ECO-TOURISM AND ENVIRONMENT

Sustainable Eco-Tourism Potential of Mt. Kabalalaan in Barangay Badak, Datu Odin Sinsuat, Maguindanao del Norte, Philippines

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Abstract

Eco-tourism promotes appreciation and local heritage, traditions, and cultural diversity. Mount Kabalalaan, renowned for its rich biodiversity, scenic landscapes, and cultural heritage, presents significant potential for eco-tourism development. Yet, despite these natural and cultural assets, the area remains underutilized due to the absence of a structured framework for sustainable eco-tourism. Moreover, the lack of clear policies and adequate infrastructure continues to hinder efforts to harness eco-tourism as a tool for both community development and environmental conservation. This study aims to explore the sustainable eco-tourism potential of Mt. Kabalalaan by evaluating its natural and cultural resources, existing tourism-related activities, and the preparedness of local stakeholders to participate and benefit from eco-tourism. It seeks to identify critical gaps, environmental risks, and opportunities for inclusive and sustainable development. Addressing these challenges is essential to ensure that future tourism initiatives uphold the principles of sustainability, empower local communities, and safeguard ecological integrity. This study adopted a descriptive and exploratory research design. It explored the current conditions of Mt. Kabalalaan in terms of its natural, cultural, and socio-economic features, enabling a more in-depth investigation of opportunities, challenges, and strategies for eco-tourism development. Both qualitative and quantitative methods were used to obtain a comprehensive understanding of the site's eco-tourism potential. It was conducted at Mt. Kabalalaan, Datu Odin Sinsuat, Maguindanao, under the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM). The participants included residents, barangay officials, community leaders, indigenous groups, and small entrepreneurs from Barangay Badak, selected through purposive sampling to ensure that only individuals with relevant knowledge and direct involvement in local development and resource management are included. Finally, the study revealed that Mt. Kabalalaan possesses all the necessary natural assets to become a successful eco-tourism destination. With the community's strong willingness to support and participate, combined with proper planning, infrastructure development and environmental protection, it can be achieved sustainable growth that benefits both the people and the environment. However, It is recommended that, base on the study. The development of infrastructure and facilities, that the area has ''high potential'' but needs proper development to maximize its offerings. Construct basic amenities build necessary facilities such as comfort room, designated parking areas, viewing decks safe trails to improve visitors experience and safety. Strengthen Environmental Management and protection, addressing the identified environment issues such as improper waste disposal and deforestation. Implement Strict waste management, establish systematic collection and disposal system, provide trash bins in strategic locations strictly, Community empowerment and capacity building. Conduct a training program for residents to become professional tour guides. Cultural preservation, encourage to sale of indigenous products, allowing the community to earn while preserving their culture. And lastly, collaborative partnership and governance ensuring shared benefits

and sustainable development, strong LGU leadership, should take the lead and planning, policy-making and promotion while ensuring that the community remains the primary beneficiary.

Keywords: Eco-tourism potential; environmental management; sustainable development; Mt. Kabalalaan; community-based tourism; SWOT analysis

1 Introduction

Tourism is often described as a double-edged sword. While it generates jobs, promotes cultural exchange, and stimulates economic growth, it can also bring negative consequences such as environmental degradation, displacement of communities, and long-term ecological damage if poorly managed (Rivera & Gutierrez, 2018).But then again-tourism is a vital industry that contributes to economic growth by generating revenue, creating employment, and fostering infrastructure development. For example, in Europe the tourism sector recorded 1.5 billion overnight stays and over €200 billion in revenue in a recent year (Eurostat, 2020). As cited by Sibva et al.,(2025). Meanwhile, ecotourism offers tourism companies and third world destinations alike a capital prospect comparative advantage of the nations. It helps community development by providing the alternative source of livelihood to the local community (Honey, 2008; Das & Chatterjee, 2015).

In the study conducted in Turkey, potential ecotourism in the protected area particularly in Kazdaglari (Mount Ida) is one of the important mountain chains situated on the provincial borders of Canakkale and Balikesir. It possesses rich resources in terms of natural and cultural aspects, within its borders (Cetinkaya et al., 2014).

In response to these issues, eco-tourism has emerged as a sustainable alternative that seeks to balance human enjoyment with environmental conservation and community well-being. Eco-tourism emphasizes minimizing ecological impact, raising awareness about the environment, involving communities in planning and decision-making, and ensuring that benefits are shared fairly (Yu, 2020).

Mountain environments in the Philippines are highly significant in this regard. They are rich in biodiversity, serve as vital watersheds, and preserve cultural traditions of local and Indigenous Peoples. However, many mountain areas remain underdeveloped or lack proper infrastructure and institutional support to realize their full eco-tourism potential (Department of Environment and Natural Resources [DENR], 2020; Philippine Institute for Development Studies [PIDS], 2019).

Mt. Kabalalaan, located in Barangay Badak, Datu Odin Sinsuat, Maguindanao, is such one site. The mountain is home to forests, streams, and diverse wildlife, and it serves as an important watershed for surrounding communities. It also holds cultural value as part of the traditions and identity of residents. Despite these natural and cultural assets, Mt. Kabalalaan has not yet been promoted or developed as an eco-tourism destination (Municipality of Datu Odin Sinsuat, 2020; Department of Tourism–BARMM, 2022).

This study aims to explore the sustainable eco-tourism potential of Mt. Kabalalaan. By evaluating its ecological resources, cultural heritage, and community readiness, the study hopes to provide insights that will guide conservation and local development. Ultimately, the goal is to make Mt. Kabalalaan a model of sustainable eco-tourism in the Bangsamoro region.

2 Review of related literature

Sustainable eco-tourism has emerged as a transformative approach to travel, emphasizing the balance between environmental conservation, cultural preservation, and economic development. Globally, the concept has evolved from niche adventure tourism into a mainstream strategy for responsible travel. The United Nations World Tourism Organization (UNWTO) defines eco-tourism as "responsible travel to natural areas that conserves the environment, sustains the well-being of local people, and involves interpretation and education" (UNWTO, 2002). Countries such as Costa Rica, Bhutan, and Kenya have successfully implemented community-based eco-tourism models that integrate biodiversity protection with local empowerment (Honey, 2008; Scheyvens, 2011). These models prioritize participatory governance, environmental education, and equitable benefit-sharing. For instance, Costa Rica's national parks generate revenue through entrance fees and guided tours, which support conservation and community development (Weaver, 2001). Bhutan's "high value, low impact" tourism policy ensures that tourism does not compromise cultural integrity or environmental sustainability (Royal Government of Bhutan, 2019). These global examples demonstrate that eco-tourism can be both economically viable and ecologically responsible when guided by strong policies and community involvement.

Eco-tourism is a sub-component of the field of sustainable tourism perceived potential as an effective for sustainable development is the main reason why developing countries are now enhancing it and including their economic development and conservation strategies. Ecotourism as an alternative tourism involves visiting natural environment in order to learn. To carry out activities environmentally friendly that is a tourism based on nature experience which enables economics and social development of local communities. (Kiper, 2013).

