

Tourism Communication in the Development of Mangrove Ecotourism in Coastal Areas: Experiences of Ecotourism Communication in Bengkalis District – Indonesia

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Abstract

Mangrove ecosystem damage is one of the concerns in the framework of state policy. The Indonesian government pays special attention to cases of mangrove ecosystem damage and encourages various parties to be involved in maintaining peat ecosystems, including making mangroves a tourist area. Guided by the Ecotourism Framework (Pederson, 1991 in Ross & Wall, 1999), this study aims to explore the potential of Mangrove Forest as an ecotourism area in Bengkalis Regency in Indonesia from a tourism communication perspective. Based on two focus group discussions followed by eight in-depth interviews with stakeholders, this study found that the Bengkalis mangrove area, especially Bukit Batu, has the potential to become an attractive ecotourism area because the area (i) has a mangrove forest that is well-preserved so that it becomes a very valuable asset for environmental education; (ii) mangrove forests provide home products as economic benefits for the community; and (iii) the readiness of the local community to promote and communicate the Bengkalis mangrove area, especially Bukit Batu, as a tourist destination. However, the enthusiasm of the community to make the mangrove forest an ecotourism area has ignored the need to consider the carrying capacity of the area. They also consider mangroves one of the main economic benefits they should exploit on a large scale. Both elements are at odds with the ecotourism framework, which aims to protect the environment through income generation, environmental education, and community engagement while effectively promoting sustainable tourism.

Keywords: tourism communication, ecotourism, mangrove, sustainable development, Indonesia

1. Introduction

This study specifically discusses tourism communication in the development of mangrove ecosystems as sustainable tourism destinations. Almost all of the Indonesian archipelago, spanning 30 provinces, is home to mangrove forests. However, most are concentrated in Papua, Kalimantan (East and South), Riau, and South Sumatra. Although large areas of mangrove forests are found in the 5 provinces as mentioned above, the largest mangrove block area in the world is not in Indonesia but in the Sundarbans mangrove forest (660,000 ha) located in the Bay of Bengal, Bangladesh. Mangrove forests in Indonesia are under serious and increasing threat from various developments, the main one being the rapid development that occurs in all economically vital coastal areas (Ilman et al., 2011). Conservation of other benefits, such as for aquaculture, coastal infrastructure including ports, industry, development of trade and housing, and agriculture, are the causes of the reduction in mangrove resources and a heavy burden on existing mangrove forests. In addition to the threats directly aimed at mangroves through this development, it turns out that mangrove resources are vulnerable to development activities that are far from their habitat. The most serious external threats come from haphazard watershed management and increasing industrial and domestic (household) pollutants entering the hydrological cycle. The result of severe soil erosion and the increasing quantity and speed of sediment deposited in the mangrove environment is the inevitable mass death (dieback) of mangroves because their lenticels are clogged by the sediment. Pollution from liquid and solid waste seriously affects the germination and growth of mangroves.

Bengkalis Regency located on the cost of Riau Province of Indonesia, is a district that has the largest mangrove forest after Indragiri Hilir District (Novizantara et al., 2022). In addition to playing an important role in maintaining the

balance of coastal ecosystems and preventing abrasion, mangroves in this area offer many opportunities for the development of sustainable ecotourism destinations. However, in 2018, the Riau Provincial Environment Agency reported that 8,090 hectares of mangroves had been destroyed in Bengkalis. The mangrove deforestation rate has been increasing every year due to abrasion and high-intensity mangrove exploitation for construction materials, wood charcoal, firewood, and to support other industrial activities that are not environmentally friendly. Local tourism is oriented towards improving the uniqueness of each region. The development of tourism is one of the advanced industries and has become global because it can change the regional economy, tourism also makes other sectors develop, for example in the advertising sector, product sector, supporters and/or commercial sector organizations (Silvia, 2006).

Through good management and governance from related parties, the tourism sector provides opportunities for business actors in the private sector. The government's success in tourism development can affect the socio-economic conditions of local communities (Martuti, 2022). However, the progress of ecotourism in Bengkalis Regency faces many challenges. One of them is the conversion of mangrove land. Converting mangrove forests into farmland, housing, or shrimp ponds is a major threat to ecosystem sustainability. This method not only damages natural habitats and reduces biodiversity, but also eliminates ecotourism opportunities that can offer long-term social and economic benefits to local communities. Various factors, such as economic pressures, lack of awareness of the importance of mangrove ecosystems, and lack of law enforcement related to environmental protection, are the main causes of this problem (Novizantara et al., 2022). In contrast, mangrove conservation efforts are hampered by a lack of communication between local governments, local communities, and related organizations. Local communities often do not understand the short-term economic benefits of ecotourism when compared to the immediate economic benefits of land conversion.

