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# SUSTAINABLE STRATEGIES BASED ON COMMUNITY PERCEPTION AND PARTICIPATION IN ECOTOURISM DEVELOPMENT PLANNING IN INDONESIA

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## Abstract

The Forest Management Unit of Region IV of Balige has a working area within Toba Regency, one of the regencies in North Sumatra Province which is rich in ecotourism potential. SWOT analysis was used in this study to analyze community perception and participation in ecotourism development planning and establish sustainable strategies for ecotourism development within the study area. Data were collected through focus group discussions, in-depth interviews, and a questionnaire survey with 114 respondents. The data were then analyzed using participatory analysis, involving a variety of community groups. Community members generally had a positive attitude toward the ecotourism development plan. The average community participation indicating a medium level of community engagement in ecotourism development. The positioning of strategies for ecotourism development within Quadrant I of the SWOT diagram, where strengths and opportunities are high, is an ideal scenario. To ensure long-term success, the strategies for the Forest Management Unit of Region IV of Balige should leverage positive community perceptions, address gaps in participation, and align with sustainable development goals, benefiting both the community and the environment. This study makes a unique contribution to ecotourism planning by integrating local knowledge and community involvement in ecotourism management strategy development.

***Keywords***: Economy, environment, management, social, SWOT

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## INTRODUCTION

Ecotourism should focus on responsible travel, conserving the environment while benefiting local communities. It should offer economic advantages while promoting environmental protection and respecting cultural values. However, its success hinges on the active involvement and positive perceptions of local communities, whose participation is essential for developing strategies that balance conservation goals with community needs. Therefore, understanding local communities' perceptions of ecotourism and their willingness to participate is vital for sustainable development. This is also true for Toba Regency. Community support often depends on perceived benefits and involvement in decision-making, but challenges like limited engagement, insufficient training, and inadequate infrastructure can hinder progress. The Forest Management Unit of Region IV of Balige (FMU Balige), works to balance conservation and socio-economic benefits in its working area, which lies within Toba Regency. Ecotourism planning in this area is aimed at minimizing environmental impacts, involving local communities in decision-making and focusing on benefit-sharing, which is essential for fostering positive perceptions, participation, and the long-term success of various ecotourism projects.

Toba Regency, renowned for Lake Toba and a range of other beautiful landscapes, is a prime location for ecotourism. Developing a sustainable ecotourism strategy in this region will require integrating community perceptions and participation, ensuring that the plan addresses local needs, minimizes negative impacts, and maximizes benefits for both the community and the environment. As local authorities and stakeholders seek to harness the potential for ecotourism in this region, understanding and involving the community is essential for the successful development and implementation of various ecotourism initiatives. With the growth in sustainable travel demands, it becomes crucial to integrate community aspirations and knowledge into tourism planning, while focusing on carefully balancing economic growth, natural resources conservation, and respect for cultural values. This research attempts to elucidate on how Toba Regency residents perceived ecotourism development, particularly in balancing conservation efforts and preserving local wisdom. Engaging the local community in this process will foster ownership, empowerment, and sustainability, ensuring long-term benefits for both the community and the environment. The indigenous knowledge, traditions, and customs of the community serve as invaluable assets that should be respected and integrated into ecotourism development (Sahureka et al., 2016; Seipalla et al., 2020; Aynalem & Kaur, 2020; Lelloltery et al., 2018; Assaye et al., 2023; Tufa et al., 2022; Abdullah et al., 2025). By incorporating local wisdom, the tourism experience becomes more authentic, immersive, and meaningful for both visitors and locals, fostering a sense of pride and appreciation for their cultural heritage.

With its ecological and cultural uniqueness, Toba Regency is deemed a suitable location for planning studies on sustainable ecotourism development. Lake Toba, the main attraction of this location, boosts a rich ecosystem and biodiversity, which can be a major nature-based ecotourism asset. Involving the Batak people, an indigenous community in the region, along with their traditional nature-related values, will provide great opportunities for sustainable, community-based ecotourism management. However, FMU Balige, one of the forest management units in charge of this region, faces challenges in developing ecotourism sustainably, including challenges from limited infrastructure that supports natural tourism. In managing ecotourism, it is crucial that FMU Balige balance economic development and environmental conservation, striving to improve sustainable resources management while dealing with threats from forest degradation.

