

Collaborative Governance in Mangrove Ecotourism Policy on Bintan Island Coastal Approach of Penta Helix

^a Alfiandri Alfiandri, ^b Bambang Irawan

^a Department Public Administration, University Maritim Raja Ali Haji. Tanjungpinang. Indonesia, ^b Department Public Administration, University Mulawarman. Samarinda. Indonesia

ABSTRAK

Studi ini bertujuan untuk mengeksplorasi efektivitas tata kelola kolaboratif dalam mengimplementasikan kebijakan ekowisata mangrove pada pendekatan penta-helix di Pulau Bintan. Tujuan penelitian adalah mengidentifikasi pemangku kepentingan utama yang terlibat dalam proses formulasi dan implementasi kebijakan ekowisata mangrove, menilai peran dan hubungan mereka, dan menganalisis bagaimana tata kelola kolaboratif dapat meningkatkan kolaborasi dan koordinasi mereka. Metode penelitian menggunakan deskriptif kualitatif dan menggunakan analisis perangkat lunak NVivo-20 yang dianalisis secara mendalam. Hasilnya menunjukkan bahwa elemen penta-helix dalam Tata Kelola Kolaboratif memiliki kesenjangan yang tidak melibatkan semua aktor pemangku kepentingan, baik dari pemerintah lokal, akademisi, sektor swasta, kelompok masyarakat, dan media. Namun, dalam hal kebijakan atau implementasi program ekowisata Mangrove, dibutuhkan studi ilmiah untuk mendukung ekowisata Mangrove di wilayah pesisir di Wilayah Kepulauan yang memiliki potensi strategis untuk dikelola dengan baik oleh pemangku kepentingan yang kuat. Pentingnya keterlibatan aktif masyarakat lokal seberapa luas mungkin dengan pemangku kepentingan seperti aktor pusat, regional, dan bisnis dalam perencanaan, implementasi, dan pengambilan keputusan dalam pembentukan dan pengelolaan Organisasi Manajemen Destinasi (DMO). Temuan ini juga menyoroti perlunya penelitian lebih lanjut untuk menyelidiki dapat diintegrasikan ke dalam proses pembuatan kebijakan di sektor dan konteks lain.

ABSTRACT

This study aims to explore the effectiveness of collaborative governance in implementing mangrove ecotourism policy on the Bintan Island coastal approach of penta helix. The research objectives are to identify the key stakeholders involved in the mangrove ecotourism policy formulation and implementation process, assess their roles and relationships, and analyze how collaborative governance can enhance their collaboration and coordination. Research method uses descriptive qualitative and uses NVivo-20 software analysis which is analyzed in depth. The results show that the penta-helix element in Collaborative Governance has gaps that do not involve all stakeholder actors, both from local government, academia, the private sector, community groups and the media. but in terms of policy or implementation of a Mangrove ecotourism program, scientific studies are needed to support Mangrove ecotourism in coastal areas in Islands Regions have strategic potential to be managed properly by strong stakeholders. The importance of active involvement of the local community as wide as possible with stakeholders such as central, regional and business actors in planning, implementing and making decisions in the formation and management of a Destination Management Organization (DMO). The findings also the need for further research to investigate can be integrated into the policy-making process and contexts.

ARTICLE HISTORY

Submitted: 08 08 2023

Revised: 23 08 2023

Accepted: 23 08 2023

Published: 24 08 2023

KATA KUNCI

Tata Kelola Kolaborasi; Ekowisata; Mangrove; Penta Helix

KEYWORDS

Collaborative Governance; Ecotourism; Mangrove; Penta Helix

INTRODUCTION

In empowering Mangrove forests, the Government of Indonesia, Mangrove management is included in the agenda of the Ministry of National Development Planning (PPN)/Bappenas, explicitly by developing a Mangrove management strategy so that threats and their impacts can be controlled. The urgency in Bintan Island's mangrove conservation stems from the fact that mangroves are one of the most critical ecosystems that provide numerous benefits to both humans and the environment. Mangroves of Bintan Island offer natural barriers against waves, coastal erosion, and storm surges while serving as fish nurseries and carbon sinks. These mangroves also help maintain water quality, regulate the climate, sustain biodiversity, and support livelihoods. Despite that, the mangroves of Bintan Island are under severe threat, with an estimated 50% of the island's mangroves lost due to anthropogenic activities including shrimp farming, agricultural expansion, and logging. This loss has a significant impact on the local community that depends on them for their livelihoods, as well as the wider global community as Bintan's mangroves play a vital role in mitigating climate change.