Areas that have potential destinations need the development of tourism based on tourism communication. Tourism communication in ecotourism development must be able to bridge knowledge differences and enable inclusive discussions. Effective communication should promote ecotourism, inform people about the benefits of mangrove ecosystems, and inform people about the adverse effects of land conversion. To increase community engagement, several approaches can be implemented, including the use of social media, hands-on training in the community, and community-based campaigns (Huang, 2022). In Bengkalis Regency, several steps have been taken to increase the popularity of mangrove ecotourism, such as holding events to inform people about the importance of preserving mangrove ecosystems. However, problems remain, such as limited access to technology, lack of digital literacy, and lack of sustainable local government support. Therefore, there needs to be a more systematic and sustainable communication approach that not only relies on a single campaign, but also promotes long-term collaboration and awareness between the community, non-governmental organizations, governments, and business actors.

This research on tourism communication in this context will help find the best strategies, challenges, and solutions to maximize the potential of mangrove ecotourism. The research will also explore how communication can help promote sustainable environmental management and prevent mangrove land conversion. By using an effective communication approach, mangrove ecosystems can remain protected while providing social and financial benefits to local communities in the long term. Ecotourism in general carries the concept of community-based ecotourism. With this concept, people who live around tourist attractions also have the opportunity to participate in the planning, implementation, and management or even feel the direct benefits of the existence of tourist attractions. This community engagement is based on the fact that they truly understand the nature and culture around them. However, in its implementation, the community can collaborate with related parties, such as the community, companies, local or central governments, and others (Huang et al., 2022). Similarly (Novizantara et al., 2022) argues that community-based ecotourism has several main aspects such as: (i) the establishment of an institution to manage ecotourism activities through cooperation with organizations, governments, and other parties; (ii) the community becomes the local owner of ecotourism facilities and areas; (iii) homestay is the main accommodation for tourists; and (iv) local communities must be tour guides and must play an active role in initiating, managing and maintaining tourist attractions. Thus, community-based ecotourism can be a strategy in developing countries to introduce the natural environment and at the same time help the economic growth of the community (Zvikonyaukwa et al., 2023). The Bukit Batu area has more value in efforts to succeed community-based ecotourism with the historical and cultural story of the Malay occupation as an indigenous people there. Scheyvens (1999) argues that in addition to providing a pleasant experience in nature, the fundamental functions of ecotourism are the protection of natural areas, income production, education and local participation as well as capacity building. Each of these functions is the basis for the overall success of ecotourism and, when combined, they can lead to the fulfillment of more specific goals such as socio-economic benefits, environmental education services, conservation of natural areas, quality tourism, and local participation (Table 1).

Table 1. Objective of Ecotourism and Indicators

Function	Objective	Indicator
Protection of natural area	Provision of local socioeconomic benefits	Increased employment opportunities Local distribution of tourism revenues Improved local infrastructure (transportation, communications, access to and provisions of goods and services) Improved access to social benefits (e.g. health care, education) Improved intercultural relations and appreciation (through positive interactions from host and tourist) Local capacity building towards self-sufficiency/ decentralization/local empowerment
Money generation	Provision of environmental education services	Passive and active learning through interpretive services in protected area or ecotourism site Involvement and participation of local communities, committees and schools in environmental education or interpretive services and programs Heightened awareness and nature appreciation (transformative values) for visitors and local residents
Education	Conservation of the natural area	Money generated from tourism revenues to contribute to maintenance, protection and management of natural area and its inhabitants Protection which occurs from concerned participants in ecotourism and conservation (through donations or through active involvement) (Heightened if objectives 1, 2 and 4 are fulfilled)
Quality tourism	Provision of a high-quality experience	If objectives 1-3 are fulfilled
Local participation	Increased foreign exchange	By receiving international tourists who contribute to the local economy
	Promotion of environment stewardship/ advocacy	Both tourists and local residents support conservation of natural resources because of transformative values nurtured from positive experiences with nature, and by achieving objectives 1-5

Source: (Ross & Wall, 1999)

These goals are interrelated because success or failure to achieve one goal can affect success or capacity to achieve another. If all goals are achieved, then ecotourism will contribute to the resolution of many conflicts related to the tension between resource exploitation and resource conservation. Furthermore, it is implied that true ecotourism can be sustainable, utilizing natural resources that can continue to be enjoyed and "used" for future generations. The development of community-based ecotourism strengthens the preservation of mangroves as a natural fence in coastal areas, and contributes to the socio-economic improvement of the community (Figure 1).