Community perceptions are beneficial for several reasons: they can boost tourist interest and local economic development, influence government and stakeholder decisions, guide targeted planning based on community preferences, and identify potential challenges in ecotourism development. Overall, community perceptions are key to the successful and sustainable development of ecotourism in Toba Regency, as was asserted in previous studies (Sahureka et al., 2016; Seipalla et al., 2020; Lelloltery et al., 2018; Assaye et al., 2023; Tufa et al., 2022; Rahmawaty et al., 2024a,b; Roslinda et al., 2024).

However, none of previous studies on ecotourism drew a link between ecotourism and sustainable planning strategies (Sahureka et al., 2016; Seipalla et al., 2020; Lelloltery et al., 2018; Assaye et al., 2023; Tufa et al., 2022). To make it worse, there is a lack of studies focusing on community perception and participation in ecotourism development in relation to sustainable planning strategies. Here is where this study comes into play, emphasizing the importance of community participation in planning, particularly under the oversight of FMU Balige, to ensure that ecotourism initiatives are environmentally sound, socially inclusive, economically beneficial, culturally respectful, and aligned with sustainable development. This study provides policymakers, tourism planners, and local communities in Toba Regency with insights and recommendations for developing sustainable ecotourism strategies. By integrating conservation principles and local wisdom, a balance between economic development, cultural preservation, and environmental protection may be achieved in Toba Regency.

## MATERIALS AND METHODS

### Research Location

This research was conducted in the working area of FMU Balige in Toba Regency, North Sumatra (Figure 1), Toba Regency, home to Lake Toba which is rich in natural resources and cultural heritage, served as an ideal case for the

investigation into the balance between conservation and sustainable tourism. With its unique characteristics, Toba Regency was considered a suitable location for exploring how community perceptions influenced sustainable ecotourism development, integrating conservation and local wisdom. This research attempted to elicit the perspectives of local community members, indigenous leaders, tourism stakeholders, and conservation experts on ecotourism using in-depth interview, survey, and observation methods.

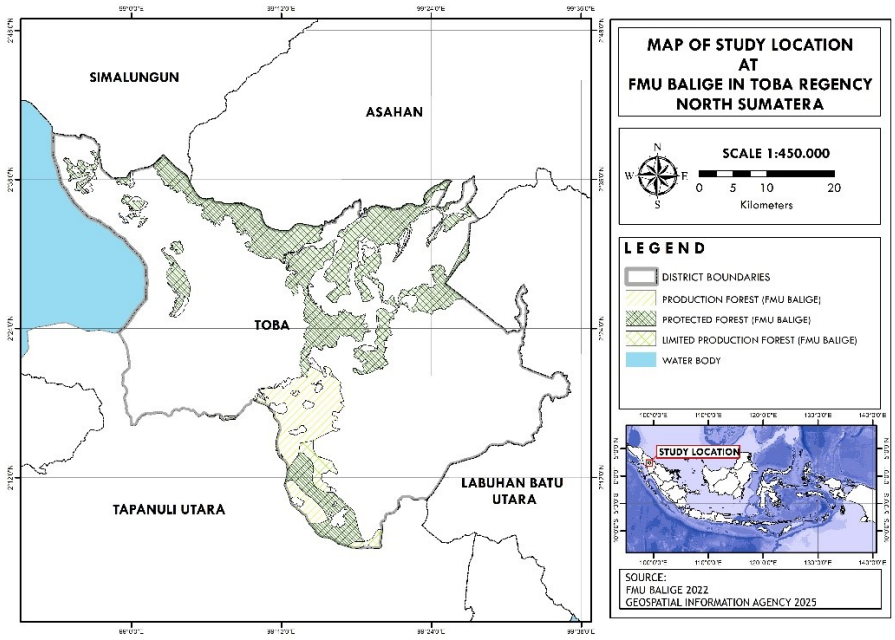


**Figure 1**: Map of Study Location at FMU Balige in Toba Regency, North Sumatra

## Data Collection

This study mixed qualitative and quantitative methods, integrating SWOT (strengths, weaknesses, opportunities, and threats) analysis and community perception and participation data, to develop sustainable ecotourism strategies for Toba Regency. A structured questionnaire with a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used to assess community perception and participation in ecotourism development. This questionnaire was distributed to 114 respondents, who were members of forest farmer groups under the supervision of FMU Balige. These respondents were selected in such a way to ensure representation of the forest farmer groups that were assisted by FMU Balige, with the number reflecting diversity within the group and involvement within forest management activities. In-depth insights into strengths, weaknesses,

opportunities, and threats pertaining to ecotourism were gathered through focus group discussions and interviews with key informants. These data collection methods were adopted from Rahmawaty et al. (2024a,b); Ramadhani et al. (2022), Sitanggang et al. (2021a,b), Saraan et al. (2020), Lubis et al. (2021).

