

Tourism Development, Regional Planning, and Poverty Alleviation: Insights from Bukit Lawang and Tangkahan, Langkat Regency

ABSTRACT

This research aims to analyze the impact of tourism development on regional planning and poverty alleviation in the Bukit Lawang and Tangkahan tourist areas of Langkat Regency. Using a quantitative approach with associative methods, 150 respondents from local communities and regional officials were surveyed. Data were analyzed with Structural Equation Modeling (SEM) using SmartPLS software. The results indicate that while tourism development significantly influences regional planning, it does not directly contribute to poverty alleviation. Moreover, regional planning failed to mediate the relationship between tourism development and poverty reduction, likely due to bureaucratic inefficiencies and unequal resource distribution. The study suggests that while tourism holds potential for regional economic growth, its impact on poverty alleviation remains limited. Future research should explore additional variables, such as unemployment and social assistance, to better understand the factors that influence poverty reduction through tourism.

Keywords: tourism development, regional planning, poverty alleviation, Bukit Lawang, Tangkahan

I. INTRODUCTION

Nature-based tourism is becoming increasingly popular among both domestic and international visitors due to its unique attractions, offering the beauty of natural environments and opportunities to interact with wildlife. In Langkat Regency, Bukit Lawang and Tangkahan stand out as significant ecotourism destinations, particularly known for their rich biodiversity, including elephants and orangutans (Waluyo et al., 2022; Husin et al., 2022). These sites have gained substantial attention, with the North Sumatra Provincial Government promoting their potential to become world-class tourist destinations (Pakpahan, 2018).

Ecotourism contributes not only to environmental conservation but also to local economic growth. Research suggests that community-based tourism development enhances local communities' well-being by providing direct involvement in tourism activities, such as managing homestays, restaurants, and selling local products (Ashley & Garland, 1994; Satria, 2009; Rewah et al., 2021). This approach ensures that the benefits of tourism are not limited to large businesses but also reach local populations. In other regions, similar empowerment strategies have shown potential, such as the involvement of local communities in health and sanitation

projects, despite facing infrastructure challenges and budgetary constraints as Arga Abdi Rafiud Darajat Lubis Research (Arga et al, 2024).

However, the tourism sector in Langkat Regency faces several challenges. A recent decline in tourist arrivals points to infrastructural issues, particularly poor connectivity between scattered tourist attractions (Langkat Regency Government, 2023; Gunadi, 2019). Additionally, inadequate promotion of these tourist sites has further hindered their potential growth (Surur et al., 2019; Permatasari et al., 2016). Infrastructure and proper land management are crucial for addressing these concerns, as seen in other regions where the transition from agricultural to non-agricultural land has impacted both local development and socio-economic structures (Eko et al, 2024). Addressing these challenges is essential to optimizing the region's tourism potential.

Infrastructure development, including roads, accommodations, and supporting facilities, is crucial for enhancing tourism appeal (Hermawan, 2024). Accessible destinations equipped with adequate facilities are more likely to attract visitors (Pakpahan, 2018). Without such infrastructure, even the most scenic areas risk losing their appeal. In regions like Subulussalam Utara, for example, rural development initiatives that focus on housing infrastructure have demonstrated the importance of effective coordination among stakeholders to maximize the benefits for local communities (XX3, 2024).

Effective regional planning plays a critical role in supporting tourism development (Rustiadi, 2018; Matondang, 2022). Integrated planning across various sectors, such as tourism, agriculture, and industry, can create synergies that strengthen regional development (Santoso & Rahayu, 2014). Previous studies indicate that tourism development, when backed by sound regional planning, contributes significantly to economic growth and poverty reduction (Hadju et al., 2021). In addition, studies from other rural areas show that strong institutional support, coupled with infrastructure development, can significantly impact the income and welfare of local communities, as demonstrated by coffee farming and other agricultural sectors (Turma et al, 2024).

One of the key benefits of tourism development is poverty alleviation. Tourism provides employment opportunities, particularly in labor-intensive sectors like accommodation, food services, and transportation (Yunus, 2007; Nasution, 2006). Additionally, tourists contribute to the local economy by purchasing goods and services, which increases household incomes (Zainuri et al., 2021). Similarly, the creative economy within ecotourism areas, such as Sei Nagalawan Village, has demonstrated how community empowerment and sustainable practices can positively influence local economies (Anisah, 2024).

Despite a reduction in poverty in Langkat Regency—from 10,045 poor residents in 2022 to 9,816 in 2023—poverty rates remain relatively high (Langkat Regency Government, 2023). This study aims to explore how community-based tourism can

further reduce poverty in the region. Lessons from other regions suggest that agricultural initiatives, when paired with proper planning and support, can significantly impact rural development and poverty reduction (Arga et al, 2024).