In the Philippine context, eco-tourism is recognized as a vital component of sustainable development. The country's rich biodiversity and cultural diversity make it an ideal destination for eco-tourism. The Department of Tourism (DOT) and the Department of Environment and Natural Resources (DENR) have jointly developed the National Ecotourism Strategy (NES), which outlines principles for managing protected areas and promoting responsible tourism (Department of Tourism & Department of Environment and Natural Resources, 2013). However, implementation remains uneven across regions. According to Yu (2020), while eco-tourism fosters environmental and cultural awareness, many destinations in the Philippines struggle with overdevelopment, lack of regulation, and marginalization of indigenous communities. The case of Boracay Island, where rapid urbanization led to environmental degradation and displacement of the indigenous Ati community, underscores the need for sustainable planning and community engagement (Magno, 2019; Rances, 2021). In contrast, successful eco-tourism initiatives such as the Tubbataha Reefs Natural Park demonstrate how strict regulation and community involvement can lead to conservation success. Tubbataha's revenue-sharing system incentivizes local communities to protect marine resources, resulting in increased fish catch and diversified income streams (Dygico et al., 2013; UNESCO, 2022).

Mindanao, the second-largest island in the Philippines, offers vast natural resources and cultural richness that position it as a prime eco-tourism destination. The Mindanao Development Authority (MinDA) has identified sustainable tourism as a key development strategy (Mindanao Development Authority [MinDA], 2020). Sites such as Lake Sebu, Mt. Apo, and the Agusan Marsh showcase the region's potential to attract eco-tourists while preserving indigenous traditions (Department of Tourism [DOT], 2021). Lake Sebu, for instance, is managed by the T'boli tribe, who offer cultural performances, handicrafts, and eco-lodges. This model promotes cultural pride and economic

empowerment (Brillo, 2019). However, Mindanao faces unique challenges that hinder the growth of eco-tourism. Peace and security concerns, limited infrastructure, and lack of capacity among local stakeholders are persistent barriers (Yu, 2020). Moreover, many areas lack baseline data on biodiversity and cultural assets, making planning difficult (DENR & DOT, 2018). Despite these challenges, community-based tourism models have shown promise. When local stakeholders are involved in planning and management, tourism becomes a tool for development rather than exploitation (Dela Cruz & Estanol, 2022).

Maguindanao, located in the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM), remains largely unexplored in academic literature on eco-tourism. Mt. Kabalalaan, in particular, is a natural site with considerable potential. Preliminary observations suggest that the mountain is home to endemic flora and fauna, sacred cultural sites, and scenic landscapes suitable for trekking, birdwatching, and cultural immersion (Mindanao Development Authority [MinDA], 2022). The BARMM government, through its Ministry of Trade, Investments and Tourism (MTIT), has initiated programs to promote sustainable tourism. These include training local guides, supporting community enterprises, and integrating tourism into regional development plans (MTIT-BARMM, 2023). However, Mt. Kabalalaan lacks formal tourism infrastructure, promotional materials, and comprehensive policy frameworks. There is also limited awareness among local communities about eco-tourism principles (Alonto, 2021). Addressing these gaps requires a multi-sectoral approach involving local government units, BARMM agencies, NGOs, and academic institutions (Cruz & Corpuz, 2020). Opportunities abound in developing trekking circuits, cultural immersion programs, and eco-lodges. Digital platforms can be leveraged to promote the site and attract responsible tourists (Department of Tourism [DOT], 2022).

Literature on eco-tourism consistently emphasizes the importance of community-based approaches. Studies by Honey (2008) and Wearing and Neil (2009) argue that eco-tourism must be led by local communities to ensure sustainability. This involves participatory planning, capacity-building, and equitable revenue-sharing. When communities have a stake in tourism, they are more likely to protect natural and cultural resources (Honey, 2008; Wearing & Neil, 2009). Environmental education is also a key component, as it fosters awareness among tourists and locals about conservation practices (Scheyvens, 1999). Interpretive trails, eco-lodges, and guided tours serve as tools for promoting environmental stewardship (Weaver, 2001). In successful eco-tourism models, tourists are not passive consumers but active learners—they engage with local ecosystems and cultures, gaining a deeper appreciation for conservation (Fennell, 2020).

Effective policy and governance are critical for eco-tourism. Without clear regulations, monitoring systems, and inter-agency collaboration, eco-tourism initiatives risk becoming exploitative (Honey, 2008; Wearing & Neil, 2009). The Philippines' National Ecotourism Strategy provides a framework, but local implementation varies (Department of Tourism [DOT] & Department of Environment and Natural Resources [DENR], 2013). In BARMM, the integration of eco-tourism into regional development plans is a positive step, but more work is needed to align policies with ground realities (BARMM-MTIT, 2021). Case studies relevant to Mt. Kabalalaan offer valuable insights. Lake Sebu's eco-tourism model includes ziplining over waterfalls, cultural performances by the T'boli tribe, and community-run resorts, demonstrating how indigenous culture can be central to tourism (Calanog, 2012; Ocampo, 2018). Mt. Apo's management plan includes zoning, carrying capacity limits, and ranger patrols, serving as a model for balancing tourism and conservation (DENR-Protected Area Management Board, 2017). Tubbataha Reefs, though marine-based, demonstrates the effectiveness of strict regulation and community involvement in preserving biodiversity (Dygico et al., 2013).

Mt. Kabalalaan faces several challenges that must be addressed to unlock its eco-tourism potential. These include limited access roads, security concerns, lack of promotional materials, and absence of formal tourism policies (BARMM-MTIT, 2022; Yu, 2020). Addressing these issues requires a multi-sectoral approach involving local government units, community organizations, and the private sector (Wearing & Neil, 2009). Opportunities include developing trekking circuits, cultural immersion programs, and eco-lodges (Honey, 2008). Partnerships with universities can facilitate biodiversity assessments, ethnographic studies, and feasibility analyses (Bennett et al., 2017). Digital platforms can be used to promote Mt. Kabalalaan and attract responsible tourists (UNWTO, 2021). Moreover, training programs for local guides and entrepreneurs can build capacity and ensure that tourism benefits the community (Scheyvens, 2011). Integrating eco-tourism into BARMM's development agenda can also provide policy support and funding (MinDA, 2020; BARMM-MTIT, 2022).

There is a need for comprehensive biodiversity mapping, documentation of indigenous knowledge systems, and analysis of community readiness (Bennett et al., 2017; Berkes, 2018). Policy studies on BARMM's tourism strategy can inform local planning and ensure alignment with regional goals (BARMM-MTIT, 2022; Yu, 2020). Impact assessments should be conducted to evaluate the environmental, social, and economic effects of tourism activities (Honey, 2008; Scheyvens, 2011). These studies will provide evidence-based recommendations for sustainable development. Mt. Kabalalaan represents a promising site for sustainable eco-tourism in Maguindanao. Drawing from global models and regional experiences, stakeholders can craft a tourism framework that promotes conservation, cultural preservation, and inclusive growth (UNWTO, 2021; Wearing & Neil, 2009). By addressing existing challenges and filling research gaps, Mt. Kabalalaan can become a beacon of sustainable development in BARMM and beyond. The integration of community-based approaches, environmental education, and effective governance will be key to unlocking its potential (Scheyvens, 2011; BARMM-MTIT, 2022).

3 Materials and methods

3.1 Research design

This study adopted a descriptive and exploratory research design. The descriptive approach is appropriate because it documents the current conditions of Mt. Kabalalaan in terms of its natural, cultural, and socio-economic features. The exploratory approach, meanwhile, enables a more in-depth investigation of opportunities, challenges, and strategies for eco-tourism development. Both qualitative and quantitative methods were used to obtain a comprehensive understanding of the site's eco-tourism potential.