**Data Analysis**

Data from interviews, survey, and observations were summarized and computed using Microsoft Excel, and the results are presented in the form of tables and graphs to make data analysis easier (Table 1). Direct observations in the study area were needed to help provide an explanation of the criteria for the results of the questionnaire survey and interviews. These results were used for subsequent descriptive analysis. The interval and score range for these results were determined following the equations below:

Interval = score range/criteria number (1)
Score range = maximum score – minimum score (2)
Maximum score = the highest value on the Likert scale x number of questions (3)
Minimum score = the lowest value on the Likert scale x number of questions (4)

Scores were calculated based on the equations above, while criteria were categorized based on a Likert scale. Using the equations above, the interval for perception and participation was calculated as 19. The score range and criteria for community perception and participation were, therefore, as presented in Table 1 and Table 2.

**Table 1:** Score Range and Criteria for Community Perception

| Score | Criteria | Explanation |
|---|---|---|
| 77–95 | Very good | Scores in this range indicate that the community perception was highly positive, likely reflecting strong satisfaction and approval across various aspects. |
| 58–76 | Good | Scores in this range suggest that the community perception was generally positive, indicating satisfaction and favorable opinions in general. |
| 39–57 | Moderate | Scores in this range suggest a neutral to moderately positive perception, with a room for improvement in certain areas. |
| 20–38 | Low | Scores in this range indicate a negative perception, with significant areas of dissatisfaction or concern among the community. |
| 1–19 | Very low | Scores in this range reflect a highly negative perception, with widespread dissatisfaction and significant issues requiring immediate attention and improvement. |

**Table 2:** Score Range and Criteria for Community Participation Level

| Score | Criteria | Explanation |
|---|---|---|
| 77–95 | Very hight | Scores in this range indicate highly active and enthusiastic participation among the community across various activities and initiatives. There was strong engagement and involvement. |
| 58–76 | Hight | Scores in this category suggest active participation and engagement among the community, with consistent involvement in some activities and initiatives. |
| 39–57 | Moderate | Scores in this range suggest a moderate level of participation. The community shows some interest and engagement, but there may be opportunities to increase involvement and participation |
| 20–38 | Low | Scores in this range indicate limited participation among the community. There may be challenges in engaging the community effectively or motivating the community to participate. |
| 1–19 | Very low | Scores in this range reflect minimal to no participation among the community, indicating significant barriers to or disinterest in engaging with activities or initiatives. |

To create strategies in planning ecotourism development in the working area of FMU Balige, SWOT analysis was carried out (Khairi et al., 2022; Pandita et al., 2024; Rahmawaty et al., 2025). It is a strategic planning tool used to evaluate the strengths, weaknesses, opportunities, and threats involved in a project or business venture. This analysis was conducted by defining the objective or topic under analysis, gathering information relevant to each SWOT category, identifying strengths and weaknesses by analyzing the internal factors contributing to FMU Balige's success or hindering its progress, identifying opportunities and threats by looking outward to understand the factors that positively or negatively impacted FMU Balige, interpreting the findings to consider how the strengths could be leveraged to pursue opportunities and how the weaknesses that might exacerbate threats could be mitigated, and developing strategies that could capitalize on strengths, minimize weaknesses, seize opportunities, and defend against threats.

## RESULTS AND DISCUSSION

### Respondent Characteristics

Survey results showed that the majority of respondents were male, aged 41–60 years (61%), with a high school education (63%), and predominantly Protestant Christian (95%). Most respondents were farmers with a monthly income below five million rupiah (91%). This demographic profile is crucial for interpreting survey findings, as it influenced respondents' perspectives and priorities, particularly in agriculture and land use. Understanding these demographics helps tailor policies and interventions to address the specific needs of and challenges faced by the community, ensuring that initiatives are relevant and effective in supporting community development and policy formulation.

**Community perception of the development of ecotourism**

A summary of community perception of the development of ecotourism in the working area of FMU Balige is presented in Table 3.