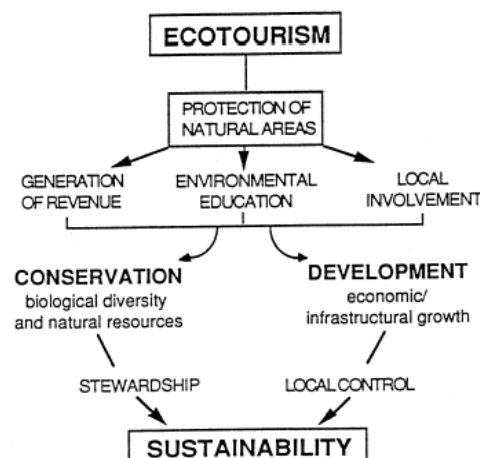


Figure 1. Ecotourism protects the environment while contributing to socio-economic development, and thus strives for sustainability (Pederson, 1991 in Ross & Wall, 1999)

Research on the Potential of Ecotourism Locations in Bengkalis by (Novizantara et al., 2022) mentioned seven tourist attractions that need to be developed, namely (i) rivers & lakes; (ii) flora & fauna; (iii) mangrove forests; (iv) community plantations; (v) canopy towers; (vi) Japanese research station and (v) village tour. Mangrove forests in Bengkalis are described as having high aesthetic value with a diversity of flora and fauna that is still undisturbed. The researchers also argue that the ecotourism approach is suitable to be applied in the Bukit Batu mangrove forest as a conservation tool to influence tourists to be environmentally responsible. However, no special research has been conducted to assess the Bukit Batu mangrove forest as a potential ecotourism location so that to develop this area, it is necessary to integrate information and communication traces through digital and conventional media.

Despite the awareness and efforts of the local community and the support of the local government, little is known about whether the mangrove forests in Bukit Batu have the potential to become ecotourism sites and whether their current efforts are in line with ecotourism goals to achieve sustainable development. This study aims to determine the potential of the Bukit Batu mangrove forest as an ecotourism location and examine the efforts of local communities in communicating the site for community understanding and achieving development goals. Tourism communication plays a central role in connecting tourist destinations with the global market, especially in the context of sustainable ecotourism development. Ecotourism, which aims to preserve the environment while empowering local communities, requires an effective communication approach to promote conservation values and attract environmentally conscious tourists. This study reviews the main literature related to the role of communication in ecotourism development, with a focus on promotion, education, and community participation.

2. Literature Review

Tourism communication plays an important role in connecting tourist destinations with the global market, especially in the context of sustainable ecotourism development. Ecotourism that aims to conserve the environment while empowering local communities requires an effective communication approach to promote conservation values and attract environmentally conscious tourists. We recognize that the search for previous studies significantly influenced the design of this study. This study reviews the main literature related to the role of communication in ecotourism development, with a focus on promotion, education, and community participation. Sustainable tourism has become a major focus in many coastal areas with biodiversity potential, including Bengkalis Regency. Tourism communication is critical to inform the community and tourists about environmental conservation and ecotourism development. The following section elucidates the literature review on tourism communication and mangrove ecotourism development.

2.1 Definition and Function of Tourism Communication

Tourism communication is a systematic effort to convey information, promotion, and education related to tourism with the aim of attracting tourists, increasing public awareness, and supporting sustainable cultural development (Kiper, 2014). To get the most impact, tourism communication must include a clear message and be tailored to the audience. An effective tourism communication strategy can help overcome problems in Bengkalis Regency, such as the low public understanding of the importance of preserving mangrove ecosystems. Mangrove ecotourism supports conservation and local economic growth. Mangroves are an important resource for maintaining the balance of coastal ecosystems because they provide natural protection against abrasion (Aye et al., 2019). However, the conversion of land into ponds, agriculture, or housing that damages the environment is a big challenge in the development of mangrove ecotourism (Ferreira, 2007). This requires a communication approach that emphasizes the importance of conservation and the benefits of ecotourism in the long term.

Case studies from various regions show that communication involving local communities can increase the success of ecotourism programs. In Indonesia, research by (Martuti, 2022) It was found that the involvement of local communities in the planning and implementation process of ecotourism programs increases community participation and concern for environmental sustainability. The experience in Bengkalis Regency shows that although mangrove ecotourism has great potential to develop, communication problems remain the main obstacle. According to research by (Weaver, 2001), government communication to the public that is only one way is often ineffective. Local communities are invited to speak up and contribute to the decision-making process through dynamic two-way communication.

2.2 Communication Approach for Mangrove Ecotourism Development

The use of social and digital media, community-based education campaigns, and capacity building of local communities are some of the approaches that have proven successful in improving tourism communication. The use of social media allows for the rapid and widespread dissemination of information, attracts younger audiences, and makes connections with technology (Zaiton, 2019). In addition, to inform the public about the benefits of ecotourism and the impact of mangrove land conversion, community-based education, such as workshops and group discussions, is essential (McSherry et al., 2023). This method emphasizes the importance of communicating dialogically and empowering various groups in the management of mangrove ecotourism in coastal areas.