Therefore, it becomes a national priority to preserve the remains of the mangroves and initiate afforestation to restore the lost forests. Besides the ecological benefits, protecting the mangroves of Bintan Island will promote social and economic development, facilitate sustainable tourism, and protect the welfare of the local communities. Thus, the urgency to conserve the mangroves of Bintan Island is not only an environmental concern but also a social, economic and political one. The first strategy is to strengthen the Mangrove database by conducting an inventory (Putri et al., 2019). The policy strategy is maintaining planning, control, monitoring, and evaluation. Mangrove management activities are a robust framework of the 2020-2024 RPJMN and are also included in the Sustainable Development Goals (TPB/SDGs) agenda, low-carbon development, and climate resilience, so the planning and evaluation agendas are clearly stated (Nawawi et al., 2017).

Competitive and sustainable tourism demands harmony between tourism and environmental preservation (Soekadijo, 1996). Sustainable ecotourism in Indonesia may be achieved by measures like those outlined by (Arismayanti, 2017) which include the creation of marine ecotourism areas and goods and the strengthening of local communities. Both the people who participate in this kind of tourism and the areas that are visited are subject to complicated social processes. There are a variety of social and cultural qualities that may be used as tourist resources. Furthermore, a study conducted by the Bintan Island Government in 2022 found that foreign tourists who visited the mangrove forest area in Bintan contributed to the local economy by spending an average of IDR 1.2 million (USD 86) per person. This spending includes activities such as mangrove boat tours, souvenir shopping, and food and beverage consumption. Additionally, the presence of foreign tourists also creates jobs and income for the local people. Many businesses in the area, such as tour operators, restaurants, and souvenir shops, rely heavily on foreign tourists for their revenue.

Participation from the tourist industry's many players, including airlines, hotels, tour operators, retailers, and guides. The demands of tourism activities must be met in a way that is fair to visitors, locals, and the government (Soekadijo, 1996). Sustainable development in coastal outlying regions may include marine tourist activities. Ecotourism in coastal zones has both potential and problems, and a case study of West Clare, Ireland might help put these into perspective. The research concludes that marine ecotourism has the potential to be part of the correct approach to tackle the difficulties encountered by coastal communities, but in reality is just part of the proper strategy (Garrod & Wilson, 2004).

The growth of marine ecotourism is predicted to contribute to the sustainable management of natural resources (Mulyadi et al., 2017), in addition to generating income for local governments. The contribution of mangrove ecotourism on Bintan Island may be significant as it promotes sustainable tourism, provides economic opportunities for the local communities, and increases awareness about the importance of mangrove ecosystems. However, if not managed properly, it can also lead to negative impacts such as overdevelopment, pollution, and disturbance of the natural environment. Therefore, the problem phenomenon for the research could be to investigate the impacts of mangrove ecotourism on Bintan Island and to identify ways to maximize its benefits while minimizing its negative effects. This may involve assessing the current state of the mangrove ecosystems, understanding the socio-economic dynamics of the tourism industry, and engaging with relevant stakeholders to develop sustainable management and conservation strategies.

The presence of marine ecotourism technology and the existence of a social aspect of marine ecotourism are the two minor obvious criteria. When it comes to marine ecotourism, however, ecological magnitude is the most important factor and economic relevance is the least (Muhsoni et al., 2021). Since laws are required to set up nautical ecotourism zoning restrictions and develop infrastructure (Nurhayati et al., 2019), information technology is advised to maximally boost marine ecotourism. Indonesia's mangroves have tremendous untapped potential, and it would be wise for the country's tourist industry to capitalize on this to boost the economy and improve people's standard of living. Therefore, the government and the private sector must collaborate to maintain this tourist industry by building and maintaining the required infrastructure and amenities.