**Table 3:** A Summary of Community Perception in the Working Area of FMU Balige

| Question Number | Answer | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | SA | | A | | DF | | DA | | SD | |
| | n | % | n | % | n | % | n | % | n | % |
| 1 | 5 | 4.42 | 94 | 83.19 | 9 | 7.96 | 5 | 4.42 | 0 | 0 |
| 2 | 4 | 3.54 | 102 | 90.27 | 4 | 3.54 | 3 | 2.65 | 0 | 0 |
| 3 | 3 | 2.65 | 66 | 58.41 | 15 | 13.27 | 29 | 25.66 | 0 | 0 |
| 4 | 5 | 4.42 | 55 | 48.67 | 4 | 3.54 | 49 | 43.36 | 0 | 0 |
| 5 | 3 | 2.65 | 69 | 61.06 | 11 | 9.73 | 30 | 26.55 | 0 | 0 |
| 6 | 2 | 1.77 | 40 | 35.40 | 10 | 8.85 | 61 | 53.98 | 0 | 0 |
| 7 | 6 | 5.31 | 36 | 31.86 | 8 | 7.08 | 63 | 55.75 | 0 | 0 |
| 8 | 5 | 4.42 | 91 | 80.53 | 10 | 8.85 | 7 | 6.19 | 0 | 0 |
| 9 | 11 | 9.73 | 96 | 84.96 | 4 | 3.54 | 2 | 1.77 | 0 | 0 |
| 10 | 8 | 7.08 | 94 | 83.19 | 6 | 5.31 | 5 | 4.42 | 0 | 0 |
| 11 | 3 | 2.65 | 50 | 44.25 | 8 | 7.08 | 52 | 46.02 | 0 | 0 |
| 12 | 6 | 5.31 | 68 | 60.18 | 5 | 4.42 | 34 | 30.09 | 0 | 0 |
| 13 | 6 | 5.31 | 49 | 43.36 | 8 | 7.08 | 50 | 44.25 | 0 | 0 |
| 14 | 7 | 6.19 | 47 | 41.59 | 11 | 9.73 | 48 | 42.48 | 0 | 0 |
| 15 | 8 | 7.08 | 77 | 68.14 | 7 | 6.19 | 21 | 18.58 | 0 | 0 |
| 16 | 7 | 6.19 | 67 | 59.29 | 6 | 5.31 | 33 | 29.20 | 0 | 0 |
| 17 | 15 | 13.27 | 79 | 69.91 | 4 | 3.54 | 15 | 13.27 | 0 | 0 |
| 18 | 13 | 11.50 | 87 | 76.99 | 3 | 2.65 | 10 | 8.85 | 0 | 0 |
| 19 | 7 | 6.19 | 76 | 67.26 | 14 | 12.39 | 16 | 14.16 | 0 | 0 |
| 20 | 14 | 12.39 | 77 | 68.14 | 4 | 3.54 | 18 | 15.93 | 0 | 0 |
| 21 | 7 | 6.19 | 72 | 63.72 | 0 | 0 | 34 | 30.09 | 0 | 0 |
| 22 | 12 | 10.62 | 96 | 84.96 | 0 | 0 | 5 | 4.42 | 0 | 0 |
| 23 | 14 | 12.39 | 92 | 81.42 | 2 | 1.77 | 5 | 4.42 | 0 | 0 |
| 24 | 15 | 13.27 | 59 | 52.21 | 1 | 0.88 | 38 | 33.63 | 0 | 0 |
| **Total score** | **930** | | **6.956** | | **462** | | **1.266** | | | |
| **Average** | **8.23** | **6.86** | **61.56** | **64.12** | **4.09** | **5.68** | **11.20** | **23.34** | | |

*Note: n = Number of respondents who answered questions.*
*SA: Strongly Agree; A: Agree; DF: Doubtful; DA: Disagree; SD: Strongly Disagree.*

Based on Table 3, the highest average score for community perception was 61.56. According to Table 1, this score, falling within the range of 58–76, was categorized as "Good" (Figure 2).

