



RESEARCH ARTICLE

Economic Impact of Marine Ecotourism on the Local Community in Semporna, Sabah, Malaysia

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| ARTICLE INFO | ABSTRACT |
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| Received: Oct 12, 2024 | The development of the tourism sector in a destination is heavily dependent on the existing natural resources, the patterns of supply, weather and seasonal influences, as well as current demand trends. The expansion of the tourism sector generates economic spillover benefits, thereby improving the welfare of the local population in a tourist destination. Consequently, this study focuses on the marine ecotourism destination in Semporna, Sabah, to assess the positive economic impact on the local community. A quantitative study was conducted with 80 respondents using purposive sampling methods. The findings reveal that marine ecotourism activities have had an economic impact on the local community, such as the expansion of employment and business opportunities, as well as the growth of small and medium-sized enterprises (SMEs). The growth of SMEs is predominantly within the food business sector, as well as businesses based on environmental and cultural products, which have become important income sources for the community. This has elevated the economic status of the local community and led to a shift in the primary employment activities of the population, from fishing to secondary and tertiary economic sectors. Therefore, stakeholders should implement strategies aimed at fostering a more integrated and inclusive local economic development, which involves active participation from the local community. Active community involvement, alongside stakeholder engagement, will ensure that the marine ecotourism sector remains relevant in enhancing economic benefits and supporting sustainable tourism development. |
| Accepted: Dec 8, 2024 | |
| Keywords | |
| Economic Impact | |
| Income | |
| Local Community | |
| Marine Ecotourism | |
| Supply | |
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INTRODUCTION

The rapid growth of the tourism industry has become a catalyst for economic growth and development, particularly in rural areas. Each year, there is a significant increase in foreign currency exchange through the tourism industry, especially in coastal countries such as Greece, Malta, the Maldives, and Turkey (Garrod and Gossling, 2008). Coastal nations are endowed with rich marine

resources, particularly natural landscapes, diverse species of aquatic flora and fauna, underwater caves or volcanic formations, and others (Peters and Hawkins, 2009).

As a result, marine ecotourism generates substantial annual revenue, forming a business sector with widespread economic influence. It also impacts coastal and island communities. Malaysia's development as a marine ecotourism destination is highly suitable given its beautiful beaches and islands, surrounded by the waters of the Strait of Malacca, South China Sea, Sulawesi Sea, and Andaman Sea (Yusoh et al., 2021). According to Hamid and Hossein (2024), most tourists prefer to seek authenticity and reality in the destinations they visit. Tourists aim to have a genuine travel experience by finding enjoyment, appreciating beauty, engaging in adventures and learning something new.

There is a need to ensure socioeconomic value for the local population, preserve marine biodiversity, and improve the quality of life for local communities at tourism destinations. Therefore, the marine ecotourism sector must be developed based on existing resource potential and current demand trends. This will yield better economic benefits, increased job opportunities, support for traditional community activities, such as fishing and agriculture, as well as new employment opportunities for youth and the impoverished (Mohd Hafiz, 2021).

In developing a tourism destination, the involvement of the local community in the economy should be prioritized. If a development fails to stimulate the local economy and create job opportunities, while the community continues with traditional economic activities, it indicates that economic progress has not occurred. This situation can result in the community remaining in poverty (Todaro, 1995) and may create negative perceptions among the local population, ultimately hindering the sustainability of the tourism industry. Moreover, marine ecotourism activities are often seen as having negative environmental impacts, such as damage to marine ecosystems, disruption of marine life breeding and coral reefs, as well as pressure on the environment, the use of natural resources, and waste disposal due to the increase in tourist numbers (Sakellariadou, 2014). Zoning fishing areas to allow marine ecotourism can also negatively affect the income of fishermen, who previously relied on this activity as their main economic source before tourism activities grew. Zoning of areas can also lead to fishing zones becoming more distant, thereby increasing fuel costs for fishermen using boats (Zamzami et al., 2021).

This raises the question of whether the marine ecotourism development in Semporna, Sabah, has had a positive impact on the local community. Therefore, this study focuses solely on evaluating the positive economic impact of marine ecotourism development on the local community in Semporna, Sabah.

LITERATURE REVIEW

The Concept of Marine Ecotourism

Marine ecotourism is a form of tourism that focuses on the conservation of coastal and marine areas (Casimiro et al., 2023; Yulius et al., 2018). Marine ecotourism highlights the aesthetic value, beauty of beaches and islands, and the richness of biodiversity, which can enhance local economic benefits through community involvement and business development. The involvement of local communities in tourism development is crucial as these communities are more sensitive to the environment they inhabit (Chek Sulaiman et al., 2018). According to Sakellariadou (2014), marine ecotourism includes activities such as sail and/or power cruising, kayaking, snorkeling, underwater photography, scuba diving, sightseeing by boat or submersible, observation of marine life and endangered species, diving with sharks, swimming with dolphins, visiting coral reefs, angling, sea bird watching, visiting underwater sculptural museums, observing underwater archaeological sites, visiting submerged artifacts, and exploring shipwrecks.