In addition, the Government also needs to utilize existing monitoring and evaluation tools. For now, Bappenas has developed AKSARA as a tool for Low Carbon Development Planning. Good Mangrove Forest management can also align with achieving a green economy which the Government is currently intensifying. The green economy is an agenda aiming to achieve low-carbon development and climate resilience. Various efforts to support the smooth running of the tourism sector, the need for the availability of accommodation service providers for foreign and domestic tourist visits to tourist destinations. Tourist destinations in Indonesia have the potential for beautiful tourist attractions and have great potential to be developed, including Bintan Island and Kepulauan Riau Province. Competitors have economic opportunities that are large enough to reap benefits from this tourism sector's activities. This is because psychologically, the desire to travel is very high due to the travel ban's impact for so long. In such conditions, foreign tourists are considered to choose the safest destination. The Government is not focused on setting a target number of tourists, but the focus of the Government connection is no longer the number but the quality of tourists.

It is recorded that more than 96% of its area is an ocean with an area of 242,825 km², making it a superior maritime sector and tourism package (Oktaviana et al., 2021). Various kinds of natural beauty potential of the Kepulauan Riau can be built and developed and have been marketed at the national level and even up to the international level. The Kepulauan Riau, a maritime area with nature presented, is in all coastal areas and seas, so the Kepulauan Riau is an archipelago (Putra, 2014). The mangrove forest is a valuable asset to the shore. In 2017, the Ministry of the Environment in Indonesia reported that mangrove forests in Indonesia covered an area of 3.48 million hectares. That's equivalent to 19% of the total area of mangrove forests globally, so there's a lot of room for growth in Indonesia. There is a discrepancy between the value placed on mangrove forests and the capacity of these ecosystems to endure in Indonesia. The quality and quantity of Indonesia's mangrove forests are deteriorating, and their functionality is declining. Mangrove forests serve as a sediment storage region because they are a highly

productive ecosystem that performs a number of crucial social, economic, and environmental roles (Kurnianingsih et al., 2021).

The phenomenon of ecotourism, which involves environmentally responsible travel and tourism to natural areas, can support environmental resilience and preservation in several ways:

1. Promoting conservation: Ecotourism can provide economic incentives for conservation and protection of natural resources. Eco-tourists often visit natural areas to observe wildlife and enjoy outdoor activities, and they are willing to pay to experience these environments. This creates direct financial benefits for local communities and conservation efforts. As a result, people in these communities have an economic incentive to protect the natural resources on which they depend.
2. Raising awareness: Ecotourism can increase public awareness of the importance of preserving natural resources. Visitors who participate in eco-tourism activities often learn about the local ecosystem, biodiversity, and environmental issues associated with the area. This can encourage them to adopt more sustainable behaviors and promote environmentalism.
3. Promoting sustainable practices: Ecotourism can promote sustainable development by encouraging local communities and businesses to operate sustainably. Ecotourism standards often require that businesses and operators adopt environmentally sustainable practices, including the effective use of natural resources, the reduction of waste, and the use of renewable energy.
4. Supporting local communities: Ecotourism can provide economic opportunities for local communities. This can help to reduce the impact of other environmentally destructive activities such as mining, logging, and agriculture. By providing additional options for economic development, ecotourism can reduce the dependence of local communities on these activities and promote environmental resilience.

Overall, the phenomenon of ecotourism can encourage more environmentally responsible behavior by raising awareness, promoting sustainable practices, supporting conservation efforts, and providing economic benefits to local communities. These factors can contribute to environmental resilience and preservation, making it an effective solution to protect natural resources while also supporting local development. Mangrove forests have a societal purpose as a vacation spot for many people. The mangrove forest is the primary ecology that keeps coastal communities alive. The establishment of rules pertaining to the management of mangroves is proof that the Indonesian Government has given this issue significant attention. Specifically, "Coastal Areas are areas transitions between terrestrial and marine ecosystems that are affected by changes in land and sea," as stated in Article 1 paragraph (2) of Law Number 1 of 2014 concerning Amendments to Law Number 27 of 2007 concerning Management of Coastal Areas and Small Islands (henceforth referred to as Law Number 1 of 2014).

Especially in fishing villages, it is becoming clear that the coastal and marine resources available today have great potential for bolstering economic well-being. The government, the business sector, and the community have all fallen short in their management of the vast untapped potential of coastal and marine resources (including tiny islands). Land-based development strategies have historically disregarded the coastal and marine sectors, despite their rich potential resource pools. Involvement of research and management, as well as collaboration between local and regional governments, industry, and ecosystems, are essential for effective coastal and small island management, which the government is well aware of (Nawawi et al., 2017).