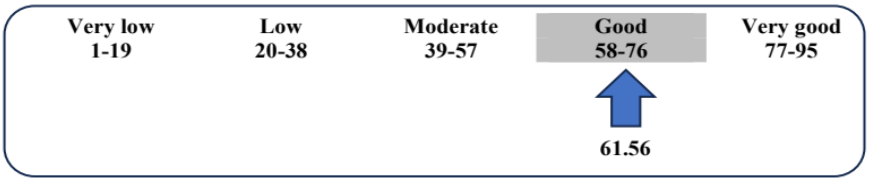


**Figure 2:** Score Range and Criteria for Community Perception

This score suggests that the community generally held a positive view and perception. This positive perception has profound implications for policy-making: it validates current strategies, encourages stakeholder engagement, improves compliance, provides a foundation for future policy adjustments, enhances communication and trust, and establishes a basis for measuring impact. By leveraging this positive perception, policymakers can further enhance the effectiveness of their initiatives, fostering a more sustainable and participatory approach to forest management. However, specific strengths and weaknesses within this range would need further exploration to understand where improvements can be made or where strengths can be leveraged further. This type of analysis is valuable for organizations or communities in gauging public opinion and strategically planning interventions or improvements based on the identified perceptions.

**Community Participation in the Development of Ecotourism**

A summary of community participation in the development of ecotourism in the working area of FMU Balige is presented in Table 4.

**Table 4:** A Summary of Community Participation in the Working Area of FMU Balige

| Question Number | Answer | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | SA | | A | | DF | | DA | | SD | |
| | n | % | n | % | n | % | n | % | n | % |
| 1 | 5 | 4.42 | 62 | 54.87 | 2 | 1.77 | 44 | 38.94 | 0 | 0 |
| 2 | 0 | 0.00 | 54 | 47.79 | 32 | 28.32 | 27 | 23.89 | 0 | 0 |
| 3 | 3 | 2.65 | 73 | 64.60 | 6 | 5.31 | 31 | 27.43 | 0 | 0 |
| 4 | 1 | 0.88 | 100 | 88.50 | 7 | 6.19 | 5 | 4.42 | 0 | 0 |
| 5 | 3 | 2.65 | 73 | 64.60 | 23 | 20.35 | 14 | 12.39 | 0 | 0 |
| 6 | 38 | 33.63 | 12 | 10.62 | 63 | 55.75 | 0 | 0 | 0 | 0 |
| 7 | 2 | 1.77 | 98 | 86.73 | 5 | 4.42 | 8 | 7.08 | 0 | 0 |
| 8 | 6 | 5.31 | 69 | 61.06 | 7 | 6.19 | 31 | 27.43 | 0 | 0 |
| 9 | 9 | 7.96 | 72 | 63.72 | 3 | 2.65 | 29 | 25.66 | 0 | 0 |
| 10 | 7 | 6.19 | 54 | 47.79 | 6 | 5.31 | 46 | 40.71 | 0 | 0 |
| 11 | 17 | 15.04 | 90 | 79.65 | 1 | 0.88 | 5 | 4.42 | 0 | 0 |
| 12 | 8 | 7.08 | 41 | 36.28 | 22 | 19.47 | 42 | 37.17 | 0 | 0 |
| 13 | 16 | 14.16 | 50 | 44.25 | 5 | 4.42 | 42 | 37.17 | 0 | 0 |
| 14 | 5 | 4.42 | 65 | 57.52 | 7 | 6.19 | 36 | 31.86 | 0 | 0 |
| 15 | 6 | 5.31 | 67 | 59.29 | 7 | 6.19 | 33 | 29.20 | 0 | 0 |
| 16 | 3 | 2.65 | 39 | 34.51 | 29 | 25.66 | 41 | 36.28 | 1 | 0.88 |
| 17 | 3 | 2.65 | 35 | 30.97 | 17 | 15.04 | 57 | 50.44 | 1 | 0.88 |
| 18 | 5 | 4.42 | 31 | 27.43 | 17 | 15.04 | 60 | 53.10 | 0 | 0 |
| 19 | 5 | 4.42 | 31 | 27.43 | 15 | 13.27 | 61 | 53.98 | 1 | 0.88 |
| 20 | 8 | 7.08 | 56 | 49.56 | 28 | 24.78 | 21 | 18.58 | 0 | 0 |
| 21 | 11 | 9.73 | 78 | 69.03 | 5 | 4.42 | 19 | 16.81 | 0 | 0 |
| 22 | 9 | 7.96 | 62 | 54.87 | 8 | 7.08 | 34 | 30.09 | 0 | 0 |
| 23 | 4 | 3.54 | 71 | 62.83 | 5 | 4.42 | 33 | 29.20 | 0 | 0 |
| 24 | 7 | 6.19 | 76 | 67.26 | 8 | 7.08 | 22 | 19.47 | 0 | 0 |
| Total score | 905 | | 5836 | | 984 | | 1482 | | 3 | |
| Average | 8.01 | 3.34 | 51.65 | 26.90 | 8.71 | 6.05 | 13.12 | 13.66 | 0.03 | 0.06 |