3.2 Locale of the study

The study was conducted in Mt. Kabalalaan, situated in Barangay Badak, Datu Odin Sinsuat, Maguindanao, under the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM). Forested landscapes, streams, and diverse flora and fauna characterize the mountain. It also functions as an important watershed for surrounding communities and holds cultural significance for residents.

3.3 Study respondents

The participants of the study included residents, barangay officials, community leaders, indigenous groups, and small entrepreneurs from Barangay Badak and nearby areas. They were selected through purposive sampling to ensure that only individuals with relevant knowledge and direct involvement

in local development and resource management are included. Their perspectives provided essential insights into the readiness and capacity of the community to engage in eco-tourism initiatives.

3.4 Data gathering methods

Data were collected using a combination of field-based and community-based techniques.

Natural and Cultural Attractions. Field surveys, site mapping, photography, and GPS tagging were used to document the natural landscapes and cultural heritage sites of Mt. Kabalalaan. The output will be an inventory of attractions that may serve as eco-tourism resources.

Community Readiness and Participation. Household surveys, focus group discussions (FGDs), and key informant interviews (KIIs) were administered to barangay officials, community leaders, and residents. These tools assessed the level of awareness, willingness, and preparedness of the community to engage in eco-tourism development.

Socio-Economic Benefits. Structured questionnaires and semi-structured interviews were used to gather data from households and small business owners. The goal is to identify potential sources of livelihood, income opportunities, and other benefits that eco-tourism may bring to residents.

3.5 Data analysis

Data collected from respondents, the field and the community were analysed through both qualitative and quantitative approaches. Survey responses were tabulated and analysed using descriptive statistics, including frequencies, percentages, and means. Qualitative data from interviews and FGDs were transcribed and subjected to thematic analysis to identify recurring themes and insights. Finally, a SWOT (strengths, weaknesses, opportunities, threats) analysis was used to integrate ecological, cultural, and socio-economic findings and to develop practical recommendations for sustainable eco-tourism planning.

3.6 Ethical considerations

The study observed ethical standards in conducting research with human participants. Before participation, informed consent was obtained from all respondents. Participation was voluntary, and strict confidentiality was maintained. The cultural practices and traditional knowledge of indigenous peoples were respected at all times, and findings are presented in a way that benefits the community.

4 Results and discussion

This section presents the analysis, interpretation and discussion of the data gathered regarding the sustainable eco-tourism potential of Mt. Kabalalaan in Barangay Badak, Datu Odin Sinsuat, Maguindanao del Norte. The findings were obtained through surveys, Key Informant Interviews (KII), Focus Group Discussions (FGD), and Semi-Structured Interviews (SSI). It also includes thematic analysis, supporting statements, and related citations to strengthen the discussion of the findings.

4.1 Respondents' profile

The demographic profile of the respondents was analyzed in terms of age, gender, community role, and length of stay in the area. These variables were considered important because they influence the respondents' familiarity and understanding of the environmental condition and eco-tourism potential of Mt. Kabalalaan. The profile is presented in Tables 1–4.

Table 1. Age distribution of the respondents.

Ages	Frequency (f)	Percentage (%)
19–28	14	9.3
29–38	37	24.7
39–48	61	40.7
49–58	24	16.0
59–68	9	6.0
69–78	4	2.7
79–88	1	0.7
Total	150	100.0

Table 1 reveals that the majority of respondents belong to the age group of 39–48 years old, comprising 40.7% of the total respondents. This indicates that middle-aged individuals are more knowledgeable and actively involved in environmental and tourism-related activities within the community. Their long-term experience and exposure to the area allowed them to provide reliable information regarding the eco-tourism potential of Mt. Kabalalaan.

The findings imply that mature respondents possess extensive environmental awareness and community involvement. According to Rogers and Kincaid (1981), middle-aged individuals often serve as active participants in community-based environmental and development programs because of their social experience and decision-making capacity. Similarly, Singh and Das (2021) emphasized that age and community involvement contribute significantly to environmental awareness and sustainable tourism participation.

Table 2 presents the gender distribution of the respondents.

Table 2. Gender distribution of the respondents.

Gender	Frequency (f)	Percentage (%)
Male	73	48.7
Female	70	46.7
Not specified	7	4.7
Total	150	100

The findings show that male respondents slightly outnumber female respondents. However, the small difference between the number of male and female respondents indicates balanced participation from both genders. This suggests that environmental conservation and eco-tourism development are concerns shared by both men and women in the community.

The active participation of both genders strengthens community collaboration in environmental management and tourism planning. Truong et al. (2020) explained that gender-inclusive participation contributes to more effective environmental management because men and women possess different perspectives and experiences related to natural resource use and conservation. Agarwal and Parida (2021) further emphasized that women play an important role in biodiversity conservation and local environmental management.

Table 3 presents the respondents' status or role in the community.

Table 3. Respondents' status or role in the community.

Community status/role	Frequency (f)	Percentage (%)
LGU	14	9.3
DENR Personnel	0	0
Tourism Officer	0	0
Barangay Official	5	3.3
Indigenous Leader	6	4.0
Resident	108	72.0
Tourist	0	0
Tourist Guide	2	1.3
Student	1	0.7
NGO	0	0
Others	14	9.3
Total	150	100

The majority of respondents were residents, accounting for 72% of the total respondents. This indicates that the study strongly reflects the perspectives of community members who directly experience the environmental condition and tourism activities in Mt. Kabalalaan.

Local residents are considered primary stakeholders in eco-tourism development because they are directly affected by environmental changes and tourism-related activities. According to Okazaki and Kawamura (2021), residents possess firsthand knowledge regarding local environmental issues and tourism potentials, making them important contributors to sustainable tourism planning.

The involvement of barangay officials, indigenous leaders, and LGU representatives also demonstrates community cooperation and shared responsibility in environmental conservation and eco-tourism development.

Table 4 presents the length of stay or service in the area.

Table 4. Length of stay or service in the area.

Number of years	Frequency (f)	Percentage (%)
Below 1 year	0	0
1 to 5 years	5	3.3
6 to 10 years	18	12.0
More than 10 years	127	84.7
Total	150	100

Most respondents have stayed in the area for more than ten years, representing 84.7% of the total respondents. This indicates that the respondents possess sufficient knowledge and familiarity regarding the environmental condition and eco-tourism potential of Mt. Kabalalaan.

Long-term residency strengthens environmental awareness and place attachment. Gustafson (2020) explained that residents who have stayed in an area for a long time are more knowledgeable about environmental changes, community issues, and local resources because of their continuous interaction with the environment.

The findings imply that the respondents are capable of providing reliable insights regarding sustainable eco-tourism development and environmental conservation in the area.

4.2 Interpretation of mean scores

Table 5 presents the interpretation of weighted mean scores.

Table 5. Interpretation of weighted mean scores.

Scale range	Verbal interpretation
1.00-1.75	Disagree/Not Yet Developed
1.76-2.50	Moderately Suitable
2.51-3.25	Agree/Suitable Moderately
3.26-4.00	Strongly Agree/Highly Suitable

The Likert Scale served as the basis for interpreting the responses gathered from the Key Informant Interviews, Focus Group Discussions, and Semi-Structured Interviews (Table 5). Higher mean scores indicate stronger agreement among respondents regarding eco-tourism development, environmental sustainability, and community participation.