There are several elements in the principles of marine ecotourism, with its foundation being environmental conservation and sustainability, local community involvement, the creation of educational experiences for tourists, and effective management for the benefit of society. Several scholars emphasize these elements. According to Chesworth (1995), the concept of marine ecotourism involves six key elements: i) traveling to natural ecosystems and archaeological sites; ii) focusing on the quality of awareness and experience; iii) providing economic benefits to local communities; iv) offering tourists the opportunity to engage with rare or unique plant species and exotic scenery; v) maintaining and enhancing the status of natural resources and ecosystems; and vi) respecting localities and cultural heritage.

Garrod (2003) focuses on four key elements in defining marine ecotourism, namely: i) sustainable management in marine ecotourism operations, ii) educating tourists about natural marine environments and their conservation, iii) benefiting the community and environment, and iv) promoting the conservation of species or habitats. According to Spenceley (2017) and Wiltshire et al. (2022), essential components of marine ecotourism include environmental conservation through the reduction of ecological footprints and local community involvement. These perspectives clearly demonstrate that marine ecotourism is heavily reliant on marine ecosystems and local community participation, as well as educating and encouraging tourists to adopt responsible environmental behaviours (Sakellariadou, 2014).

Economic Impact of Marine Ecotourism Activities on Local Communities

The economic dimension refers to tourism development that ensures economic sustainability. The economic dimension adds long-term value, providing economic benefits not only for local government revenues but also specifically for the local population. When the income of the people increases consistently, it indirectly boosts public expenditure and consumption. Consequently, local government revenues will also rise through local taxes. Essentially, the economic system is the relationship between producers and consumers, involving intermediary or transport systems. Every individual is a consumer, while producers are individuals or groups who produce or provide goods and services to meet consumer demand. Consumer demand encompasses both basic needs and aspirational needs (Samsul et al., 2023).

A study by Samsul et al. (2023) on marine ecotourism activities at the Kiluan Marine Tourism Park in Indonesia found that such activities promote economic growth by providing investment and employment opportunities to the local community, creating various direct and indirect jobs, generating income, and developing infrastructure in the local community. Furthermore, it supports related industries such as hospitality, retail, and transport (UNWTO, 2021). This economic impact has a multiplier effect on the local economy, creating value chains between sectors, stimulating economic growth, enhancing infrastructure development, and improving the quality of life in coastal communities (UNEP, 2020). Higham and Lück (2021) highlight that marine ecotourism activities not only generate direct income but also stimulate investments in infrastructure improvements, such as local fishing ports, jetties, and recreational facilities, further supporting tourism growth and enhancing the overall appeal of coastal destinations. Local fishing jetties are renovated for use by passenger boats and accommodations (Sakellariadou, 2014). Fishing boats are converted into tourist boats for sightseeing and activities like fishing and snorkeling (Badaruddin et al., 2006). This development attracts high-spending tourists, thereby increasing local government tax revenues (Samsul et al., 2023). Tourists contribute to income in the form of sales taxes to the region, municipal councils, and states through the creation of diving-related tourism jobs (Ingram, 2010).

The development of marine ecotourism has transformed the main economic structure of coastal and island communities, shifting from agricultural and fishing activities to tourism-related businesses and services. This change has increased the income and standard of living of these communities (Canty, 2007; Jabil et al., 2012; Norlida Hanim et al., 2014). A study by Muhammad Faiz and Hanizah

(2016) found that the percentage of fishermen as the primary occupation on Perhentian Island had significantly decreased, with only 7.6% still engaged in fishing in 2015. Research by Yudha et al. (2023) on Samalona Island, Makassar, and by Christopher et al. (2016) on Bagan Lalang also observed a shift in economic activities from fishing economies to service provision catering to the needs of tourists. Moreover, this change in economic activities has been driven by the impact of tourism development, which has affected the quality of coastal and marine ecosystems, as well as the quantity of fish caught, particularly by near-shore fishermen.