Through active community involvement in managing and developing tourist destinations, the tourism sector is expected to continue growing (Cinditya & Umilia, 2013). Research also indicates that sustainable planning in urban and rural regions, supported by targeted government expenditure on education, social services, and healthcare, can significantly impact human development outcomes (Rizki et al, 2024). This research seeks to provide local governments with guidance on formulating effective policies and strategies to leverage tourism for poverty alleviation and improve community welfare and suit the Sustainable Development Goals (SDGs) which established the eradication of extreme poverty as a key target by 2030 (Satia Negara Lubis & Arga Abdi Rafiud Darajat Lubis, 2024).

II. METHODOLOGY

2.1 Research Location and Duration

This study was conducted in Langkat Regency, selected for its tourism potential, particularly in Bukit Lawang and Tangkahan. The location was chosen using purposive area sampling, as these sites represent key tourist destinations in the region. The research took place from January to March 2024.

2.2. Research Type

This is a quantitative study using an associative/correlational approach, aiming to identify the relationships between the independent and dependent variables. Inferential statistical analysis was employed to determine the degree of relationship and influence between the variables.

2.3 Data and Data Sources

The data used in this study consists of both primary and secondary sources. Primary data were collected through questionnaires and direct interviews with respondents. Secondary data were obtained from the Langkat Regency Tourism Office and other relevant documents.

2.4 Population and Sample

The study's population consists of local residents and regional officials in Langkat Regency, targeting 150 respondents. The sample was selected using purposive sampling to represent the relevant population characteristics. Additionally, incidental sampling was applied, where respondents encountered and willing to participate in interviews were included as part of the sample.

2.5 Operational Definitions of Variables

This study uses two main variables:

- Exogenous Variable (X): Tourism Development. This includes the attractiveness of tourist sites, infrastructure, accessibility, and institutional support.

- Endogenous Variables (Y):
 - Regional Planning (Y1): Improvement of regional benefits through economic, social, and infrastructural aspects.
 - Poverty Alleviation (Y2): Efforts to enhance community welfare, focusing on human resources, income levels, and access to education and healthcare.

Table 1. Operationalization of Variables

Variable	Definition	Indicator	Measurement Scale
Tourism Development (X)	Development of natural tourism based on tourists' needs	1. Tourist attractions 2. Infrastructure 3. Accessibility 4. Institutional support	Interval
Regional Planning (Y1)	Improvement of regional benefits	1. Economy 2. Social Infrastructure 3.	Interval
Poverty Alleviation (Y2)	Efforts to reduce poverty	1. Human resources 2. Income increase 3. Access to education & healthcare	Interval

2.6 Data Analysis Techniques

Data were analyzed using Structural Equation Modeling-Partial Least Square (SEM-PLS). SEM-PLS modeling was employed to examine the relationships between latent exogenous and endogenous variables using the SmartPLS software (Ferdinand, 2016). The analysis procedure includes:

1. Theoretical Model Planning: The theoretical model is built based on a literature review and empirically tested.
2. Path Diagram: The theoretical model is converted into a path diagram to simplify the interpretation of causal relationships between variables.
3. Equation Conversion: The path diagram is converted into structural and measurement equations.
4. Data Input: A variance/covariance matrix is used as input for SEM estimation.
5. Goodness-of-Fit Evaluation: The model's fit is assessed using various indices, such as Chi-Square, RMSEA, GFI, AGFI, TLI, and CFI.
6. Model Interpretation and Modification: Modifications are made based on residuals and error predictions to improve the model.

III. RESULTS AND DISCUSSION

3.1 Research Results

3.1.1 Overview of the Study Area

Langkat Regency is one of the regencies in North Sumatra Province, with significant potential for tourism development, particularly through ecotourism in

Bukit Lawang and Tangkahan. Bukit Lawang is famous as the gateway to Gunung Leuser National Park, offering trekking opportunities to observe orangutans in their natural habitat. Meanwhile, Tangkahan is known for conservation-based ecotourism, offering elephant trekking and hot springs. These two destinations present high tourism potential, both in terms of natural beauty and cultural experiences (Pakpahan, 2018; Hermawan, 2024).



Figure 1. Research Location

However, the development of tourism in Langkat Regency faces challenges, such as inadequate infrastructure and poor waste management. The roads leading to tourist sites are suboptimal, particularly during the rainy season. Moreover, there is a need for improved supporting facilities, such as accommodations, transportation, and sanitation, to ensure tourists' comfort and preserve the environment (Waluyo et al., 2022).