4.3 Key informant interview results

This section presents the results and discussion of the Key Informant Interview (KII) conducted among LGU officials, barangay officials, tourism officers, indigenous leaders, and other stakeholders regarding the eco-tourism potential of Mt. Kabalalaan (Tables 6–13). The responses reflect the current condition, sustainability practices, community participation, and challenges affecting the development of eco-tourism in the area.

4.3.1 Current condition of eco-tourism

Table 6 presents the responses to the question "How would you describe the current condition of eco-tourism in Mt. Kabalalaan?"

Table 6. Key informant responses: current condition of eco-tourism.

Response	Scale	Frequency	Percentage	Weighted score
Well and fully developed	4	8	11.4%	32
Moderately developed	3	18	25.7%	54
Not yet highly developed	2	34	48.6%	68
Not developed	1	10	14.3%	10
Total		70	100%	164

Note: Weighted mean = 2.34 (4 = highest response category, 1 = lowest).

The majority of respondents described the eco-tourism condition of Mt. Kabalalaan as not yet highly developed. This indicates that the area still lacks sufficient tourism facilities, infrastructure, and organized eco-tourism programs. Although the site possesses strong natural potential, development efforts remain limited. The moderate mean score suggests that eco-tourism activities are present but still require significant improvement and planning.

4.3.2 Eco-tourism potential of natural resources

Table 7 presents the responses to the question "Which natural resource provides eco-tourism potential in Mt. Kabalalaan?"

Table 7. Key informant responses: eco-tourism potential of natural resources.

Response	Scale	Frequency	Percentage	Weighted score
Forest biodiversity	4	16	22.9%	64
Wildlife	3	12	17.1%	36
Beautiful scenery	2	30	42.9%	60
Natural heritage and water resources	1	12	17.1%	12
Total		70	100%	172

Note: Weighted mean = 2.46 (4 = highest response category, 1 = lowest).

Most respondents identified the beautiful scenery and biodiversity of Mt. Kabalalaan as its main eco-tourism assets. This finding implies that the area has strong natural resources that can attract visitors and support sustainable tourism activities. However, the moderate interpretation also reflects the need for better conservation, promotion, and tourism development initiatives

4.3.3 Effectiveness of environmental protection measures

Table 8 presents the responses to the question "How effective are the current environmental protection measures?"

Table 8. Key informant responses: effectiveness of environmental protection measures.

Response	Scale	Frequency	Percentage	Weighted score
Very effective	4	10	14.3%	40
Effective	3	24	34.3%	72
Slightly effective	2	28	40.0%	56
Not effective	1	8	11.4%	8
Total		70	100%	176

Note: Weighted mean = 2.51 (4 = highest response category, 1 = lowest).

The respondents generally perceived the environmental protection measures as only slightly effective to effective. This suggests that current conservation activities and environmental regulations are insufficient to fully address environmental concerns in the area. The findings indicate the need for stronger implementation of environmental policies, community participation, and monitoring programs.

4.3.4 Sustainability priorities

Table 9 presents the responses to the question "Which should be prioritized to maintain sustainability?"

Table 9. Key informant responses: sustainability priorities.

Response	Scale	Frequency	Percentage	Weighted score
Limiting number of visitors	4	12	17.1%	48
Proper waste management	3	18	25.7%	54
Environmental education	2	30	42.9%	60
Community-based monitoring	1	10	14.3%	10
Total		70	100%	172

Note: Weighted mean = 2.46 (4 = highest response category, 1 = lowest).

Environmental education was identified as the top priority in maintaining sustainability in Mt. Kabalalaan. This implies that increasing environmental awareness among residents and visitors is essential for protecting the natural resources of the area. Proper waste management and visitor regulation were also recognized as important sustainability practices.

4.3.5 Community participation

Table 10 presents the responses to the question "What is the level of community participation in eco-tourism planning?"

Table 10. Key informant responses: community participation.

Response	Scale	Frequency	Percentage	Weighted score
Very high	4	6	8.6%	24
High	3	16	22.9%	48
Moderate	2	34	48.6%	68
Low	1	14	20.0%	14
Total		70	100%	154

Note: Weighted mean = 2.20 (4 = highest response category, 1 = lowest).

The findings reveal that community participation in eco-tourism planning is moderate. Most respondents believed that local residents are involved to some extent, but their participation is still limited in decision-making and tourism management. This suggests the need for stronger collaboration between the community, local government, and other stakeholders.

4.3.6 Eco-tourism management

Table 11 presents the responses to the question "Who should lead the management of eco-tourism?"

Table 11. Key informant responses: eco-tourism management.

Response	Scale	Frequency	Percentage	Weighted score
Local government unit (LGU)	4	14	20.0%	56

Response	Scale	Frequency	Percentage	Weighted score
Local community	3	34	48.6%	102
Private sector	2	10	14.3%	20
Shared management	1	12	17.1%	12
Total		70	100%	190

Note: Weighted mean = 2.71 (4 = highest response category, 1 = lowest).

Most respondents preferred the local community to lead eco-tourism management in Mt. Kabalalaan. This indicates that stakeholders believe community-based tourism management can help ensure sustainability and environmental protection. The findings also emphasize the importance of local participation and shared responsibility in tourism development.

4.3.7 Challenges in sustainable eco-tourism development

Table 12 presents the responses to the question "What is the biggest challenge in developing sustainable eco-tourism?"

Table 12. Key informant responses: challenges in sustainable eco-tourism development.

Response	Scale	Frequency	Percentage	Weighted score
Environmental threats	4	36	51.4%	144
Lack of funding	3	16	22.9%	48
Lack of knowledge and training	2	10	14.3%	20
Poor access and infrastructure	1	8	11.4%	8
Total		70	100%	220

Note: Weighted mean = 3.14 (4 = highest response category, 1 = lowest).

Environmental threats were identified as the biggest challenge affecting sustainable eco-tourism development in Mt. Kabalalaan. Respondents expressed concern regarding possible environmental degradation, deforestation, and improper tourism activities. The findings highlight the need for stricter environmental protection measures and sustainable tourism planning.

4.3.8 Overall suitability of Mt. Kabalalaan

Table 13 presents the responses to the question "Overall, how suitable is Mt. Kabalalaan as a sustainable eco-tourism site?"

Table 13. Key informant responses: overall suitability of Mt. Kabalalaan.

Response	Scale	Frequency	Percentage	Weighted score
Highly suitable	4	14	20.0%	56
Suitable	3	30	42.9%	90
Moderately suitable	2	18	25.7%	36
Not suitable	1	8	11.4%	8
Total		70	100%	190

Note: Weighted mean = 2.71 (4 = highest response category, 1 = lowest).

The respondents generally considered Mt. Kabalalaan as a suitable site for sustainable eco-tourism despite its current underdeveloped condition. This indicates that the area has strong eco-tourism potential because of its natural attractions and environmental resources. However, improvements in infrastructure, environmental management, and tourism planning are necessary to fully develop its potential.