This clearly demonstrates that marine ecotourism activities have led to a shift in the primary economic activities of the local population and have created a diversification of economic activities for the local community. This significant change has been driven by the unpredictable nature of fisherman. Entrepreneurial growth has occurred within local communities, with individuals actively involved as retailers, suppliers, wholesalers, boat and chalet operators, and in businesses such as eateries and souvenir shops based on local marine resources (Chek Sulaiman et al., 2018; Jabil et al., 2012; Norasmah et al., 2012; Sakellariadou, 2014). They are also involved in providing facilities and support services for tourism activities such as jet skis, gazebos, snorkeling equipment rentals, transportation, accommodations, and tour guides (Jabil et al., 2012; Norasmah et al., 2012; Zamzani et al., 2021). However, local community involvement as tour guides is limited due to the need for training, self-preparation, and knowledge of the flora and fauna found in these locations (Zamzani et al., 2021). Fishermen have also turned to food stalls and Small and Medium-sized enterprises (SMEs) such as seafood processing and fish marketing. Skilled fishermen who operate motorboats have shifted to roles as boatmen and dive masters. The local community's active engagement in these formal services has contributed to an improved socio-economic status (Jabil et al., 2012). This has increased the community's reliance on marine ecotourism, which brings economic benefits through tourism entrepreneurship (Norasmah et al., 2012).

Economic factors are considered the most influential in sustaining tourism development. This is because economic factors are seen as ensuring the livelihood of the population. Development must take into accounts the needs and opportunities that the local community will gain, whether in economic, social, cultural, or environmental aspects (Norlida Hanim et al., 2017; Sakellariadou, 2014). According to Zamani-Farahani and Musa (2008), communities will support tourism development if it involves infrastructure and facility development. Communities will support future developments, provided they bring changes in areas such as improvements in basic amenities, job security, income levels, employment opportunities, and healthcare facilities. A study by Mohamad Syahrul Nizam et al. (2024) found that road construction has a positive effect on the socioeconomic conditions of local communities. This development led to a surge in tourist arrivals, allowing local communities to increase their monthly income through accommodation offerings. Furthermore, business competition from external entrepreneurs does not place undue pressure on the local community. The positive changes experienced by the local community enhance its identity and dignity (Norlida Hanim et al., 2014).

According to Sakellariadou (2014), the youth are more motivated to remain in their hometowns due to the wide range of job opportunities. Moreover, the development of marine ecotourism can generate funds to support marine environmental research, conservation at the local scale, and promote responsible alternative economies through education, environmental awareness, and eco-friendly lifestyles.

RESEARCH METHODOLOGY

Semporna is the largest town on the eastern coast of Sabah, located in the Semporna District, Sabah, with geographic coordinates of 4°28'54.41"N and 118°36'40.28"E. Semporna is a small fishing town situated on the eastern coast of Sabah, near the international maritime borders of the Philippines and Indonesia. It spans an area of 442 square miles or 113,412 hectares, divided into two regions: the

mainland of Semporna, Sabah, and the island areas rich in marine biodiversity. Several islands that are key marine ecotourism attractions include Sipadan Island, Mabul Island, Kapalai Island, and Matak Island. The beauty and uniqueness of the marine habitat at each island in Semporna, Sabah, make this area a renowned international marine ecotourism destination.

This quantitative study employed a questionnaire as the research instrument and was conducted on 80 respondents using purposive sampling methods. Samples are involved in the marine ecotourism industry, either directly or indirectly. A five-point Likert scale was used to assess the economic impact of marine ecotourism activities on the local community, ranging from 1 = Strongly Disagree to 5 = Strongly Agree. The research findings were presented in terms of frequency, percentage and mean values. The mean score interpretation and analysis of the levels were as follows: 1.00 to 2.00 (low), 2.01 to 3.00 (somewhat low), 3.01 to 4.00 (somewhat high), and 4.01 to 5.00 (high) (Nunnally and Bernstein, 1994).

RESULTS AND DISCUSSION

The study was conducted on 80 respondents from the Semporna District community, consisting of 38 male respondents (47.5%) and 42 female respondents (52.5%). The majority of respondents were aged between 19 and 25 years (41.3%), followed by the age group of 26 to 30 years (28.7%). The Muslim population predominantly inhabits Semporna, with 97.5% of respondents identifying as Muslim, while the remaining 2.5% were Christian (Table 1). Generally, the Bajau ethnic group is the second-largest indigenous population in the state of Sabah, following the Kadazandusun. The majority of the population in Semporna, Sabah, is of the Bajau ethnicity, consisting of various sub-ethnic groups such as Bajau Kubang, Omadal, Ubian, and Simunul. Based on Table 1, which shows the demographic profile of the respondents, there were seven ethnic and sub-ethnic groups represented in the study. The majority of the respondents were Bajau, with 37 individuals (46.3%), followed by Bugis with 21 individuals (26.3%) and Suluk with 13 individuals (16.3%). The remaining respondents were from other ethnic groups, including Bumiputera Sabah (6.3%), Tidung (2.5%), Malay, and Bisayak, each accounting for 1.3%.