3.1.2 Descriptive Analysis of Respondents

This study involved 150 respondents, consisting of local residents and regional officials in the Bukit Lawang and Tangkahan tourist areas. Based on the analysis of respondents' characteristics, the majority were women (80%), with the dominant age range being 41-50 years old (33.3%). Most respondents had completed secondary education (66%), with the majority earning between IDR 5,000,001 and IDR 9,000,000 (47.3%). Only 8% of respondents had incomes above IDR 9,000,000, reflecting economic disparities in the area (Husin et al., 2022).

Table 2. Distribution of Respondents by Gender, Age, Education, and Income

Description	Frequency %	
Gender: Female	120	80%
Gender: Male	30	20%
Age 18-30 Years	45	30%
Age 31-40 Years	38	25.33%
Age 41-50 Years	50	33.33%
Age >50 Years	17	11.33%
Education: High School	99	66%
Education: Bachelor's Degree	22	14.67%
Income: IDR 5-9 million	71	47.33%

3.1.3 Descriptive Statistics

Descriptive statistical analysis of the variables Tourism Development (X), Regional Planning (Y1), and Poverty Alleviation (Y2) shows that all indicators have high mean values, indicating that most respondents agree on the importance of tourism development and regional planning in reducing poverty. The item with the highest score under the Tourism Development variable is PWS6 (accessibility), highlighting the importance of road and transportation infrastructure in supporting tourism (Agustini et al., 2023).

Table 3. Descriptive Statistics for Tourism Development Variables

Item	N	Min	Max	Mean	Std. Deviation
PWS1	150	3.00	5.00	4.36	0.572
PWS6	150	2.00	5.00	4.50	0.711

3.1.4 Data Quality Testing

3.1.4.1 Validity Testing

Validity testing ensures that the instruments used in this research accurately measure the intended constructs. Convergent and discriminant validity were assessed. Convergent validity was tested using the loading factor and Average Variance Extracted (AVE). The results show that all indicators have loading factors > 0.7 and $AVE > 0.5$, confirming that all constructs meet the criteria for convergent validity (Jogiyanto, 2009).

Table 4. Outer Loading and AVE Values for Validity Testing

Variable	Outer Loading	AVE
Tourism Development	0.736 - 0.871	0.554
Regional Planning	0.687 - 0.846	0.614
Poverty Alleviation	0.748 - 0.812	0.592

3.1.4.2 Reliability Testing

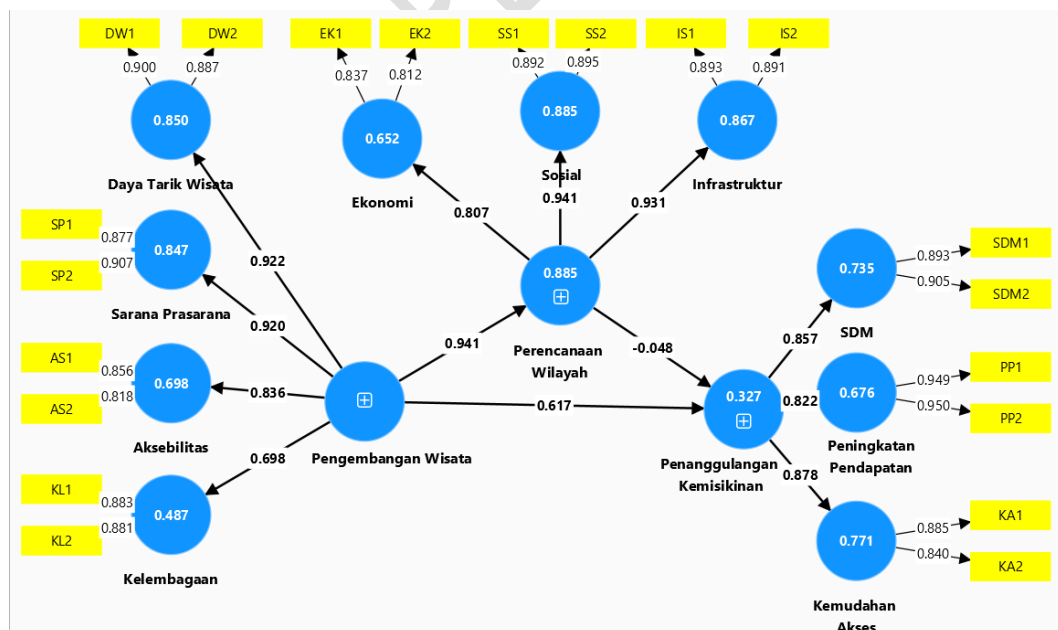
Reliability was tested using Cronbach's alpha and composite reliability. The results show that all variables have composite reliability values above 0.7, indicating that the instruments used are reliable and consistent in measuring the intended constructs.