4.4 Focus group discussion results

This section presents the results and discussion of the Focus Group Discussion (FGD) conducted among residents, youth, tourism workers, and environmental groups regarding the eco-tourism potential of Mt. Kabalalaan (Tables 14–21). The findings highlight the participants' perceptions of eco-tourism activities, environmental concerns, community participation, economic benefits, and recommendations for sustainable eco-tourism development.

4.4.1 Perception of eco-tourism potential

Table 14 presents the responses to the question "How do you view the eco-tourism potential of Mt. Kabalalaan?"

Table 14. Focus group responses: perception of eco-tourism potential.

Response	Scale	Frequency	Percentage	Weighted score
Very High	4	7	50.0%	28
High	3	4	28.6%	12
Moderate	2	2	14.3%	4
Low	1	1	7.1%	1
Total		14	100%	45

Note: Weighted mean = 3.21 (4 = highest response category, 1 = lowest).

The majority of participants perceived the eco-tourism potential of Mt. Kabalalaan as very high. This indicates that the area possesses strong natural attractions and resources that may support sustainable tourism activities. Participants recognized the scenic beauty and environmental value of the area, making it suitable for eco-tourism development.

4.4.2 Most suitable eco-tourism activity

Table 15 presents the responses to the question "Which eco-tourism activity is most suitable in Mt. Kabalalaan?"

Table 15. Focus group responses: most suitable eco-tourism activity.

Response	Scale	Frequency	Percentage	Weighted score
Hiking and trekking	4	8	57.1%	32
Nature photography	3	3	21.4%	9
Bird watching	2	2	14.3%	4
Cultural tours	1	1	7.1%	1
Total		14	100%	46

Note: Weighted mean = 3.29 (4 = highest response category, 1 = lowest).

Hiking and trekking were identified as the most suitable eco-tourism activities in Mt. Kabalalaan. This finding suggests that participants value outdoor recreational activities that allow visitors to experience the natural landscape and biodiversity of the area. Nature photography and bird watching were also recognized as possible activities that can promote environmental appreciation.

4.4.3 Environmental issue priority

Table 16 presents the responses to the question "Which environmental issue should be prioritized?"

Table 16. Focus group responses: environmental issue priority.

Response	Scale	Frequency	Percentage	Weighted score
Deforestation	4	3	21.4%	12
Improper waste disposal	3	7	50.0%	21
Threats to wildlife	2	2	14.3%	4
Soil erosion	1	2	14.3%	2
Total		14	100%	39

Note: Weighted mean = 2.79 (4 = highest response category, 1 = lowest).

Improper waste disposal was identified as the environmental issue that should be given the highest priority. This indicates that participants are concerned about environmental cleanliness and the possible effects of tourism-related waste on the natural condition of Mt. Kabalalaan. The findings emphasize the importance of proper waste management and environmental awareness programs.

4.4.4 Community support for environmental programs

Table 17 presents the responses to the question "How willing is the community to support environmental programs?"

Table 17. Focus group responses: community support for environmental programs.

Response	Scale	Frequency	Percentage	Weighted score
Very willing	4	8	57.1%	32
Willing	3	3	21.4%	9
Slightly willing	2	2	14.3%	4
Not willing	1	1	7.1%	1
Total		14	100%	46

Note: Weighted mean = 3.29 (4 = highest response category, 1 = lowest).

The majority of participants expressed that the community is very willing to support environmental programs. This suggests that residents and stakeholders recognize the importance of environmental protection and are willing to participate in sustainability initiatives.

4.4.5 Social and economic benefits of eco-tourism

Table 18 presents the responses to the question "What benefit can eco-tourism provide to the community?"

Table 18. Focus group responses: social and economic benefits of eco-tourism.

Response	Scale	Frequency	Percentage	Weighted score
Employment opportunities	4	7	50.0%	28
Additional income	3	3	21.4%	9
Cultural preservation	2	2	14.3%	4
All of the above	1	2	14.3%	2
Total		14	100%	43

Note: Weighted mean = 3.07 (4 = highest response category, 1 = lowest).

Employment opportunities were identified as the primary benefit of eco-tourism in the community. This finding implies that participants believe eco-tourism can improve livelihood opportunities and provide economic benefits to local residents. Additional income generation and cultural preservation were also recognized as important advantages.

4.4.6 *Main beneficiaries of eco-tourism*

Table 19 presents the responses to the question "Who should benefit the most from eco-tourism?"

Table 19. Focus group responses: main beneficiaries of eco-tourism.

Response	Scale	Frequency	Percentage	Weighted score
Local residents	4	8	57.1%	32
Indigenous peoples	3	3	21.4%	9
Business owners	2	2	14.3%	4
Government	1	1	7.1%	1
Total		14	100%	46

Note: Weighted mean = 3.29 (4 = highest response category, 1 = lowest).

Most participants believed that local residents should benefit the most from eco-tourism development. This suggests that community-based tourism is highly valued among participants, as it may improve local livelihoods and strengthen community participation in tourism management.

4.4.7 *Needed support for sustainable eco-tourism*

Table 20 presents the responses to the question "What support is most needed to develop sustainable eco-tourism?"

Table 20. Focus group responses: needed support for sustainable eco-tourism.

Response	Scale	Frequency	Percentage	Weighted score
Training and capacity building	4	3	21.4%	12
Infrastructure development	3	2	14.3%	6
Supportive policies	2	2	14.3%	4
Promotion and marketing	1	7	50.0%	7
Total		14	100%	29

Note: Weighted mean = 2.07 (4 = highest response category, 1 = lowest).

Promotion and marketing were identified as the most needed support for sustainable eco-tourism development in Mt. Kabalalaan. Participants emphasized the need to increase awareness and promote the area to attract visitors and investors. However, training, infrastructure, and supportive policies were also considered important for long-term development.

4.4.8 *Continuation of eco-tourism development*

Table 21 presents the responses to the question "Should eco-tourism development in Mt. Kabalalaan continue?"

Table 21. Focus group responses: continuation of eco-tourism development.

Response	Scale	Frequency	Percentage	Weighted score
Yes, fully supported	4	9	64.3%	36
Yes, with conditions	3	3	21.4%	9
Not sure	2	1	7.1%	2
No	1	1	7.1%	1
Total		14	100%	48

Note: Weighted mean = 3.43 (4 = highest response category, 1 = lowest).

The majority of participants strongly supported the continuation of eco-tourism development in Mt. Kabalalaan. This finding indicates strong confidence in the area's tourism potential and the possible social, economic, and environmental benefits that eco-tourism may bring to the community.

4.5 Semi-structured interview results

This section presents the results and discussion of the Semi-Structured Interview (SSI) conducted among respondents regarding the eco-tourism potential of Mt. Kabalalaan (Tables 22–27). The findings focus on awareness and experience, sustainable practices, eco-tourism activities, development and improvement, and the general assessment of the area as a sustainable eco-tourism site.

4.5.1 *Awareness and experience*

Table 22 presents the responses to the question "How would you rate your experience (or expected experience) in Mt. Kabalalaan?"

Table 22. Semi-structured interview responses: awareness and experience.

Response	Scale	Frequency	Percentage	Weighted score
Excellent	4	26	39.4%	104
Good	3	24	36.4%	72
Moderate	2	12	18.2%	24
Poor	1	4	6.1%	4
Total		66	100%	204

Note: Weighted mean = 3.09 (4 = highest response category, 1 = lowest).