The total size of Bintan Island's mangrove forest ecosystem is estimated to be 9,625.87 hectares (Ha), with 8,895.87 hectares located in Bintan Island and 730 hectares in Tanjungpinang City (Irawan, 2013). The most recent figures for the Mangrove forest on Bintan Island were issued in 2000, showing an extent of 10,156.13 ha. This information came from the Ministry of Environment and Forestry's Sei Jang Duriangkang Watershed and Protected Forest Management Center. More than 100 hectares of mangroves on Bintan Island have been destroyed due to logging and landfilling for housing and industry, according to data supplied by the Ministry of Environment and Forestry at the Watershed Management Center Sei Jang Duriangkang River and Protected Forest.

Bintan Island in the Kepulauan Riau of Indonesia is well-known for its ecotourism attractions. The island boasts of mangrove forests, pristine beaches, and diverse wildlife, making it a popular destination for nature lovers and adventurers. The ecotourism activities in Bintan Island include hiking, bird watching, kayaking, snorkeling, and diving. The degradation of ecotourism areas on Bintan Island due to natural disasters, human activities, or climate change can have a severe impact on the tourism industry. This can result in loss of revenue, reduced employment opportunities, and a decline in the local economy. Efforts need to be taken to restore the damaged ecotourism areas in Bintan Island and implement sustainable tourism practices to protect them. This can include reforestation, beach cleanups, responsible waste management, and promoting eco-friendly tourism activities. GIS mapping can be used to identify the key ecotourism areas on Bintan Island and assess the damage caused to them. This information can be used to develop data-driven strategies for their restoration and management, ensuring the long-term sustainability of ecotourism in the Kepulauan Riau.

Natural disasters and human activities can contribute to coastal devastation. Human-caused factors include the incessant pursuit of material goods and the accompanying disregard for the natural world in everyday life. In order for the environment to deteriorate and cause catastrophe. Currents, tidal waves, earthquakes, tsunamis, winds, storms, and climate change are all examples of natural phenomena that cannot be prevented. Developing coastal ecotourism on Bintan Island requires cooperation and innovative strategies in the form of inter-regional government policies in order to foresee the uncontrollable factors that cause coastal natural damage, especially to the Mangrove Forest's resources.

Literatur Review

The Pentahelix is a novel expansion of the Quadruple Helix that links academia, industry, community, government, and the media to foster an environment conducive to the growth of imagination. The academic and commercial sectors of the original triple helix eventually evolved into the penta helix. Government, which was later supplemented with one component, Civil Society (or Communities in this study), to become a Quadruple Helix to accommodate the perspective of society; in this case, it is a "media and culture-based society" that has also become an integral part of innovation in the 21st century. An additional benefit of the Communities feature is that it facilitates the formation of networks and configurations that cut beyond traditional disciplinary boundaries, frees the idea of "innovation" from a focus on monetary gain, and integrates imagination into the process of creating new knowledge and products (Sudiana et al., 2020).

The collaborative governance theory is an approach that emphasizes on the development and enhancement of partnerships among public, private, and civil society stakeholders in a social system, with the objective of improving service delivery and

responding to social and economic challenges. The concept of pentahelix is a useful tool for collaborative governance, which highlights five critical stakeholders -government, industry, academia, civil society, and individual citizens. The pentahelix approach recognizes that each stakeholder within the system has unique experiences, resources, and knowledge that can contribute to the shared objective of improving service delivery. The government can provide regulations and governance frameworks, while industry can provide expertise, resources, and innovation. Academia can generate research, knowledge, and insights, while civil society can provide social accountability and advocacy. Individual citizens can provide feedback and ideas for service improvement.

The author uses the pentahelix approach as it is a holistic and practical way of addressing complex economic, social, and political problems. The approach allows for collaboration and collective problem-solving, where the strengths and resources of each stakeholder can be used towards a shared objective. This approach is particularly relevant in addressing complex issues such as climate change, poverty reduction, and healthcare. By bringing together stakeholders from different sectors, the pentahelix approach enables a comprehensive understanding of the issues and effective implementation of solutions. The collaborative governance theory and the pentahelix approach allow stakeholders to collaborate in addressing complex societal challenges. The approach is favored by the author as it is a practical and comprehensive approach that brings together government, industry, academia, civil society, and individual citizens in a collaborative effort towards a shared objective.

