conducting regression analysis.

2. Multicollinearity Test

Multicollinearity was assessed to ensure that the independent variables were not excessively correlated, as such conditions can distort regression coefficients and compromise the accuracy of the model. The evaluation used two indicators: Tolerance, which must be greater than 0.10, and the Variance Inflation Factor (VIF), which must be less than 10. The results confirmed that all independent variables met these criteria, indicating the absence of multicollinearity and ensuring that the regression analysis could be conducted reliably.

Table 1. VIF

Independent Variable	Tolerance	VIF	Conclusion
Ecotourism Development (X1)	0.657	1.522	No multicollinearity
Community Empowerment (X2)	0.657	1.522	No multicollinearity

The multicollinearity test results indicate that both independent variables—Ecotourism Development (X1) and Community Empowerment (X2)—possess tolerance and VIF values well within acceptable statistical limits. With tolerance values of 0.657, far above the minimum threshold of 0.10, and VIF values of 1.522, substantially below the upper limit of 10, the analysis confirms that the predictors do not exhibit harmful levels of intercorrelation. These results demonstrate that the variance shared between the independent variables is minimal, ensuring that each variable contributes uniquely to explaining variations in tourism village sustainability. Consequently, the regression coefficients can be interpreted confidently without concerns about distortion due to multicollinearity.

The heteroscedasticity test further validates the suitability of the regression model by confirming that the residuals exhibit constant variance across predicted values. A scatterplot of standardized residuals against predicted scores revealed a random, patternless distribution of points, indicating the absence of heteroscedasticity. This finding confirms that the assumption of homoscedasticity is satisfied, allowing for reliable regression analysis and supporting the overall robustness and validity of the statistical model used in this study.

4.4 Multiple Linear Regression Results

To analyze the influence of Ecotourism Development (X1) and Community Empowerment (X2) on Tourism Village Sustainability (Y), a multiple linear regression analysis was conducted using SPSS version 25. The regression model demonstrates a strong relationship, with an R value of 0.742, indicating substantial correlation between the predictors and the dependent variable. The R^2 value of 0.551 shows that 55.1% of the variance in tourism village sustainability is explained jointly by ecotourism development and community empowerment, while the remaining 44.9% is attributed to other factors not included in the model. The ANOVA results further support the model's overall significance, with an F-value of 74.215 and a p-value below 0.001, confirming that the combined effect of the two independent variables on tourism village sustainability is statistically meaningful.

Additionally, the regression coefficients provide insight into the individual contributions of each predictor to the dependent variable, demonstrating how ecotourism development and community empowerment uniquely influence sustainability outcomes. The statistically significant ANOVA result confirms that the regression model is appropriate and robust, validating its use in assessing the effects of both independent variables. Together, these findings indicate that the model has good explanatory power and that ecotourism development and community empowerment play important roles in shaping the sustainability of tourism villages in Indonesia.

Table 2. Multiple Regression

Variable	B (Unstandardized)	Std. Error	β (Standardized)	t	Sig.
Constant	0.682	0.245	-	2.782	0.006
Ecotourism Development (X1)	0.421	0.073	0.421	5.764	0.000
Community Empowerment (X2)	0.438	0.072	0.438	6.102	0.000

The multiple regression results presented in Table 2 show that both Ecotourism Development (X1) and Community Empowerment (X2) significantly contribute to Tourism Village Sustainability (Y). The constant value of 0.682 indicates the baseline level of sustainability when both independent variables are held at zero, suggesting that tourism villages possess an inherent level of sustainability even without the influence of ecotourism initiatives or empowerment programs. Ecotourism Development (X1) has an unstandardized coefficient (B) of 0.421 with a t-value of 5.764

and a significance level of $p < 0.001$, indicating that it positively and significantly influences sustainability; every one-unit increase in ecotourism development is associated with a 0.421 increase in sustainability. The standardized coefficient ($\beta = 0.421$) further demonstrates that ecotourism development has a substantial relative contribution compared to other variables.