The findings show that the majority of respondents rated their experience or expected experience in Mt. Kabalalaan as excellent and good. This indicates that respondents have a positive perception of the natural beauty and eco-tourism potential of the area. The high mean score suggests that visitors and community members appreciate the site's environmental condition and recreational value.

4.5.2 Sustainable practices

Table 23 presents the responses to the question "Which sustainable practice should be implemented?"

Table 23. Semi-structured interview responses: sustainable practices.

Response	Scale	Frequency	Percentage	Weighted score
Strict waste segregation	4	28	42.4%	112
Guided tours only	3	18	27.3%	54
Eco-friendly facilities	2	12	18.2%	24
Visitor orientation programs	1	8	12.1%	8
Total		66	100%	198

Note: Weighted mean = 3.00 (4 = highest response category, 1 = lowest).

Strict waste segregation was identified as the most important sustainable practice that should be implemented in Mt. Kabalalaan. This finding emphasizes the importance of environmental cleanliness and proper waste management in preserving the natural condition of the area. Respondents also recognized the value of guided tours and eco-friendly facilities in promoting responsible tourism.

4.5.3 Supported eco-tourism activity

Table 24 presents the responses to the question "Which eco-tourism activity are you willing to support?"

Table 24. Semi-structured interview responses: supported eco-tourism activity.

Response	Scale	Frequency	Percentage	Weighted score
Nature trekking	4	30	45.5%	120
Conservation volunteering	3	16	24.2%	48
Cultural immersion	2	12	18.2%	24
Educational tours	1	8	12.1%	8
Total		66	100%	200

Note: Weighted mean = 3.03 (4 = highest response category, 1 = lowest).

Nature trekking received the highest support among the eco-tourism activities. This indicates that respondents are highly interested in outdoor recreational activities that allow visitors to appreciate the natural beauty of Mt. Kabalalaan. Conservation volunteering also received positive responses, showing awareness regarding environmental protection and sustainable tourism participation.

4.5.4 Development and improvement

Table 25 presents the responses to the question "Which facility most needs improvement?"

Table 25. Semi-structured interview responses: development and improvement.

Response	Scale	Frequency	Percentage	Weighted score
Trails and signage	4	28	42.4%	112
Rest areas	3	18	27.3%	54
Safety and security	2	12	18.2%	24
Information centers	1	8	12.1%	8
Total		66	100%	198

Note: Weighted mean = 3.00 (4 = highest response category, 1 = lowest).

The respondents identified trails and signage as the facilities that most need improvement in Mt. Kabalalaan. This finding suggests that accessibility, visitor guidance, and safety are important concerns in the area. Improving these facilities may help enhance visitor satisfaction and strengthen eco-tourism development.

4.5.5 Recommendation of Mt. Kabalalaan

Table 26 presents the responses to the question "How willing are you to recommend Mt. Kabalalaan as an eco-tourism site?"

Table 26. Semi-structured interview responses: recommendation of Mt. Kabalalaan.

Response	Scale	Frequency	Percentage	Weighted score
Very willing	4	20	30.3%	80
Willing	3	30	45.5%	90
Slightly willing	2	12	18.2%	24
Not willing	1	4	6.1%	4
Total		66	100%	198

Note: Weighted mean = 3.00 (4 = highest response category, 1 = lowest).

Most respondents expressed willingness to recommend Mt. Kabalalaan as an eco-tourism destination. This reflects a positive perception of the area's tourism potential and natural attractions. The high interpretation indicates that respondents believe the site can become an effective eco-tourism destination with proper development and management.

4.5.6 General assessment

Table 27 presents the responses to the question "Do you think Mt. Kabalalaan can be developed without damaging nature?"

Table 27. Semi-structured interview responses: general assessment.

Response	Scale	Frequency	Percentage	Weighted score
Yes	4	18	27.3%	72
Yes, if there are strict regulations	3	32	48.5%	96
Maybe yes	2	10	15.2%	20

Response	Scale	Frequency	Percentage	Weighted score
No	1	6	9.1%	6
Total		66	100%	194

Note: Weighted mean = 2.94 (4 = highest response category, 1 = lowest).

The majority of respondents believed that Mt. Kabalalaan can be developed without damaging the environment provided that strict regulations are implemented. This finding highlights the importance of sustainable tourism planning, environmental protection measures, and proper management practices. Respondents recognized the need to balance tourism development with environmental conservation.

4.6 Thematic analysis

Table 28 presents the themes, codes and participants' responses on the eco-tourism potential and environmental issues of Mt. Kabalalaan.

Table 28. Themes, codes and participants' responses on the eco-tourism potential and environmental issues of Mt. Kabalalaan.

Themes	Codes/Keywords identified	Responses	Interpretation
Eco-tourism Potential	Waterfalls, caves, biodiversity, scenic views, mountains	"Mt. Kabalalaan has huge caves and waterfalls rich in biodiversity."	Respondents perceived Mt. Kabalalaan as a place with strong eco-tourism potential because of its natural attractions and environmental resources.
Suitable Eco-tourism Activities	Hiking, trekking, camping, nature photography, waterfalls exploration	"Mt. Kabalalaan is suitable for hiking and trekking because of its mountainous terrain."	Respondents identified outdoor and nature-based activities as appropriate eco-tourism activities in the area.
Community Participation and Support	Environmental programs, cooperation, readiness, support	"The community is willing to support environmental programs."	The findings indicate that the community is willing and prepared to participate in eco-tourism and conservation activities.
Environmental Issues and Concerns	Improper waste disposal, tree cutting, pollution, forest conversion	"Improper disposal of garbage is one of the environmental problems in the area."	Environmental degradation and waste management issues were identified as major concerns affecting sustainability.
Socio-economic Benefits	Additional income, livelihood, employment, tourism opportunities	"Eco-tourism can provide additional income to the residents."	Respondents believe eco-tourism can improve the economic condition of the local community through livelihood opportunities.
Need for Sustainable Management	Environmental protection, regulations, infrastructure, policy support	"There should be strict environmental regulations and proper facilities."	Respondents emphasized the importance of sustainable management, infrastructure development, and policy implementation for long-term eco-tourism sustainability.
Cultural and Community Recognition	Indigenous culture, local identity, area recognition	"The place will become more recognized through tourism."	Eco-tourism was viewed as a way to promote local culture and increase recognition of Mt. Kabalalaan.

Table 28 presents the thematic analysis of the qualitative findings gathered from the Key Informant Interviews (KII), Focus Group Discussions (FGD), and Semi-Structured Interviews (SSI) conducted among the respondents regarding the eco-tourism potential of Mt. Kabalalaan. The analysis revealed several recurring themes related to eco-tourism potential, community participation, environmental concerns, economic benefits, and sustainable management practices.

One of the major themes identified was the eco-tourism potential of Mt. Kabalalaan. The respondents emphasized that the area possesses rich natural attractions such as waterfalls, caves, forests, scenic landscapes, and biodiversity, making it suitable for eco-tourism development. The findings indicate that the natural resources of Mt. Kabalalaan serve as important assets that can attract tourists and support nature-based tourism activities. According to Gunn (1994), natural attractions such as mountains, forests, and waterfalls are significant components that contribute to tourism development and destination attractiveness.