The penta helix approach builds on the success of the triple helix by including government, business, and nonprofits in the innovation process. By working together, we can pool our strengths and increase the likelihood that our idea will be seen and encouraged. In 1995, Etzkowitz and Leydesdorff presented the Triple Helix paradigm, which included representatives from academia, industry, and government. The manufacturing and commercial sector is the innovator. The academic community is the agent tasked with expanding human understanding. Then, engage the Government, the third domain. Together, the three of them use a top-down strategy to invent solutions that may boost a country's economy.

After further refinement, the Triple Helix became the Quadruple Helix by including the viewpoint of Civil Society or the community. To expand upon the success of the triple helix model (a network connecting academic institutions, private businesses, and the government), the quadruple helix idea was conceived (Amrial et al., 2017). Adding media to the Quadruple Helix model in Indonesia serves as a complement to the Penta helix element, as the media (both traditional media and social media) play a significant role in the context of the development of the creative economy in Indonesia. However, they are still considered standalone components since their operation is not reliant on any other features. In light of the foregoing, it seems reasonable to conclude that the Penta Helix is an innovation model used to increase or raise the level of an economy of a country or region, which involves five stakeholders, namely Government, business (private), media, academia, and communities, where these five elements each play a role and influence that is quite prominent and influential, such that, when working together, they will get better and maximum results.

The novelty of our research lies in investigating the use of Collaborative Governance as a means of developing mangrove ecotourism policy on Bintan Island, using a Penta Helix approach. This approach involves collaboration between government, businesses, academia, civil society, and

local communities in the policymaking process, which has not been commonly used in mangrove ecotourism policy development. In addition, the research focuses on the Bintan Island Coastal Approach, which involves promoting sustainable tourism, mangrove conservation, and community development. This approach has not been widely studied in the context of Collaborative Governance for mangrove ecotourism policy development. Overall, our research contributes to the ongoing discussion on the sustainable development of ecotourism in mangrove ecosystems. It provides insights on how Collaborative Governance can be used as an effective tool for promoting sustainable tourism, conservation, and inclusive development in mangrove ecotourism policy.

RESEARCH METHODS

This strategy for doing research is grounded on post-positivism (Clark, 1998). Post-positivism is a philosophical approach emphasizing the limitations of objective and empirical observation and the subjective nature of knowledge. It recognizes that theories and hypotheses cannot be conclusively proven but can only be supported by evidence. Post-positivist researchers seek to develop and test theories that are based on empirical evidence and can be revised as new evidence emerges. Purposive and snowball sampling of data sources, triangulation of data, inductive data analysis, and an emphasis on meaning over generalization characterize qualitative research methods appropriate for studying the conditions of natural objects (Olsen, 2004). The effectiveness of the words and phrases employed has a major impact on the analysis and comprehension of the study. As a consequence, the methodology and significance of the findings are the central concerns of this study. To better understand an event, behavior, or occurrence, the study strategy emphasizes looking at the human, material, and institutional factors involved (Bogdan & Taylor, 1975; Guba & Lincoln, 1994).

The Successive Approximation method of qualitative data analysis is used here. "The researcher starts with research questions and a framework of assumptions and concepts when using data analysis techniques." They next investigate the evidence to determine how well the visuals correspond to the evidence and how effectively the data's characteristics are shown. The actual situation. The idea of ecotourism on Bintan Island's mangroves will be tested to determine how well it corresponds to the realities discovered via research. A descriptive qualitative approach is a research approach that emphasizes detailed and contextual descriptions of the observed phenomena. This approach does not include numbers or statistics in the analysis. This method is used to understand the meaning behind observed phenomena, such as individual experiences and perceptions, culture, and social policies.

Descriptive qualitative approaches are usually carried out using interviews, observation, and document analysis to obtain data. The advantages of a descriptive qualitative approach are that it can dig deep knowledge, reveal complex characteristics and open up more research strategies based on human experience and behavior. NVivo is a software package that supports qualitative research by providing researchers with a range of tools to help them analyze and manage their data. researchers can analyze and manage their data in a more efficient and organized manner, which can help them draw more accurate conclusions and make more informed decisions. Besides, NVivo empowers researchers to perform complex analyses and queries that might otherwise be difficult to achieve manually, making research more efficient and effective.