2.3 Tourism Communication as an Instrument for Ecotourism Promotion

Promotion is the main function of communication in tourism, especially to attract tourists to new or lesser-known destinations. Tourism promotion relies on visual and verbal narratives to build the image of the destination (Urry & Larson, 2011). In the context of ecotourism, the promotion must convey the uniqueness of nature, conservation values, and educational experience opportunities available in the destination. Effective promotion often involves digital media, such as social media and websites. Asmelash & Kumar (2019) stated that digital marketing strategies can increase tourist awareness of ecotourism destinations, especially among the younger generation who are more concerned about environmental issues. For example, destinations such as Costa Rica have successfully leveraged digital campaigns to attract ecotourism tourists by highlighting their biodiversity and conservation initiatives. In Indonesia, the main challenge in promoting ecotourism is the lack of digital infrastructure in remote areas. Therefore, it is necessary to adapt communication strategies, such as using high-quality visual content to attract the attention of potential tourists despite limited internet access (Avau, 2011).

Eco-tourism efforts can also be promoted through conventional media, such as TV, which is able to reach the targeted audience. Past research has debated that many advertisers are shifting away from traditional media due to its complexity, which is affected by divergence (Bruce et al., 2023; Kee et al., 2015 in Wan Mohd Ghazali et al., 2025). However, broadcasters are encouraged to focus on TV content development and advertising strategies that align with viewers' demands (Wan Mohd Ghazali et al., 2025) to effectively communicate about eco-tourism, for example.

2.4 Communication for Education and Environmental Awareness

Ecotourism is not only aimed at recreation, but also to increase environmental awareness among tourists. Communication plays an important role in providing information that educates tourists about conservation values and environmental responsibility (Rahadian, 2022). Informed tourists tend to be more supportive of ecotourism goals and contribute to environmental conservation. One of the educational methods that is often used is environmental interpretation through tour guides. Meanwhile (Black & Ham, 2005) emphasizing that effective interpretation requires narratives that are engaging, relevant, and based on scientific facts. In this context, tour guides must have good communication skills to effectively convey conservation messages to tourists. In addition, the use of technology such as mobile applications can also support ecotourism education. The app can provide interactive information about local flora, fauna, and ecosystems, enriching the tourist experience (Kassen, 2018).

2.5 Communication to Increase Local Community Participation

Local community participation is an important pillar in ecotourism development. Without their involvement, ecotourism programs are likely to fail to achieve sustainability (Scheyvens, 1999). Inclusive communication can help local communities understand the benefits of ecotourism, from economic empowerment to cultural preservation. According to (Asmelash & Kumar, 2019), communication involving the community should use a participatory approach, such as group discussions, workshops, or community forums. This approach allows local communities to voice their needs and aspirations, while building a sense of ownership of the ecotourism project. Studies in Nepal show that participatory communication has been successful in increasing community involvement in the management of national parks, ultimately increasing conservation and tourism success (Pai et al., 2020). In the Indonesian context, a similar approach can be applied to develop mangrove ecotourism in coastal areas, such as in Bengkalis or Banyuwangi.

2.6 Challenges of Tourism Communication in Ecotourism Development

Despite having great potential, tourism communication in ecotourism also faces significant challenges. One of them is the conflict between environmental preservation and tourist expectations. Ecotourism is often trapped in a paradox, where increasing numbers of tourists can damage the environment that should be preserved (Buckley, 2012). In this case, communication should be directed to manage tourist expectations, for example by conveying visit restrictions or conservation rules. Another challenge is how to reach the global market while maintaining a local identity. Study by Weaver (Weaver, 2001) shows that many ecotourism destinations face a dilemma between marketing to international markets and maintaining local control over destination management. Balanced communication can help address these challenges by promoting international appeal while emphasizing the involvement of local communities.

Tourism communication has a strategic role in supporting the development of ecotourism. From destination promotion to education and empowerment of local communities, effective communication can be a catalyst for the success of sustainable ecotourism. The literature shows that technology-based approaches, environmental interpretation, and community participation are key elements in ecotourism communication strategies. However, successful communication in ecotourism also requires adaptation to local challenges, such as limited digital infrastructure or conflicts of interest between environmental conservation and tourist needs. Thus, an integrated communication strategy based on sustainability principles can help make ecotourism a model of harmonious tourism development between humans and nature.

3. Theoretical Framework

In 1991, Pedersen's (in Ross and Wall, 1999) developed an ecotourism framework and argued that while providing an enjoyable experience in nature, the fundamental functions of ecotourism are protection of natural areas, production of revenue, education and local participation and capacity building. Each of these functions is basic to the overall success of ecotourism and, together, they can lead to the fulfilment of more specific objectives such as socio-economic benefits, environmental education services, conservation of natural area, quality tourism, and local participation (Table 1). These objectives are intertwined because success or failure to achieve one objective may influence the success or capacity to achieve others. If all of the objectives are met, then ecotourism will have contributed to the resolution of many of the conflicts associated with tensions between resource exploitation and resource conservation. Furthermore, it is implied that true ecotourism can be a sustainable, benefiting from natural resources which can continue to be enjoyed and "used" for generations to come. Pederson's proposition later taken by Ross and Wall (1999) to expand on study of eco-tourism focusing on how effective communication can be used by developing Table 1. This integrated framework acts as a guidance to this study.