Another significant theme identified was community participation and support. The respondents expressed their willingness to participate in environmental conservation programs and eco-tourism activities within the area. The findings imply that the local community recognizes the importance of protecting the environment while benefiting from tourism-related opportunities. Scheyvens (2011) emphasized that community participation is essential in sustainable eco-tourism development because it promotes local empowerment, environmental responsibility, and economic inclusion.

Environmental concerns also emerged as one of the major themes in the study. Respondents identified improper waste disposal, tree cutting, littering, and environmental degradation as common environmental problems affecting Mt. Kabalalaan. These issues were perceived as threats to the sustainability of eco-tourism development and biodiversity conservation in the area. The findings suggest that proper environmental management practices and conservation programs are necessary to protect the ecological condition of the area. According to the World Bank (2021), improper waste management and environmental pollution contribute significantly to environmental degradation and negatively affect tourism destinations.

The socio-economic benefits of eco-tourism were likewise highlighted by the respondents. Participants believed that eco-tourism development could provide additional income, employment opportunities, and promotion of local products and services. The findings indicate that eco-tourism can contribute to local economic growth and community development through tourism-related livelihood opportunities. Holden (2008) explained that eco-tourism can improve the economic condition of local communities while promoting environmental conservation and cultural preservation.

Lastly, the need for sustainable management practices emerged as an important theme in the study. Respondents emphasized the importance of implementing environmental regulations, improving tourism facilities, and strengthening conservation programs to ensure the long-term sustainability of eco-tourism in Mt. Kabalalaan. The findings imply that sustainable tourism development requires cooperation among local communities, government agencies, and environmental organizations. According to Honey (2008), sustainable eco-tourism development should balance environmental protection, community participation, and economic benefits to achieve long-term sustainability.

Table 29 presents the themes, codes and participants' responses on the benefits of eco-tourism development.

Table 29. Themes, codes and participants' responses on the benefits of eco-tourism development.

Themes	Codes/Keywords identified	Responses	Interpretation
Additional Source of Income	Income generation, livelihood, financial support	"Eco-tourism can provide additional income to the residents."	Respondents perceived eco-tourism as a means of improving the economic condition of the local community through additional income opportunities.
Employment Opportunities	Tourist guide, local jobs, community work	"Residents can work as tourist guides."	The findings reveal that eco-tourism development may create employment opportunities for local residents, especially in tourism-related services.
Promotion of Local Products	Souvenirs, handicrafts, local products, business opportunities	"Local products can be sold and promoted."	Respondents believed that eco-tourism can help promote local products and encourage small-scale businesses within the community.
Recognition of Mt. Kabalalaan	Tourism promotion, visibility, destination recognition	"Mt. Kabalalaan will become more recognized."	Respondents viewed eco-tourism as a strategy for increasing awareness and recognition of Mt. Kabalalaan as a potential eco-tourism destination.
Community Development	Community participation, cooperation, local progress	"The community will benefit from tourism activities."	Eco-tourism was perceived as beneficial for community development through collective participation and shared economic opportunities.
Preservation of Natural Resources	Environmental protection, conservation awareness, sustainability	"Tourism development should include environmental protection."	Respondents emphasized that eco-tourism can encourage environmental conservation and sustainable use of natural resources.

Table 29 presents the thematic analysis on the benefits of eco-tourism development as perceived by the respondents in Mt. Kabalalaan. The findings revealed that the respondents recognized several socio-economic and environmental benefits that eco-tourism can provide to the local community and the surrounding environment.

One of the major benefits identified by the respondents was additional income generation. The respondents believed that eco-tourism development could provide supplementary income to local residents through tourism-related activities and services. This finding implies that eco-tourism may contribute to improving the economic condition of the community by creating opportunities for small businesses, transportation services, and local tourism enterprises. According to Inskeep (1991), tourism development stimulates local economies by increasing demand for goods and services within the community.

Another significant benefit identified was the creation of employment opportunities. The respondents emphasized that residents may work as tourist guides, transportation providers, vendors, or service personnel involved in tourism operations. The findings suggest that eco-tourism development can contribute to reducing unemployment and enhancing livelihood opportunities among community members. Holden (2008) explained that eco-tourism promotes community-based economic activities that directly benefit local residents through employment and income generation.

The promotion of local products and services also emerged as one of the important benefits of eco-tourism development. Respondents believed that local handicrafts, agricultural products, and cultural products could be promoted and marketed to tourists visiting the area. This finding indicates that eco-tourism can help strengthen local entrepreneurship and preserve local culture and identity. Honey (2008) emphasized that eco-tourism encourages the promotion of local products and cultural heritage while supporting sustainable economic development.

Furthermore, the respondents identified area recognition and tourism promotion as important benefits of eco-tourism development. The respondents stated that Mt. Kabalalaan may become more recognized as a tourist destination because of its natural attractions and biodiversity. Increased recognition of the area may attract more visitors, investments, and development opportunities for the community. According to the United Nations World Tourism Organization (UNWTO, 2021), tourism development enhances destination visibility and contributes to regional economic growth through increased tourist arrivals and tourism-related investments.

The findings also suggest that eco-tourism development can encourage environmental awareness and conservation among local residents and visitors. Through tourism activities and environmental programs, community members may become more aware of the importance of protecting natural resources and preserving biodiversity. This implies that eco-tourism can serve not only as an economic strategy but also as a tool for environmental education and sustainable development.

4.7 SWOT analysis

Table 30 presents the SWOT analysis of Mt. Kabalalaan.

Table 30. SWOT analysis of Mt. Kabalalaan.

Strengths	Weaknesses	Opportunities	Threats
Rich natural attraction (caves,waterfalls,landscapes) - "Mt. kabalalaan has strong eco-tourism potential due to the presence of waterfalls and caves."	Inadequate waste management – "primary environmental problem is poor waste management due to unregulated and improper disposal of garbage."	Development of eco-tourism activities: hiking, trekking, camping, swimming, nature photography, educational tours.	Climate change impacts – biodiversity loss, ecosystem vulnerability.
High community willingness and support for environmental programs – "Community is well prepared to support the environmental program."	Deforestation and land conversion – "Environmental concerns involve waste problems, deforestation, and conversion of land for agriculture."	Promotion of community-centered development – shared benefits between LGU and residents.	Pollution and biodiversity loss from unmanaged tourism growth.
Strong economic potentials and livelihood opportunities (tour guiding, crafts, food stalls, tourism services)	Lack of infrastructure and facilities – "It still needs proper development and facilities to fully maximize what can offer."	Potential for holistic tourism experience combining adventure, culture and environment.	Unsustainable agriculture expansion leading to forest conversion.

Strengths	Weaknesses	Opportunities	Threats
Majority of respondents are long-term residents (84.7% lived 10+ years) giving deep local knowledge and attachment.	Absence of formal tourism officers/NGOs in participation (no DENR, NGOs represented)	Strong place attachment among residents ensures long-term stewardship.	Global deforestation trends and external pressures on natural resources.
Balanced gender representation (male 48.7%, female 46.7%) ensures inclusive perspectives.	Risk of environmental degradation in key sites (trash in waterfalls and caves, tree cutting).	Alignment with UNWTO sustainable tourism goals and rural development strategies.	Economic recession or instability could reduce tourism demand.