*Note: n= Number of .respondens who answered questions.*
*SA : Strongly Agree. A : Agreed. Df : Doubtful. Da : Disagree. SD : Strongly Disagree*

The average score for community participation was 51.65. As it fell within the range of 39–57, according to the criteria provided in Table 1, the community participation was categorized as “Moderate” (Figure 3). This suggests that the community showed a reasonable level of participation. In other words, while there was reasonable engagement among the community in FMU Balige's activities, several barriers still limited the achievement of higher levels of participation. There might still be some opportunities to enhance and encourage more active involvement in community activities and initiatives.

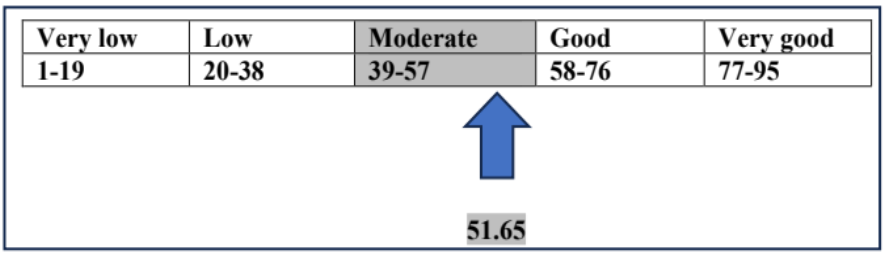


**Figure 3:** Score Range and Criteria for Community Participation

Addressing community participation through education, resources support, improved communication, and inclusive practices could foster a more participatory environment, ultimately enhancing the effectiveness of forest management initiatives and ensuring that community voices are heard and valued. For organizations aiming to improve participation levels, understanding where they fall within this spectrum of participation can guide strategies to increase engagement, foster community involvement, and strengthen relationships between the community and the initiatives or programs being offered.

**Strategies for the Development of Ecotourism in Toba Regency**

The internal strategic factors (IFAS) and external strategic factors (EFAS) of the development of ecotourism in Toba Regency are presented in Table 5 and Table 6, and the final IFAS and EFAS scores are presented in Table 7. As for the matrix position of the ecotourism development planning strategies, it is provided in Figure 4.

**Table 5:** Internal Strategic Factors (IFAS)

| No | Internal Strategic Factors | Weight | Rating | Score |
|---|---|---|---|---|
| | **Strength** | | | |
| 1 | Diverse potential for nature tourism | 0,02 | 4 | 0,08 |
| 2 | High community interest in managing nature tourism | 0,04 | 4 | 0,16 |
| 3 | Local wisdom in managing nature tourism, especially religious tourism | 0,08 | 4 | 0,32 |
| 4 | Existence of nature tourism management organizations (Village Forest institutions, community forests, and youth organizations) | 0,06 | 4 | 0,24 |
| 5 | Existence of tourism awareness groups officially recognized by the regent | 0,06 | 4 | 0,24 |
| | Total | 0,26 | | 1,04 |
| | Totality | | | 1,30 |
| | **Weakness** | | | |
| 1 | Suboptimal management of nature tourism areas | 0,06 | 1 | 0,06 |
| 2 | Lack of promotional ability from the managers | 0,13 | 2 | 0,25 |
| 3 | Insufficient human resources for managing nature tourism | 0,08 | 2 | 0,17 |
| 4 | Insufficient funding for managing nature tourism | 0,02 | 1 | 0,02 |
| 5 | Insufficient facilities and infrastructure in FMU 4 | 0,04 | 2 | 0,08 |
| 6 | Low accessibility to nature tourism objects | 0,08 | 1 | 0,08 |
| 7 | Lack of creativity in managing similar nature tourism objects | 0,17 | 1 | 0,17 |
| 8 | Lack of services in managing similar nature tourism objects | 0,15 | 1 | 0,15 |
| | Total | 0,73 | | 0,98 |
| | Totality | 1.00 | | 1,72 |