Table 5. Cronbach's Alpha and Composite Reliability Values

Variable	Cronbach's Alpha	Composite Reliability
Tourism Development	0.854	0.894
Regional Planning	0.809	0.882
Poverty Alleviation	0.805	0.863

3.1.5. Structural Model Testing (R-Square)

The R-square value measures the contribution of exogenous variables in influencing endogenous variables. Based on the data processed with SmartPLS, the R-square value for Regional Planning is 0.885, meaning that 88.5% of its variability is influenced by Tourism Development, while the R-square value for Poverty Alleviation is 0.327, indicating that 32.7% is influenced by Tourism Development and Regional Planning, with the remainder influenced by other factors not included in this model.



Source: Data Processed, 2024

Figure 2. R-Square SmartPLS 4.0

3.1.6 Hypothesis Testing

Hypothesis testing was conducted using the bootstrapping method in SmartPLS. The results indicate that Tourism Development significantly influences Regional Planning and Poverty Alleviation, while Regional Planning does not significantly affect Poverty Alleviation.

Table 6. Hypothesis Testing Results

Hypothesis	T-Statistic	P-Value	Conclusion
Tourism Development -> Regional Planning	51.170	0.000	Significant
Tourism Development -> Poverty Alleviation	2.643	0.008	Significant
Regional Planning -> Poverty Alleviation	0.185	0.853	Not Significant

4.2. Discussion

4.2.1. The Influence of Tourism Development on Regional Planning

The study results demonstrate that Tourism Development significantly influences Regional Planning. Developing tourist destinations like Bukit Lawang and Tangkahan requires well-coordinated regional planning to support infrastructure, accessibility, and sustainable tourism (Rustiadi, 2018). This is consistent with previous research, which suggests that tourism development fosters local economic growth and job creation (Hermawan, 2024).

4.2.2. The Influence of Tourism Development on Poverty Alleviation

This study also shows that Tourism Development significantly influences Poverty Alleviation. The increase in local incomes through community-based tourism, especially in rural areas, helps to reduce poverty (Yunus, 2007). However, the study also reveals that these benefits have not been fully distributed, as disparities remain between local communities and external investors (Satria, 2009).

4.2.3. The Influence of Regional Planning on Poverty Alleviation

The findings indicate that Regional Planning does not significantly influence Poverty Alleviation. This suggests that existing planning efforts have not yet been effective in bridging the economic gap in the area. Issues such as bureaucracy and unequal budget allocation are the main obstacles to more inclusive regional planning (Hadju et al., 2021).

4.2.4. Regional Planning as a Mediator between Tourism Development and Poverty Alleviation

The study shows that Regional Planning does not significantly mediate the relationship between Tourism Development and Poverty Alleviation. This suggests that, while tourism development can provide economic benefits, current regional planning efforts are not yet optimized to support poverty alleviation objectives

(Rustiadi, 2018). Strengthening regional planning that is more participatory and data-driven is needed to maximize the economic benefits of the tourism sector.

IV. CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusion

This study demonstrates that tourism development has a significant impact on regional planning in the Bukit Lawang and Tangkahan tourist areas. However, its contribution to poverty alleviation remains limited, as tourism development has not directly reduced poverty in these areas. Additionally, regional planning was found to have no significant influence on poverty alleviation and was unable to mediate the relationship between tourism development and poverty reduction. Although tourism holds great potential for improving infrastructure and promoting regional economic growth, the current strategies in place are not sufficient to leverage this sector effectively for poverty reduction. Therefore, a more comprehensive and coordinated approach is necessary to maximize the benefits of tourism in supporting poverty alleviation efforts.

4.2 Recommendations

To address the limitations identified in this study, several key strategies should be considered. First, infrastructure development must be improved, particularly in terms of integrated transportation systems that connect Bukit Lawang and Tangkahan. This would enhance economic opportunities by making the area more accessible to visitors. Additionally, it is crucial to develop environmentally friendly infrastructure that not only supports accessibility but also preserves the natural environment of these ecotourism destinations, ensuring their sustainability.

Regional planning should also be made more inclusive to ensure that the economic benefits of tourism development are distributed more equitably across local communities. This can be achieved by involving local stakeholders in participatory planning processes that focus on addressing economic disparities. Furthermore, efforts to strengthen community-based tourism initiatives should be increased, enabling local residents to play a more active role in managing and developing tourism in their areas. Providing training and support for small businesses, such as homestays, restaurants, and the sale of local products, would help ensure that the economic benefits of tourism reach a wider segment of the population.

Lastly, future research should explore additional factors such as unemployment rates, social assistance, and the broader economic potential of the region. Investigating these variables may provide deeper insights into how regional planning and tourism development can be optimized to effectively reduce poverty in Langkat Regency. By implementing these strategies, the region can better capitalize on its tourism potential to support poverty alleviation while preserving its natural and cultural heritage for future generations.

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