Table 1. Demography profile

| Item | Aspect | Frequency | Percentage (%) |
|-----------|-------------------------------|-----------|----------------|
| Gender | Male | 38 | 47.5 |
| | Female | 42 | 52.5 |
| Age | Under 18 years | 7 | 8.8 |
| | 19-25 years | 33 | 41.3 |
| | 26-30 years | 23 | 28.7 |
| | Above 31 years | 17 | 21.3 |
| | | | |
| Ethnicity | Bajau | 37 | 46.3 |
| | Suluk | 13 | 16.3 |
| | Bugis | 21 | 26.3 |
| | Tidung | 2 | 2.5 |
| | Indigenous Sabah (Bumiputera) | 5 | 6.3 |
| | Melayu | 1 | 1.3 |
| | Bisayak | 1 | 1.3 |
| Religion | Islam | 78 | 97.5 |
| | Hindu | - | - |
| | Buddhism | - | - |
| | Christian | 2 | 2.5 |
| Income | Less than MYR1000 | 18 | 22.5 |

| | | | |
|--|-------------------|----|-----|
| | MYR1001-MYR2000 | 8 | 10 |
| | MYR2001-MYR3500 | 52 | 65 |
| | MYR3001 and above | 2 | 2.5 |

The study found that residents continue to engage in fishing activities, including aquaculture, as a source of income, such as the cultivation of seaweed, shrimp and pearls. The majority of respondents (65%) reported a monthly household income ranging from MYR2001 to MYR3000, followed by 22.5% of households earning less than MYR1000. Only 2.5% of respondents reported a household income exceeding MYR3000. Observations indicate that the most vibrant and competitive economic sector is the tertiary sector, which encompasses services, particularly hospitality services, in alignment with the development of marine ecotourism in Semporna, Sabah.

Impact of Marine Ecotourism Activities on the Local Community Economy

The marine ecotourism activities offered in Semporna, Sabah, include scuba diving, island hopping, snorkeling, ocean kayaking, hiking, fish exhibitions, and seaweed farming. The economic impact of marine ecotourism development on the local population can be observed in terms of income generation, increased employment opportunities, and business growth.

Table 2. Impact of Marine Ecotourism on Residents in Semporna, Sabah

| Item | Strongly disagree (1) | Disagree (2) | Somewhat disagree (3) | Agree (4) | Strongly agree (5) | Mean | Level |
|--|--------------------------|-----------------|--------------------------|---------------|-----------------------|------|-------|
| Increase in employment opportunities | | - | 2 (2.5%) | 25 (31.3%) | 53 (66.2%) | 4.63 | High |
| Increase in business opportunities | | - | 1 (1.3%) | 28 (35.0%) | 51 (63.7%) | 4.62 | High |
| Growth of Small and Medium-sized Enterprise (SMEs) | | - | 1 (1.3%) | 28 (35.0%) | 51 (63.7%) | 4.62 | High |
| Promotion of environmental and cultural product | | - | 2 (2.5%) | 28 (35.0%) | 50 (62.5%) | 4.60 | High |
| Improving in residents' standards of living | | - | 4 (5.0%) | 29 (36.3%) | 47 (58.7%) | 4.54 | High |
| Changes in local economic activities | 1 (1.3%) | - | 5 (6.3%) | 37 (46.2%) | 37 (46.2%) | 4.36 | High |

Increase in employment opportunities

Table 2 shows that respondents tended to strongly agree (66.2%) and agree (31.3%) that there has been an increase in employment opportunities among the local population as a result of marine ecotourism development in the study area. Only two respondents (2.5%) expressed disagreement. The mean score was high (4.63) (Table 2). Employment opportunities have been created to meet the needs and demands of tourists. The increase in job opportunities aligns with the expansion of marine ecotourism activities. Job creation is evident in direct roles, such as tour guides and activity operators, as well as indirect positions in the service sector (food, accommodation and logistics). These opportunities extend beyond the service sector to include areas such as management, marine ecology research, and environmental conservation. This is due to the involvement of various stakeholders, including government agencies and private entities, in the development of the marine ecotourism sector. Furthermore, this industry provides continuous employment and supports the local economy. Indirectly, it helps reduce unemployment rates, raise the standard of living in local

communities, and contribute to economic stability. These findings align with studies by Canty (2007), Jabil et al. (2012), Sakellariadou (2014), and Samsul et al. (2023), which demonstrate that numerous job opportunities are created in business and service sectors based on marine ecotourism. Christopher et al. (2016) also found that marine ecotourism development in Mabul Island, Kapalai, and Semporna has increased business and employment opportunities for local communities, alongside the upgrading of infrastructure to support the tourism sector. Moreover, the development of infrastructure helps attract tourists to these destinations, as noted by Mohamad Syahrul Nizam (2024).