4.7.1 Strengths and weaknesses

The SWOT analysis is summarised in Table 30. Mt. Kabalalaan's abundant natural assets include unique natural attractions including caves, waterfalls, scenic landscapes, and high elevation, which serve as core comparative assets for ecotourism. These feature offer high aesthetic appeal and unique experiences that cannot be replicated elsewhere.

The strong community foundation-Majority of respondents 84.7% are long term residents who have lived in the area for 10 years or more giving them extensive local knowledge, deep place attachment, and reliable understanding of the area's resources and conditions. There is also a balance gender representation, ensuring inclusive and well-rounded perspectives. High community willingness and support-residents expressed overwhelming readiness to participate in environmental protection programs and ecotourism initiatives, viewing development as shared responsibility and opportunity rather than an external imposition.

The site's terrain and natural features make it suitable for a wide range of ecotourism activities including hiking, trekking camping, cave exploration, swimming, nature photography, and educational tour.

Weaknesses are internal negative factors. The findings confirm that, while the area has high potential, it lacks basic amenities necessary for tourism operations such as comfort rooms, designated parking area, safe hiking trails, and viewing decks, limiting the ability to accommodate visitors comfortably and safely. Critical environmental management issues identified include improper waste disposal, littering in key natural sites, unregulated tree cutting, and conversion of forested areas to agricultural land, which directly threaten ecological integrity.

4.7.2 Opportunities and threats

Growing global demand for eco-tourism, the ecotourism sector is recorded as the fastest growing segment of the global tourism industry. Opportunities and threats of ecotourism development external positive factors that can be harnessed to accelerate the sustainable growth of ecotourism in Mt. Kabalalaan, turning its potential into tangible benefits for the community and environment. Mt. Kabalalaan presents significant market opportunity. Its unique natural assets (pristine caves, waterfalls and diverse landscapes) align with with the preferences of eco-conscious travelers who seek authentic, unspoiled destinations. The area's relative remoteness and natural integrity can be positioned as comparative advantage, attracting visitors.

The threats are external negative factors that pose risks to the sustainable development of ecotourism in Mt. Kabalalaan, if not addressed properly, they can undermine the areas natural assets,

economic potential, and social well-being. Moreover, the risk of irreversible damage to the natural resources that form the foundation of eco-tourism. Unregulated activities, such as improper waste disposal, illegal logging, and conversion of forested area into agricultural land. These practices can lead to loss of biodiversity, destruction of habitats, soil erosion, and pollution of water sources.

5 Summary of findings

This study was conducted to assess the sustainable eco-tourism potential of Mt. Kabalalaan in Barangay Badak, Datu Odin Sinsuat, Maguindanao del Norte. Specifically, the study aimed to determine the demographic profile of the respondents, identify the eco-tourism potential of the area, assess community participation and environmental concerns, and evaluate the socio-economic benefits and sustainability practices related to eco-tourism development. The findings of the study revealed that the majority of the respondents were middle-aged individuals and long-term residents of the community who possessed sufficient knowledge and familiarity regarding the environmental condition and tourism potential of Mt. Kabalalaan. The active participation of local residents, barangay officials, indigenous leaders, and other stakeholders indicated strong community involvement in environmental conservation and eco-tourism development initiatives. The results further revealed that Mt. Kabalalaan possesses significant eco-tourism potential because of its rich biodiversity, waterfalls, caves, forests, scenic landscapes, and other natural attractions. The respondents identified hiking, trekking, camping, nature photography, and environmental exploration as suitable eco-tourism activities that may attract visitors and support nature-based tourism development in the area. The Key Informant Interviews (KII), Focus Group Discussions (FGD), and Semi-Structured Interviews (SSI) consistently showed that the respondents generally support eco-tourism development in Mt. Kabalalaan. The respondents agreed that eco-tourism can provide socio-economic benefits to the community, including additional income, employment opportunities, promotion of local products and services, and increased recognition of the area as a tourist destination. Despite these positive findings, the study also identified several environmental concerns affecting the sustainability of the area. The respondents emphasized issues such as improper waste disposal, littering, tree cutting, environmental degradation, and lack of tourism-related infrastructure and facilities. These concerns were perceived as potential threats to the ecological condition and long-term sustainability of Mt. Kabalalaan as an eco-tourism destination. Furthermore, the findings highlighted the importance of environmental conservation, implementation of tourism regulations, infrastructure development, and active community participation in ensuring the sustainable development of eco-tourism in the area. The respondents emphasized that cooperation among local communities, government agencies, environmental organizations, and tourism stakeholders is essential in maintaining environmental protection while promoting tourism development.

6 Conclusions

Based on the findings of the study, it was concluded that Mt. Kabalalaan possesses strong potential for sustainable eco-tourism development because of its abundant natural resources, biodiversity, scenic landscapes, waterfalls, caves, and forests. These environmental features make the area suitable for various eco-tourism activities that can contribute to nature-based tourism development within the community. The study also concluded that the local community demonstrates positive perceptions and strong support toward eco-tourism development. The active participation of residents and local stakeholders indicates that the community recognizes the importance of environmental conser-

vation and sustainable tourism practices in protecting the natural resources of Mt. Kabalalaan. Moreover, the study concluded that eco-tourism development may provide significant socio-economic benefits to the community through employment opportunities, additional income generation, promotion of local products, and increased tourism recognition. However, the sustainability of eco-tourism development in the area may be affected by environmental issues such as improper waste disposal, environmental degradation, and insufficient tourism facilities and infrastructure.

Therefore, sustainable eco-tourism development in Mt. Kabalalaan requires effective environmental management, proper implementation of tourism regulations, infrastructure development, and continuous cooperation among local communities, government agencies, and tourism stakeholders to ensure the long-term protection and sustainability of the area.

7 Recommendations

Based on the findings and conclusions of the study, the following recommendations are hereby proposed:

1. The Local Government Unit (LGU) and concerned agencies may strengthen environmental conservation programs and implement sustainable tourism management practices to protect the natural resources of Mt. Kabalalaan.
2. Tourism-related infrastructure and facilities such as comfort rooms, waste disposal systems, resting areas, directional signages, and accessible pathways should be developed and improved to enhance visitor safety, convenience, and environmental protection.
3. Environmental awareness campaigns, waste management programs, and community-based conservation activities should be continuously conducted to promote environmental responsibility among residents and visitors.
4. Strict implementation of environmental policies and tourism regulations should be enforced to prevent improper waste disposal, illegal tree cutting, environmental degradation, and other activities that may negatively affect the ecological condition of the area.
5. Local residents should be encouraged to actively participate in eco-tourism planning, environmental protection programs, and tourism-related livelihood opportunities to strengthen community involvement and sustainable development.
6. The promotion of local products, cultural heritage, and community-based tourism activities should be supported to improve local economic opportunities and preserve the cultural identity of the community.
7. Future researchers may conduct related studies focusing on biodiversity conservation, tourism impact assessment, visitor satisfaction, and long-term sustainability planning to further strengthen eco-tourism development in Mt. Kabalalaan.
8. Future researchers are encouraged to conduct a comprehensive ecological carrying capacity assessment of Mt. Kabalalaan, as this component was included within the scope of the study but was not fully undertaken during the research process. Such assessment may help determine the appropriate visitor capacity and sustainable tourism activities that the area can accommodate while ensuring environmental protection, resource conservation, and long-term sustainability of the eco-tourism destination.

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