Similarly, Community Empowerment (X2) shows a strong positive effect, with an unstandardized coefficient (B) of 0.438, a t-value of 6.102, and a significance level of $p < 0.001$. This means that a one-unit increase in community empowerment leads to a 0.438 increase in tourism village sustainability. The standardized coefficient ($\beta = 0.438$) indicates that community empowerment slightly exceeds ecotourism development in its relative influence on sustainability outcomes, making it the stronger predictor in the model. Overall, both variables have significant and positive effects, reinforcing the conclusion that strengthening ecotourism practices and empowering local communities are critical strategies for achieving sustainable tourism village development.

Discussion

This study aimed to examine the influence of ecotourism development and community empowerment on the sustainability of tourism villages in Indonesia, and the regression results confirm that both variables exert significant positive impacts. The findings show that ecotourism development ($\beta = 0.421$, $p < 0.001$) plays a substantial role in enhancing sustainability, suggesting that conservation-oriented tourism practices, environmentally friendly activities, and cultural integration contribute directly to the long-term viability of tourism villages. These results are consistent with previous studies, which argue that ecotourism strengthens environmental management, supports local economic resilience, and reinforces cultural preservation [11], [13], [14]. Through initiatives such as eco-friendly homestays, cultural exhibitions, and community-guided tours, ecotourism not only increases destination attractiveness but also deepens the community's engagement with its natural and cultural assets, thereby serving as a catalyst for sustainable rural tourism.

The analysis also reveals that community empowerment ($\beta = 0.438$, $p < 0.001$) has an even slightly stronger effect on tourism village sustainability, underscoring the essential role of local participation, autonomy, and capacity building. Empowered communities are better positioned to manage tourism resources, engage in decision-making, and collaborate effectively on tourism-related initiatives. This result aligns with the findings of [13], [15], who emphasize that sustainable tourism cannot be achieved without strong community involvement. Community empowerment enhances social cohesion, promotes collective action, and enables residents to confront environmental and socio-cultural challenges more effectively, reinforcing the centrality of community-driven approaches in sustainable tourism development.

Furthermore, the regression model indicates that ecotourism development and community empowerment together explain 55.1% of the variance in tourism village sustainability ($R^2 = 0.551$), demonstrating a strong synergistic relationship between the two variables. Ecotourism provides the structural framework for environmentally and culturally responsible tourism, while empowerment ensures that communities possess the agency and capacity to implement and sustain these practices. In practical terms, this synergy implies that ecotourism programs will not succeed without active local participation, and empowered communities require structured ecotourism frameworks to channel their involvement into sustainable outcomes. Thus, the findings reinforce the importance of an integrated strategy that combines ecological, economic, and socio-cultural dimensions with community engagement to achieve long-term tourism village sustainability.

Implications for Policy and Practice

The findings of this study offer several important implications across policy, practice, and academia. From a policy perspective, local and national governments should formulate integrated strategies that combine ecotourism development with community empowerment programs, supported by incentives such as training, grants, and technical assistance to strengthen both ecotourism quality and community capacity. In practical terms, tourism village managers are encouraged to involve community members in planning, monitoring, and implementing tourism activities while promoting initiatives that enhance environmental awareness, cultural preservation, and income-generating opportunities to reinforce sustainability outcomes. Academically, this study contributes empirical evidence demonstrating that ecotourism development and community empowerment jointly influence tourism village sustainability, thereby extending previous research by quantifying the impact of these variables within the Indonesian tourism context.

5. CONCLUSION

The findings of this study confirm that ecotourism development and community empowerment are key determinants of tourism village sustainability in Indonesia, with ecotourism contributing to environmental conservation, cultural preservation, and economic benefits, while community empowerment strengthens participation, decision-making, and collective management of tourism resources. The regression results indicate that these two variables jointly explain 55.1% of the variance in sustainability, underscoring the importance of integrating ecotourism strategies with community capacity-building initiatives. Practically, this suggests that policymakers and village managers should adopt holistic development approaches that combine responsible tourism practices with efforts to enhance community skills and autonomy, thereby improving the resilience, attractiveness, and competitiveness of tourism villages. Future research may consider additional influencing factors—such as government support, market conditions, and technological adoption—to further enrich strategies for advancing sustainable tourism village development.

REFERENCES

[1] C. W. Wolor *et al.*, "Increasing the Competency of Prospective Coffee Entrepreneurs Through Experiential Training in Coffee Tourism Villages: Case Study of Young Entrepreneurs in Indonesia.," *Int. J. Sustain. Dev. Plan.*, vol. 19, no. 5, 2024.