4. Materials and Methods

The location of this study is Bukit Batu Village, Bengkalis, Indonesia. We conducted three focus group discussions with 30 residents to explore their opinions on what makes the Bukit Batu mangrove forest qualify as an ecotourism site. This was followed by eight in-depth interviews with the head of Bukit Batu village, two local business owners, two Tourism Awareness Group volunteers (Pokdarwis), two representatives from local companies involved in corporate social responsibility (CSR) at Bukit Batu village, and a representative from the Malay customary association to assess the potential of the Bukit Batu mangrove forest as an ecotourism site based on the ecotourism objectives and indicators in Table 1. The interviews also aimed to examine their communication strategies in promoting the Bukit Batu mangrove forest to the public. All discussions were recorded with the respondents' permission, thematically analyzed, and evaluated using the list of objectives and indicators suggested by Ross and Wall (1999) in Table 1.

5. Results and Discussion

Research on tourism communication in the development of mangrove ecotourism in Bengkalis Regency shows several important findings about effective communication, the problems faced, and how it impacts conservation and community participation. Mangrove ecotourism is one of the sustainable tourism alternatives that can support environmental conservation while improving the economy of coastal communities. Bengkalis Regency, located on the east coast of Sumatra Island, has great potential in the development of mangrove ecotourism. However, the success of this development requires an effective tourism communication strategy to bring together various stakeholders, including local communities, governments, and tourists. When asking about respondents' views on the mangrove forest, four themes emerged from the focus group discussion: aesthetic values, economic benefits, environmental protection, and heritage education.

Most of the focus group respondents appreciate the mangrove forest ecosystem for its invaluable aesthetic value, the economic benefits it provides, and its role in protecting the village from coastal erosion. The latter is particularly important for the Bukit Batu villagers, as most of them work as fishermen. Since Bukit Batu is located near the Straits of Malacca, the presence of large ships could cause severe coastal erosion. The well-preserved mangrove forest in Bukit Batu helps mitigate this problem. This situation can be seen as a motivation for the Bukit Batu community to recognize the importance of preserving the mangrove forest. The residents are becoming increasingly aware of the importance of the surrounding mangrove forest. It is also interesting to note that respondents believe there are other attractions that could be associated with the mangrove forest. The forest provides materials for the villagers to produce cottage industry products (lejo woven fabric), offering further economic benefits. The uniqueness of the mangrove forest also lies in its location, which faces directly the border of the Bukit Batu River. The river is famous for its long and legendary history tied to the Malay communities, encompassing both intangible and tangible heritage.

With all these interconnected elements, most respondents feel that the mangrove forest can be not only a strategic eco-tourism site but also an important source of environmental and heritage education for visitors. Thus, its potential as an eco-tourism destination is undeniable. Although the local government has developed and managed these potentials through the Tourism Awareness Group volunteers, further efforts, particularly in strategic tourism communication, are needed to increase awareness and ensure sustainability. Hence, further investigation was conducted with eight respondents through in-depth interviews to explore how communication strategies were used to promote the mangrove forest.



Figure 2. Interconnection between mangrove forest ecotourism and other potential tourism elements

Based on the focus group findings, the mangrove forest of Bengkalis Province fits the first three functions of eco-tourism as suggested by Ross and Wall (1999): Protection of Natural Areas, Money Generation, and Education. Since it meets the first three functions, the Bengkalis mangrove forest automatically qualifies for the fourth function that is Quality Tourism (see Table 1).

5.1 Effective Tourism Communication

This study found that tourism communication in Bengkalis Regency is still sporadic and unorganized. Although local governments have tried to encourage mangrove ecotourism, the most common strategy still focuses on socialization through print media and formal events. These results are in line with research (Santos, 2016) It shows that communication methods that do not involve interactive discussions tend to be less effective in increasing public awareness. However, there are several programs conducted by local communities and non-governmental organizations that have succeeded in increasing community engagement through community-based communication approaches. The community becomes more interested in ecotourism and environmental conservation through educational activities and introduction to the mangrove ecosystem carried out with participatory methods.

5.2 The Use of Social Media as a Communication Media for Mangrove Development in Coastal Areas

Social media plays a big role in many environmental communication agendas, such as encouraging changes in people's attitudes in positioning the environment (Pavelle & Wilkinson, 2020), as well as educating them to participate in preserving the environment (Rahadian, 2022). Despite the importance of social media as a communication medium, the Instagram account of Laksamana Bukit Batu Mangrove Ecotourism only has six posts with 145 followers. In the form of an account named @mangrove_laksamana, they use interesting images to communicate about mangroves with slogans such as "We take care of what already exists as a form of gratitude to the universe / 'We are good to nature, nature is good to us"; "Taking care of mangroves means taking care of the beach"; "Mangroves are nature's buffer against waves, sea level rise, and erosion"; and "Learning with nature".