As a result, the youth are likely to shift their perceptions and be motivated to develop their own local areas rather than migrate elsewhere. This is due to the higher availability of job opportunities in their hometown, as evidenced by Sakellariadou (2014). The expansion of the marine ecotourism industry through job creation enables the local community to acquire specialized skills, promoting local-level training and education programs. Consequently, the local community can enhance their ability to compete in the labor market and achieve greater economic stability through regular income and better career opportunities. However, Scheyvens (2002) states that ecotourism is often dominated by external parties, such as foreign investors or large companies. This causes profits to flow out of the area rather than benefiting the local community. Furthermore, the local community may have limited opportunities for training and skill development to effectively take advantage of opportunities in the tourism sector.

Increase in business opportunities

The majority of respondents agree, with 63.7% strongly agreeing and 35.0% agreeing that marine ecotourism development has increased business opportunities for local residents. Only one respondent (1.3%) expressed disagreement, with a high mean score (4.62) (Table 2). Observations indicate that many tourism-related businesses have been established in the study area, including accommodations, retail outlets, food businesses, and souvenir and craft businesses. This is supported by the studies of Chek Sulaiman et al. (2018), Jabil et al. (2012), Norasmah et al. (2012), Sakellariadou (2014), and Zamzani et al. (2021), who found that business opportunities in tourism services and related industries are abundant. Similarly, research by Christopher et al. (2016) revealed that fishing households have ventured into businesses, such as retail, restaurants, souvenir shops, craft shops, and chalet management. Business activities are concentrated along the coastline and main roads.

Clearly, the restaurant business is thriving among the local community, offering a variety of food and handicrafts based on marine products. These commercial business activities provide continuous income for the local community through the development of products and services offered. Indirectly, they reduce unemployment rates and narrow the poverty gap, encouraging dynamic and sustainable economic growth in the area.

Growth of Small and Medium-sized Enterprises (SMEs)

The impact of marine ecotourism activities in Semporna has led to the growth and expansion of SMEs among the local community. The study shows that 51 respondents (63.7%) strongly agreed, and 28 respondents (35.0%) agreed. One respondent (1.3%) disagreed. The mean score is high (4.62) (Table 2). The growth of SMEs is evident in the increase of craft industries, particularly those producing marine life-based souvenirs such as shells and conchs, as well as the local food processing industry and other sectors utilizing local resources. The local community is also actively involved as retailers, suppliers, wholesalers, boat and chalet operators, and restaurant owners. As such, entrepreneurship within the local community has significantly increased, generating income, as agreed by Jabil et al. (2012), Norasmah et al. (2012) and Sakellariadou (2014). Strengthening collaboration between SMEs and tourism-related agencies in promoting marine ecotourism products can improve the visibility and appeal of the destination, thereby stimulating local economic growth.

However, SMEs created from marine ecotourism activities are often seasonal and less stable. This is because if tourist visits decline during off-peak seasons, such as public holidays and festivals, or due to weather conditions, the number of tourists may decrease. This, in turn, leads to a drastic reduction in income for communities that heavily rely on marine ecotourism. Such conditions result in economic instability if there is no comprehensive economic diversification plan (Gossling et al., 2009).

Promotion of environmental and cultural products

The study indicates that marine ecotourism has successfully highlighted environmental products and cultural heritage as the primary economic resources for the local community, in line with the findings of Chek Sulaiman et al. (2018), Jabil et al. (2012), and Sakellariadou (2014). A total of 62.5% (strongly agree) and 35.0% (agree) of respondents agreed that the local community's economy has developed through the promotion of environment- and culture-based products. The mean score is high, at 4.60 (Table 2). Observations found that most handicrafts are made from marine resources, such as seashells, conchs and coral stones. Traders can easily obtain these marine products at low prices since they are abundant in their surroundings. Life as a fisherman significantly aids in acquiring these resources. Environmental products are also featured through tours, boat rides, diving activities, and research. This initiative raises awareness of the importance of preserving cultural heritage and the environment, as well as fostering sustainable education among residents and tourists. The implication is that the local community can earn continuous income, while tourists gain unique experiences through offerings provided by these destinations.

Improving in residents' standard of living

Analysis shows that there has been an improvement in the standard of living among the local community, consistent with the development of the marine ecotourism sector. The majority of respondents (58.7%) strongly agreed that marine ecotourism activities have improved the standard of living of the local community, with 36.3% agreeing. The mean score is high (4.54) (Table 2). The improvement in living standards is in line with the existence of various economic activities and the active participation of the community in entrepreneurial activities, as supported by Chek Sulaiman et al. (2018), Jabil et al. (2012), Sakellariadou (2014) and Zamzani et al. (2021). Moreover, marine ecotourism activities contribute to the inflow of money into the tourism sector, leading to community development.