**Table 6:** External Strategic Factors (EFAS)

| No | External Strategic Factors | Weight | Rating | Score |
|---|---|---|---|---|
| | **Opportunity** | | | |
| 1 | Inclusion of Toba regency as a national strategic area | 0,03 | 4 | 0,11 |
| 2 | Regulation as a super priority national tourism destination area | 0,14 | 3 | 0,41 |
| 3 | Existence of tourism association networks | 0,16 | 3 | 0,49 |
| 4 | Very good accessibility to national strategic area (NSA) | 0,05 | 3 | 0,16 |
| 5 | Advances in communication technology can be utilized for nature tourism promotion | 0,08 | 4 | 0,33 |
| 6 | Tradition of returning home to develop the area, including nature tourism | 0,08 | 3 | 0,24 |
| | Total | 0,54 | | 1,74 |
| | Totality | | | 2,29 |
| | **Threat** | | | |
| 1 | High potential for forest fires | 0,04 | 1 | 0,04 |
| 2 | High pressure from other sector developments on forest areas | 0,08 | 2 | 0,16 |
| 3 | Low community income levels | 0,08 | 2 | 0,16 |
| 4 | Damage to local culture due to incoming tourists | 0,10 | 2 | 0,20 |
| 5 | Damage to ecosystems due to visitors | 0,12 | 2 | 0,24 |
| 6 | Floods and landslides in nature tourism locations | 0,03 | 1 | 0,03 |
| | Total | 0,46 | | 0,84 |
| | Totality | 1.00 | | 1,30 |

**Table 7:** Final IFAS and EFAS Scores

| IFAS | | EFAS | |
|---|---|---|---|
| Category | Total Score | Category | Total Score |
| S | 1.04 | O | 1.74 |
| W | 0.98 | T | 0.84 |
| Total (S-W) | 0.06 | Total (O-T) | 0.90 |

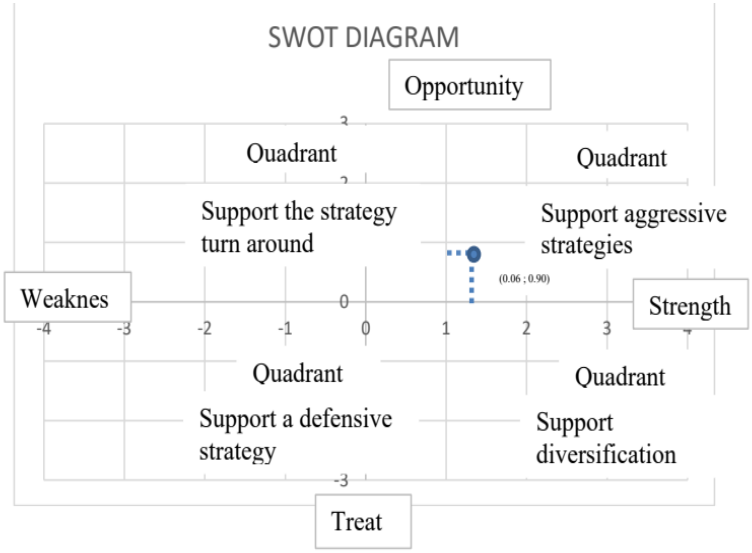


**Figure 4:** Matrix Position of the Ecotourism Development Planning Strategies

The SWOT quadrant scheme established based on analysis can be explained as follows:

1. The Strengths-Opportunities (S-O) quadrant is designated for strategies that utilize internal strengths to take advantage of external opportunities.
2. The Weaknesses-Opportunities (W-O) quadrant is designated for strategies that overcome internal weaknesses to take advantage of external opportunities.
3. The Strengths-Threats (S-T) quadrant is designated for strategies that utilize strengths to overcome external threats.
4. The Weaknesses-Threats (W-T) quadrant is designated for defensive strategies that aim to reduce the impact of internal weaknesses and external threats.

Based on Figure 4, the ecotourism development strategies are positioned within Quadrant I of the SWOT diagram, which means strengths and opportunities are high, while weaknesses and threats are low. The strategies

established were based on the researchers' considerations and data, aiming to achieve sustainable ecotourism development planning in the working area of FMU Balige in Toba Regency.

The SWOT matrix of the ecotourism development planning strategies for FMU Balige is presented in Table 8.