Figure 3. Instagram @mangrove_laksamana

The Bukit Batu Mangrove Ecotourism also publishes several contents on its YouTube channel. As of August 16, 2023, the Bukit Batu Tourism Village YouTube account has uploaded 53 videos containing activities and information about the Bukit Batu Tourism Village. One video titled “Bukit Batu Mangroves, Here We Came” got 209 views and “Mangrove of Bukit Batu #wisatabukitbatu Admiral” got 127 views. Based on the viewing, these videos have not been successful in attracting the attention of the public. Nonetheless, this is a good start to communicating the site to the audience. According to (Pavelle & Wilkinson, 2020), as a medium of communication and promotion, videos uploaded and shared through social media can be used as “gate” to raise awareness and change people's behavior. In addition, promotional activities through social media are also effective in attracting impressions from the community and stakeholders to pay attention to the development of mangrove ecotourism.

5.3 Flow of Environmental Communication for Ecotourism of Bukit Batu Mangrove Forest

In theory, ecotourism pays attention to the relationship between the natural environment and tourism must be mutually beneficial. In this case, visitors must be able to enjoy the beauty of nature and at the same time part of the tourism revenue earned must be projected to protect nature and the sustainability of tourism (Mustain, 2022). Tourism sustainability can be achieved by communicating the need to protect the environment to all stakeholders, especially tourists. In short, nature as a tourist attraction should not only be used as exploitation material. In the context of environmental communication of the Laksaman Bukit Batu Mangrove Ecotourism, the Bukit Batu Pokdarwis together with the local community have implemented nature conservation efforts well. This is because they are aware that in nature-based tourism such as in Bukit Batu Mangrove Ecotourism, the preservation of mangrove forests is the main attraction that must be maintained. This statement is in accordance with the opinion (McSherry et al., 2023) which states that anthropological factors are one of the main factors that can damage mangrove ecosystems in Indonesia. In addition, as an effort to preserve the environment, Pokdarwis Bukit Batu also often encourages the planting of mangrove tree seedlings in the area and routinely provides education about environmental norms and regulations that apply to the community.

Mangrove forests with their prominent roots are well maintained as an attraction for visitors, but mangroves grow naturally compared to those planted by the government. To communicate about mangroves, they carefully build mangrove paths so that visitors can only cross certain areas that are allowed to protect the mangroves from damage but still be able to enjoy the expanse of forest. Visitors were also briefed on these efforts as part of educational learning. The main key players in this communication process are the Tourism Awareness Group (Pokdarwis) and the manager of the Bukit Batu Mangrove Ecotourism. The former acts as a coordinator, facilitator and stimulator. This means that as a coordinator, the agency must organize the right activities in attracting tourists; facilitation includes providing space for tourism development such as facilities and infrastructure; and stimulate related agencies to be involved in the development of the tourism sector (Aye et al., 2019). In carrying out this function, the Bengkalis Regency Disparbudpora always coordinates with village officials.

As the party responsible for the exploration, management and development of Laksamana Bukit Batu Mangrove Ecotourism in carrying out its functions, the Bukit Batu Pokdarwis is always guided by environmental norms (communication). For example, at the planning stage, the Bukit Batu Pokdarwis conducted an in-depth study of the condition of the Bukit Batu Admiral Mangrove Forest, such as identifying the types of mangroves that exist, water and soil conditions, water levels, flora and fauna. Fauna. The results of this analysis are used as a reference in the development of Laksamana Bukit Batu Mangrove Ecotourism. At this stage, Pokdarwis Bukit Batu held intense discussions with the local community to find out their views on the environment, tourist attractions, and themselves as a community living around the Laksamana Bukit Batu Mangrove Ecotourism. At the organizational level, Pokdarwis Bukit Batu communicates massively to prepare the necessary regulations related to the environment, tourist attractions, and the creation of communication content. By leading communication efforts, the risk of technical errors or misunderstandings between parties can be minimized. In addition, with this regulation, the mangrove forest of Bukit Batu Village can continue to be preserved as an object of development.

In the implementation stage, the Bukit Batu Pokdarwis involved various parties to assist in the management of the Bukit Batu Laksamana Mangrove Ecotourism. These parties are the Bukit Batu Village Youth Organization as a direct officer in the field, the Bukit Batu Village Government in supervising regulations on the management of tourist attractions and the environment, the Bengkalis Regency Disparbudpora, the Bengkalis Regency Environmental Agency, and private companies for promotional purposes. and the construction of facilities and infrastructure. As the manager, Pokdarwis is trusted to manage all activities to develop the Laksamana Bukit Batu Mangrove Ecotourism activities. Although the local government and private companies take part in the provision of facilities and infrastructure, the construction is still carried out and supervised by the Bukit Batu Pokdarwis so as not to damage the mangrove forest.