However, a small number of respondents (5.0%) disagreed, seeing the standard of living as still low (Table 2). This is due to the fact that many of the jobs created in this industry tend to be low-paying, particularly in the service sector, such as boat drivers, recreational activity operators, and cleaners. Therefore, while there has been an increase in income, it may not be sufficient to achieve broader economic well-being. Additionally, perceptions of quality of life are subjective, and individuals have different needs and expectations. Thus, the standard of living interpreted by respondents is relative to their personal needs. Improvements in the standard of living can be seen through the development and investment in infrastructure, education, and healthcare to collectively support the tourism destination. This leads to the provision of basic facilities, such as clean water, improved sewage systems, and more effective public health and education infrastructure.

Changes in local economic activities

Semporna is widely known as a popular destination for seafood, which demonstrates that the majority of the population in the study area are engaged in fishing-related economic activities. However, the development of the tourism industry, particularly marine ecotourism, has shifted the local workforce from fishing and agriculture to secondary and tertiary activities, namely tourism, business, and services. This shift is due to the impact of tourism development on fishing areas and the creation of more employment opportunities within the tourism sector. As a result, some

fishermen have transitioned to the tourism sector, which offers higher income compared to agriculture and fishing. This change is supported by nearly all respondents, with 74 (92.6%) agreeing. Meanwhile, only five respondents (6.3%) disagreed, and one respondent (1.3%) strongly disagreed with this statement (Table 2). Other researchers, including Jabil et al. (2012), Norlida Hanim et al. (2017), Muhammad Faiz and Hanizah (2016) and Yudha et al. (2023), have also documented this shift, noting that the local community is actively seeking to meet the needs and demands of tourists, while also seeking better employment and income opportunities.

However, this transition requires adaptation to the local way of life. Nonetheless, it has opened up opportunities for innovation and the development of new skills within the local economy. Individuals who successfully adapt to these changes are able to gain better economic benefits and become more competitive. Christopher et al. (2016) have shown that the process of tourism infrastructure development has reduced the income of fishermen due to ecological imbalances in the marine environment, water pollution, and changes to the coastal landscape. This situation has resulted in a reduction in fish supply. However, initiatives for fishermen communities and environmental preservation, including the maintenance of ecological balance, have generated economic opportunities through participation in tourism-related activities, such as the service sector.

Strategies for the Sustainability of Marine Ecotourism for the Local Community

Overall, marine ecotourism has brought significant changes to the local community's economic activities. This industry offers a more sustainable alternative income source compared to conventional fishing and agriculture activities practiced by many local residents. However, challenges remain, such as the high dependence on a single sector, income uncertainty, and the long-term stability of the tourism sector. According to Gossling et al. (2009), while the marine tourism sector provides substantial economic benefits, it is vulnerable to external factors such as global economic crises, pandemics, natural disasters, and changes in tourism trends, all of which can result in a deep decline in tourist numbers. Therefore, there is a need to provide socio-economic value to the local population while preserving the marine biodiversity wealth, as well as improving the quality of life for the local community (Mohd Hafiz, 2021). Several strategic recommendations can be implemented to enhance the competitiveness of destinations and, ultimately, boost the local community's economy:

- i) Develop a strategic management plan focused on the preservation, conservation, and protection of national heritage resources to ensure the continued uniqueness and authenticity of natural resources.
- ii) Attract more foreign investment to enhance infrastructure development and public facilities.
- iii) Efficient governance, enforcement, and uniform infrastructure maintenance should be prioritized by local governments to ensure sustainable coastal development.
- iv) Integration of decision-making in management processes by local stakeholders. This approach will facilitate decision-making related to local ecosystems and culture, as well as environmental education.
- v) Strengthen support ecosystem services, including physical infrastructure, service facilities, and safety.
- vi) Develop a competent and skilled human capital base through the acquisition of knowledge and innovative skills among local communities to foster the growth of the tourism sector.
- vii) Improve the production of high-quality, innovative, and commercially viable ecotourism products to increase demand for local products, ensuring economic benefits for the local community.
- viii) Establish a willingness-to-pay mechanism to support marine ecotourism resource conservation.

- ix) Integrate digital technology into tourism services.
- x) Conduct explicit environmental and tourism research to maintain environmental integrity, leading to continuous benefits derived from these activities.