[2] W. T. Aji, "Penta Helix: Five Variable Elements of Strength in the Development of Taman Langit Tourism Village, Batu Layar District, West Lombok Regency," *Empower. J. Pengabdi. pada Masy.*, vol. 3, no. 2, pp. 65–76, 2023.

[3] S. Syofiyardi, R. Riyadiyanto, and S. Maisarah, "Community Empowerment and Sustainable Economic Improvement through Semut Island Eco-Tourism Village Program by PT Pertamina Patra Niaga Fuel Terminal Sei Siak," *Int. J. Soc. Serv. Res.*, vol. 2, no. 12, pp. 1280–1290, 2022.

[4] R. P. Ishak, "Capacity Building and Community Empowerment Strategies Based on Local Wisdom: A Case Study of Cimande Village," *TRJ Tour. Res. J.*, vol. 8, no. 2, pp. 239–261, 2024.

[5] T. Kartika, E. Edison, and E. Maryani, "Tourism village development for sustainable tourism in West Java-Indonesia (hexa helix tourism collaboration perspective)," in *IOP Conference Series: Earth and Environmental Science*, IOP Publishing, 2024, p. 12008.

[6] I. N. P. Budiartha, I. M. Suwitra, I. G. Agung, and A. Gita, "Regulation Number 5 Of 2020 Concerning Standards for Organizing Balinese Cultural Tourism to Promote Sustainable Village-Based Tourism," *Int. J. Crim. Justice Sci.*, vol. 17, no. 1, pp. 199–213, 2022, doi: 10.5281/zenodo.4756100.

[7] J. Sartohadi *et al.*, "Revitalization of Winong Spring as a Generator of Ecotourism Activities to Promote Local Economic Development in Giripurno Village as One of Borobudur Buffer," *Indones. J. Community Engag.*, vol. 9, no. 3, pp. 131–138, 2023.

[8] V. Astari, L. Hakim, and F. Putra, "The Sustainable Development Strategy of Marine-Based Gastronomy Ecotourism at Southern Malang, Malang Regency, East Java," *Environ. Res. Eng. Manag.*, vol. 79, no. 2, pp. 32–49, 2023.

[9] I. G. A. M. P. Sanjaya, I. D. N. Sudita, and N. K. E. Suwitari, "Analysis Of Entrepreneurial Spirit on The Success of Broiler Plasma Farmer in Gianyar District, Bali Province," *AJARCDE (Asian J. Appl. Res. Community Dev. Empower.*, pp. 187–194, 2023.

[10] A. M. Dawis and R. F. A. Cahyani, "Assistance Digital Marketing and Branding Strategy Sukoharjo Product on

Ministry of Micro Small and Medium Enterprises," *JCOMENT (Journal Community Empower.*, vol. 3, no. 2, pp. 110–116, 2022.

[11] C. M. Son, "Exploring the Impact of Cultural Heritage on Destination Branding and Tourist Experiences: Perspective from South Korea," *J. Hosp. Tour. Manag.*, vol. 6, no. 1, pp. 1–10, 2023, doi: 10.53819/81018102t4138.

[12] M. Rovira, L. Garay, E. Górriz-Mifsud, and J.-A. Bonet, "Territorial Marketing Based on Non-Wood Forest Products (NWFPs) to Enhance Sustainable Tourism in Rural Areas: A Literature Review," *Forests*, vol. 13, no. 8, p. 1231, 2022.

[13] I. Wijaya, "Local and sustainable potential approaches in the design of a master plan architecture: Case study of paksebali tourism village development, Indonesia," *Geoj. Tour. Geosites*, vol. 36, no. 2, pp. 571–579, 2021.

[14] T. Parusheva, "Cultural identity and sustainable cultural tourism in the context of local and global.," 2022.

[15] M. Murniati, G. Maski, I. Noor, and M. Ekawaty, "Entrepreneurship in the tourism industry: Implication on sustainable economic development," in *Environmental, social, and governance perspectives on economic development in Asia*, Emerald Publishing Limited, 2021, pp. 137–156.