Other forms of cooperation carried out by Pokdarwis Bukit Batu are (i) carrying out research on leko nipah crafts with

practicum students in 2022; (ii) The Bukit Batu Village Youth Organization and all villages in Bukit Batu and Bandar Laksamana Districts organized the Bukit Batu River Festival activities; (iii) and collaborate with the Indonesian Competency Test Center Forum (Fortukindo) and the Professional Certification Institute/National Agency for Professional Certification of Indonesian Tourism Maestro, Disparbudpora Bengkalis Regency to carry out a tour guide certification test. Tangible evidence of Pokdarwis carrying out cooperation, collaboration, innovation and communication with various parties to develop the Laksamana Bukit Batu Mangrove Ecotourism as a sustainable and environmentally friendly ecotourism area. Based on the information gathered, an overview of the communication flow of Bukit Batu Mangrove Ecotourism Communication can be described in Figure 4. The volunteers mentioned in this picture are part of the Tourism Awareness Group (Pokdarwis).

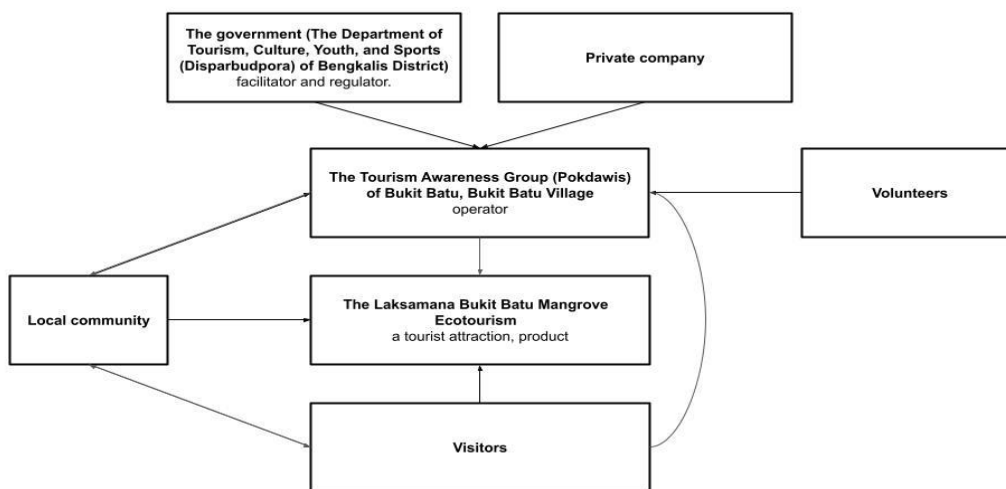


Figure 4. Bukit Batu Mangrove Ecotourism Communication Flow

The main element in the management and protection of mangroves in Bukit Batu is collaboration between stakeholders. Pokdarwis Bukit Batu acts as the main group in managing the area and communicating the necessary content to visitors, assistance is gathered from the community, local government and small businesses. However, in order to reach a larger audience, these stakeholders must rethink how to use social media effectively. On the one hand, the existence and role of the Bukit Batu Pokdarwis is also in accordance with the opinion (Maldonado-Eraza et al., 2020) which states that tourism development depends on economic factors and initiatives. On the other hand, this community initiative also implies the community's concern for natural resources to improve the living standards of its members (Berger, 1999). Structurally, the Bukit Batu Pokdarwis consists of people from various backgrounds such as academics, activists, lecturers, and business people. Thus, it is hoped that the development of Laksamana Bukit Batu Mangrove Ecotourism can achieve its goals in a sustainable manner.

6. Discussion

To develop mangrove ecotourism in Bengkalis Regency, effective and inclusive tourism communication is very important. Participatory communication, direct education, and digital media can increase public awareness and participation in mangrove conservation. To overcome the problem of land conversion, the government must also strengthen regulations and provide alternative economic incentives to support conservation. The overall findings show that the development of ecotourism depends on strategic and adaptive communication, which not only conveys information but also encourages community participation in the management and conservation of natural resources.

6.1 Review of the Success Rate of Tourism Communication in Bengkalis Regency

The results of the study show that tourism communication in Bengkalis Regency tends to focus on government efforts, such as the distribution of pamphlets and formal events. Only 30% of 100 locals know about the potential and benefits of mangrove ecotourism, according to the survey. This shows that information is not spread evenly and cannot attract the attention of the wider community. One-way communication, such as formal speeches and static information boards, has proven to be less effective in encouraging conversations or active citizen engagement. Study (Bukricieva & Afanasieva, 2022) emphasized that a two-way approach in tourism communication is essential, involving people to talk to each other to increase a sense of belonging. As a result of the post-event evaluation, field data showed that socialization activities involving local communities, such as learning tours and Q&A with mangrove experts, succeeded in increasing residents' understanding by up to 65%.

6.2 Difficult to Fulfill the Function of Mangrove Land

Converting mangrove land into agricultural land and ponds is one of the biggest problems found in this study. More than 1,000 hectares of mangrove land have been converted from 2015 to 2023, according to data from the Bengkalis Regency Environment Agency. These conditions severely affect coastal ecosystems, reduce the natural habitat of wildlife, and damage ecotourism opportunities that depend on environmental sustainability. Economic pressures are the main cause of this relocation, according to an in-depth analysis. Based on interviews conducted with fifty local business actors, seventy percent of them admitted that converting mangrove land into farmland or shrimp ponds was a better option because they believed that the results would yield profits faster. This condition shows that an effective communication approach is needed to change society to see mangrove ecosystems as a long-term asset and not just a source of temporary income (Avau, 2011).