**Table 8:** SWOT Matrix for the Ecotourism Development Planning Strategies

| Internal / External | Strengths (S) | Weaknesses (W) |
|---|---|---|
| | 1. Diverse potential for nature tourism<br>2. High community interest in managing nature tourism<br>3. Local wisdom in managing nature tourism, especially religious tourism<br>4. Existence of nature tourism management organizations<br>5. Existence of tourism awareness groups officially recognized by the regent | 1. Suboptimal management of nature tourism areas<br>2. Lack of promotional ability from the managers<br>3. Insufficient human resources for managing nature tourism<br>4. Insufficient funding for managing nature tourism<br>5. Insufficient facilities and infrastructure in FMU 4<br>6. Low accessibility to nature tourism objects<br>7. Lack of creativity in managing similar nature tourism objects<br>8. Lack of services in managing similar nature tourism objects |
| **Opportunities (O)** | **Strategy S-O** | **Strategy W-O** |
| 1. Inclusion of Toba regency as a national strategic area<br>2. Regulation as a super priority national tourism destination area<br>3. Existence of tourism association networks<br>4. Very good accessibility to NSA areas<br>5. Advances in communication technology can be utilized for nature tourism promotion<br>6. Tradition of returning home to develop the area, including nature tourism | 1. Develop and Promote Diverse Tourism Packages<br>2. Empower Communities with Digital Tools<br>3. Integrate Cultural and Religious Elements<br>4. Enhance Organizational Capacity<br>5. Amplify Awareness Efforts Digitally | 1. Enhance Management Practices through Partnerships and Training:<br>2. Boost Promotional Abilities Using Digital Tools and Networks:<br>3. Attract and Train Human Resources:<br>4. Secure Funding through National Programs and Private Partnerships:<br>5. Develop Infrastructure Using National Funding and Good Accessibility:<br>6. Improve Access and Virtual Visibility:<br>7. Foster Creativity and Innovation:<br>8. Enhance Service Quality through Training and Standards |
| **Treats (T)** | **Strategy S-T** | **Strategy W-T** |
| 1. High potential for forest fires<br>2. High pressure from other sector developments on forest areas<br>3. Low community income levels<br>4. Damage to local culture due to incoming tourists<br>5. Damage to ecosystems due to visitors<br>6. Floods and landslides in nature tourism locations | 1. Diversify Tourism to Mitigate Ecological Risks<br>2. Engage Community in Income-Generating and Culture-Preserving Tourism:<br>3. Apply Local Wisdom in Tourism Management and Advocacy:<br>4. Enhance Disaster Preparedness through Management Organizations:<br>5. Promote Responsible Tourism through Awareness Groups: | 1. Enhance Management through Risk Training and Systems:<br>2. Promote Responsible Tourism and Joint Promotions:<br>3. Bolster Human Resources through Volunteer and Cross-Training Programs:<br>4. Secure Funding for Resilient Infrastructure and Conservation:<br>5. Develop and Maintain Resilient Infrastructure:<br>6. Improve Access with Safe Routes and Adaptive Transportation:<br>7. Innovate and Rotate Tourism Practices: Enforce Service Standards and Eco-Friendly Solutions |

The strategies above outline comprehensive approaches to developing sustainable ecotourism practices based on community involvement, digital innovation, cultural integration, and proactive risk management. By leveraging strengths, addressing weaknesses, seizing opportunities, and mitigating threats, FMU Balige can enhance its tourism offerings while ensuring environmental conservation, community empowerment, and economic benefits. Implementing these strategies requires collaboration among stakeholders, adherence to best practices, and continuous monitoring to achieve long-term sustainability in ecotourism development. To achieve sustainable ecotourism goals, careful planning must involve local communities, strengthen infrastructure, and implement policies that align economic growth with nature conservation. A collaborative approach and pentahelix partnership (government, community, academics, business actors, and media) are key to facing this challenge and maximizing the potential of Toba Regency as an environmentally friendly and community-based ecotourism destination.

## CONCLUSION

The community had a generally positive perception of the ecotourism development plan, as shown by a perception score of 61.56, which fell within the "Good" category. This suggests a strong foundation, with some room for improvement. Meanwhile, community participation was in the “Moderate” category, with a score of 51.65, indicating both interest in and potential for greater engagement. Strategies to increase involvement include improving communication and offering more participation opportunities. The ecotourism development plan’s being positioned in Quadrant I of the SWOT diagram suggests that it has strengths that can be leveraged to capitalize on available opportunities, promoting sustainable and beneficial ecotourism development.

Based on the results of this study, it is suggested that local authorities and stakeholders should strengthen community engagement in the ecotourism development planning, leveraging the existing positive perceptions while addressing the factors contributing to moderate participation. This collaborative approach will not only promote sustainable ecotourism development but also enhance the overall well-being of the community, ensuring that ecotourism benefits are widely shared and effectively realized.

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