CONCLUSION

Marine ecotourism is a complex industry that requires a holistic approach to planning and management. Sustainable economic returns and benefits are crucial for the development of marine ecotourism that exploits all economic potential. Management emphasis should be ecosystem-based, taking into account the needs of the local community as well as resource, economic, and social dimensions. This development will ensure active participation from local communities, fostering sustainability within the tourism industry and national economic growth. Therefore, stakeholders must increase investment, consultation, marketing, counseling, motivation, courses and workshops, as well as monitoring to ensure that all activities create positive and significant impacts on the local community.

Both government and private sectors must be proactive and collaborate in providing infrastructure to ensure that all plans and programs are effectively implemented. Policy instruments and indicators should not only involve other stakeholders but also engage local communities in decision-making. Stakeholders should also disseminate best practices for sustainable local development. Encouraging local community participation, particularly youth involvement in tourism development, especially in SMEs, will further promote local development. This creates a win-win situation for all parties, offering opportunities for youth and local communities to benefit from the resources available in their area. Additionally, the local community must manage their resources effectively.

However, strategies for establishing integrated and sustainable marine ecotourism development require cooperation among all stakeholders to shape the dynamics of management and sustainable development policies. Every party must ensure the long-term implementation of tourism operations that provide economic benefits, such as job opportunities, poverty alleviation, reducing social inequality, and improving social services for the local communities. Expanding these economic benefits will attract tourist flows from both domestic and international markets, increasing the socio-economic status of local communities. An economic diversification strategy will ensure a balance between environmental preservation and the welfare of local communities, strengthening the sustainability of the marine ecotourism sector.

AUTHORS' CONTRIBUTIONS

Study design: Rosmiza M.Z. & Mohamad Syahrul Nizam, Mohamad Pirdaus

Data analysis and interpretation: Nur Aqilah Hadifah & Johan Johnes

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All authors read and approved the final manuscript.

REFERENCES

- Badaruddin M, MS Ahmad Puad, J Jamil, and YW Kwong, 2006. Island tourism in Malaysia: The not so good news. In: 12th Asia Pacific and 4th Asia Pacific CHRIE Joint Conference.
- Canty SWJ 2007. Positive and negative impact of dive tourism: The case study of Utila, Honduras (Master's thesis). Lund University Centre for Sustainability Studies, Lund, Sweden.

- Casimiro D, MA Ventura, AZ Botelho, and Guerreiro J, 2023. Ecotourism in marine protected areas as a tool to valuate natural capital and enhance good marine governance: A review. *Frontiers in Marine Science*, 9: 1002677.
- Chek Sulaiman F, J Norajlin, J Ely Rouzee, and H Nur Idzhainee, 2018. The impact of marine tourism towards the local community at Pulau Pangkor, Perak. *Asian Journal of Quality of Life*, 3(13): 168-176.
- Chesworth N, 1995. Ecotourism seminar paper delivered in the Institute of Environmental Studies and Management. UPLB, College, Laguna.
- Christopher P, S Zaini, and Z Siti Khatijah, 2016. Impak ekopelancongan terhadap komuniti tempatan di Malaysia: Kajian kes komuniti nelayan Bagan Lalang, Sepang, Selangor. *Geografia-Malaysian Journal of Society and Space*, 12(4): 94-108.
- Garrod B, 2003. Marine ecotourism in New Zealand: An overview of the industry and its management. In: Garrod C and C Wilson (Eds.), *Marine ecotourism: Issues and experiences*. 1st edition. Channel View Publications, Clevedon, UK, pp: 17-37.
- Garrod B, and S Gössling, 2008. New frontiers in marine tourism: Diving experiences, sustainability, management. *Tourism Management*, 29(5): 869-877.
- Gössling S, CM Hall, and D Weaver, 2009. Sustainable Tourism Futures: Perspectives on Systems, Restructuring and Innovations. In: Gössling S, CM Hall, and D Weaver (Eds.), *Sustainable tourism futures: perspectives on systems, restructuring and innovations*. 1st edition. Routledge, New York, USA, pp: 10-15.
- Hamid R, and O Hossein, 2024. An integrative framework to evaluate impacts of complex tourism change initiatives. *Tourism Management*, 100: 104829.
- Higham JE, and M Lück (Eds.), 2021. *Marine tourism: Development, impacts and management*. Routledge, London, UK.
- Ingram T, 2010. Hearing on the environmental and economic impacts of ocean acidification. Written statement of Executive Director Diving Equipment and Marketing Association.
- Jabil M, Y Mohamad Pirdaus, and MZ Rosmiza, 2012. Implikasi sosioekonomi pembangunan pelancongan penyelaman skuba terhadap komuniti pulau di Malaysia: Satu tinjauan awal. *Geografia: Malaysian Journal of Society and Space*, 8(5), 26-38.
- Mohamad Syahrul Nizam Ibrahim, Shazali Johari, Amirah Sariyati Mohd Yahya, Rosmiza Mohd Zainol, and Suziana Hassan, 2024. The challenges and socioeconomic impacts of proposed road development to Gunung Mulu National Park, Sarawak, Malaysia: A case study of local community perspectives on sustainable tourism. In: H. Ahmed Imran, and A Sharma. *The emerald handbook of tourism economics and sustainable development*. United Kingdom: Emerald Publishing. pp 99-118.
- Mohd Hafiz Hanafiah, Mohd Raziff Jamaluddin, and Velan Kunjuran. (2021). Qualitative assessment of stakeholders and visitors perceptions towards coastal tourism development at Teluk Kemang, Port Dickson, Malaysia. *Journal of Outdoor Recreation and Tourism*, 35: 100389.
- Muhammad Faiz R, and I Hanizah, 2016. Pembangunan mampan pelancongan maritim di Pulau Perhentian, Terengganu. *Journal of Southeast Asian Studies*, 21: 108-124.
- Norasmah O, J Salwani, S Saliza, and B Norsyaidah, 2012. Impak aktiviti selam skuba dan snorkeling terhadap aktiviti keusahawanan, sosioekonomi dan alam sekitar. *Jurnal Teknologi*, 59: 57-63.