6.3 Effects of the Benefits of Participatory Communication

It is proven that communication carried out in a participatory manner by the community can increase awareness and desire to maintain the ecosystem. A successful example of a participatory approach is the "World Mangrove Day" program, which involves locals in activities such as planting mangrove seedlings and talking about the environment. Qualitative data collected from this activity showed that 80% of participants understood the importance of mangroves better after doing hands-on activities. In addition, programs like these foster a sense of belonging to ecotourism, which encourages communities to protect ecosystems. Communication that is dialogical and involves the community in the decision-making process increases a sense of shared responsibility, according to (Arcos Pumarola et al., 2018). This is supported by Bengkalis data, where community participation in environmental programs increased by up to 45% after they were involved in the planning and implementation of ecotourism activities.

6.4 Using Digital Media to Communicate

Along with technological advancements, digital and social media have become important tools for the wide and effective dissemination of information. Very little effort has been made to promote Bengkalis ecotourism through social media platforms such as Instagram and Facebook. Only twenty percent of people surveyed knew about the use of technology in tourism campaigns, indicating that there are opportunities that have not been fully exploited. A study conducted by (Mustain, 2022) found that the use of digital media has the ability to increase public awareness up to fifty percent faster than older approaches. Data shows that digital technology and visual content such as videos and photos can better capture the attention of audiences. Ecotourism promotion programs conducted by a number of local NGOs showed a 30% increase in the number of visitors to ecotourism sites in the first two months after the launch of the digital campaign (Rahadian, 2022).

6.5 Problems Faced

One of the main obstacles in developing tourism communication in Bengkalis is limited access to information and lack of public understanding of the importance of mangrove ecosystems. The conversion of mangrove land for short-term economic purposes, such as agriculture and ponds, damages ecosystems and reduces tourism opportunities. Low digital literacy in society is an additional obstacle. This prevents people from using social media and digital technology to communicate well. Governments and related organizations cannot disseminate information widely and effectively because of these factors (Huang et al., 2022).

7. Conclusion

The results of the study show that the application of more inclusive and sustainable communication methods is very important. There are several suggestions put forward, such as the following: "Multi-stakeholder Collaboration": Involving governments, academics, non-governmental organizations, and efforts to design and implement a comprehensive communication program. "Continuing Education Program": Creating long-term education programs in schools and community centers with materials that focus on the benefits of ecotourism and the importance of mangrove conservation." The conclusion of this paper is that developing sustainable mangrove ecotourism in Bengkalis Regency requires planned and engaged tourism communication. If done correctly, these initiatives can help reduce land conversion, increase public awareness, and create tourism models that support environmental conservation and economic well-being.

The results of the study show that communication methods that involve the community directly increase community participation in ecotourism and conservation activities. For example, increasing a sense of belonging and shared responsibility can be achieved through campaign programs that involve local communities in mangrove tourism management. According to Amelash & Kumar (2019), it is possible that participatory communication approaches can encourage people to participate in nature conservation efforts. However, the findings of this study also show that educational campaigns conducted sporadically and without sustainable strategies are less effective in improving

long-term understanding of environmental conservation. To overcome low understanding and change people's behavior towards environmental conservation, continuous and structured education is needed.

We recommend several communication strategies that can be implemented in Bengkalis Regency: Community-Based Education Approach: Involve the community directly in educational activities such as workshops and environmental programs; Utilization of Digital Technology: Disseminating information about mangrove ecotourism with interesting and easy-to-understand content through online platforms and social media; and Sustainable Partnerships: Using online platforms and social media to disseminate information about mangrove ecotourism.

Further research could also explore effective methods to engage local communities in the protection of mangrove forests. This can be done through workshops or collaboration with local schools and environmental NGOs. Second, future studies should investigate the socio-economic impacts of converting mangrove land for short-term economic purposes, such as agriculture and aquaculture, and develop strategies to promote alternative livelihoods that are both economically viable and environmentally sustainable. Given the low digital literacy in the region, research into digital literacy initiatives too could examine how improving access to digital tools and social media platforms might enhance communication on environmental issues, allowing local communities to engage more effectively in ecotourism and conservation efforts.

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Authors contributions

Conceptualization, NE and NNNK; methodology, NE; software, NE validation, NE and NNNK; formal analysis, NE; investigation, NE; resources, NNNK; data curation, NE and NNK; writing—original draft preparation, NE; writing—review and editing, NE and NNNK; visualization, NE and NNNK; supervision, NES; project administration, NNNK; funding acquisition, NE. All authors have read and agreed to the published version of the manuscript.

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