- Norlida Hanim MS, S Md Shafiin, and MI Siti Hajar, 2017. Impak pembangunan pelancongan ke atas persekitaran manusia dan fizikal komuniti Pulau Tioman. *Akademika*, 87(3), 49-62.
- Norlida Hanim MS, O Redzuan, MI Siti Hajar, AH Sharina, MD Shafiin Shukor, Y Ishak, Mohd Samsudin, and O Mustaffa, 2014. Development of tourism industry and its impact on Langkawi island community. *Jurnal Ekonomi Malaysia*, 48(2), 71-82.
- Nunnally J, and I Bernstein, 1994. *Psychometric Theory* (3rd ed.). New York, McGraw-Hill.
- Peters, H, and JP Hawkins, 2009. Access to marine parks: A comparative study in willingness to pay. *Ocean & Coastal Management*, 52, 219-228.
- Sakellariadou F, 2014. The concept of marine ecotourism: A case study in a Mediterranean island. *The International Journal of Climate Change: Impacts and Responses*, 6(1): 33-39.
- Samsul B, B Henrie, W Endang Linirin, P Parjito, and S Siti Herawati, 2023. Measuring the sustainability of marine ecotourism in Kiluan Marine Tourism Park, Lampung Province, Indonesia. *Environment and Ecology Research*, 11(2): 392-405.
- Scheyvens R, 2002. *Tourism for development: Empowering communities*. 1st edition. Prentice Hall, London, UK.
- Spenceley A, 2017. Tourism and protected areas: Comparing the 2003 and 2014 IUCN World Parks Congress. *Tourism & Hospitality Research*, 17, 8-23.
- Todaro MP, and SC Smith, 1995. *Economic development* (11th ed.). Addison-Wesley, Pearson.
- UNEP (United Nations Environment Programme), 2020. Global marine tourism report. Retrieved from <https://www.unep.org>
- UNWTO (World Tourism Organization), 2021. Global report on marine tourism: Supporting sustainable coastal tourism development. Retrieved from <https://www.unwto.org/global-report-on-marine-tourism>
- Wiltshier P, J Basil, and R Iv, 2022. Tourism transformations in protected area gateway communities. Retrieved from <https://www.cabidigitallibrary.org>
- Yudha P, MR Sawu, and MF Ulinnuha, 2023. Opportunities and challenges in development community-based marine ecotourism on Samalona Island, Makassar City. *Journal of Tourism Sustainability*, 3(2): 94-100.
- Yulius, Y., R Ramdhan, and T Khairunnisa, 2018. *Buku panduan ekowisata bahari*. PT. IPB Press.
- Yusoh MP, NM Salleh, J Mapjabil, and MZ Rosmiza, 2021. An investigation of Tunku Abdul Rahman Marine Park, Sabah's attractions and tourism infrastructure management. *Journal of Tourism, Hospitality and Environment Management*, 6(24): 87-99.
- Zamani-Farahani H, and G Musa, 2008. Residents' attitudes and perception towards tourism development: A case study of Masooleh, Iran. *Tourism Management*, 29(6), 1233-1236.
- Zamzami L, M Aliman, and Azwar, 2021. The effect of ecotourism development on marine conservation area in West Sumatera, Indonesia. *GeoJournal of Tourism and Geosites*, 38(4): 1166-1174.