RESULTS AND DISCUSSIONS

Overview of Mangrove Ecotourism on Bintan Island

Private-public partnerships in the Mangrove ecotourism sector are increasingly focused on community empowerment as a means of fostering innovation and creativity in the sector (Akbar & Ikhsan, 2019). Researchers found that innovation in Mangrove management was not incorporated into the community in Bintan Island because of the conditions of the people there. This was because the tourism industry had created its own pattern in the development of Mangrove ecotourism. There may be several factors that contribute to a pattern where collaboration with the community cannot be carried out, and people do not support synergistic governance:

1. Lack of trust: The community may not trust the government or other stakeholders due to a history of broken promises, mismanagement of funds, or other factors. This lack of trust can make collaboration difficult as people are hesitant to work with those they do not trust.
2. Inadequate communication: Effective collaboration requires open and honest communication between all parties involved. If there is insufficient communication, misunderstandings can occur, leading to conflicts and breakdowns in collaboration.
3. Power imbalances: When there is a significant power imbalance between different groups or individuals, collaboration can be challenging. Those with more power may be reluctant to share control or give up resources, while those with less power may feel sidelined or excluded.
4. Limited resources: Limited resources, such as funding, personnel, or infrastructure, can also hinder successful collaboration. When different stakeholders are competing for scarce resources, tensions can arise, and collaboration may break down.
5. Cultural differences: Cultural differences between the community and other stakeholders can also impede collaboration. Different values, beliefs, and practices can lead to misunderstandings and conflicts, making it difficult to work together towards shared goals.

Ultimately, collaboration with the community and successful synergistic governance requires mutual trust, open communication, shared resources, balanced power dynamics, and an understanding of cultural differences. Without these conditions, collaboration may be difficult, if not impossible, to achieve. In light of the above, there is room for growth in different policy innovations in the Bintan Island's Mangrove ecotourism sector with respect to environmental objectives. However, there are still varying priorities when it comes to expanding Mangrove Ecotourism. Visitors to Bintan Island for the first time will need to take the initiative if they want to take use of the mangrove ecotourism services available there since the Mangrove Ecotourism cooperation pattern based on Collaborative Management is not working.

Figure 1.
One of the Mangrove Tourism Nameplates on Bintan Island



Source: Secondary Data of Researcher 2021

Community participation is the leading benchmark in encouraging Collaborative Governance in Coastal Ecotourism in Mangrove Ecotourism on Bintan Island. This needs to be maintained so people can survive the Covid-19 pandemic. There needs to be guidance and concern from the Government to be more supportive. Support and promote tourist destinations and activities held by small tourism activists currently popping up in the regions. So far, tourism activists have not been involved in increasing environmental-based tourism by the Government. Many Mangroves ecotourism, especially those neglected due to lack of capital or knowledge. So there is a need for education to increase tourism potential for teaching and agro-tourism for the community.

Because of its proximity to Singapore and Malaysia, Bintan Island serves as a gateway for many international visitors to Indonesia. Bintan Island's Mangrove Tourism Managers need to be educated on the need of management to prevent threats to mangrove ecosystems such overexploitation, illegal logging, and inappropriate development. The plan is to promote more tourism in the area to boost the economy there. Ecotourism amid the mangroves of Bintan Island is increasingly drawing visitors from near and far to Bintan Island. However, according to the reports published by the Earth Observatory of Singapore, the mangrove forests on Bintan Island have been experiencing degradation due to anthropogenic activities such as deforestation, land conversion for human settlements, and agricultural activities. The mangrove ecosystem is also vulnerable to natural disasters such as storms and tsunamis that could cause significant damage to the environment. Additionally, the island's location in a region with high anthropogenic pressure, including rapid urbanization and tourism development, may exacerbate the effects of environmental degradation on the mangroves.

Ecotourism is a kind of tourism in which nature appreciation is a primary focus. Eco-Adventure, Eco-Cruise, Eco-Safari, Nature Tourism, Low Impact Tourism, Bio-Tourism, and Ecologically Responsible are all parts of the ecotourism industry's promotional efforts. The flora, water biota, fauna, and surrounding surroundings that make up a mangrove forest's ecosystem all contribute to its potential for natural beauty and environmental sustainability. The stunning coastline of Bintan Island is ideal for the development of mangrove forests. Ecotourism in the Mangroves is playing an important role in protecting the Mangrove ecosystem in Bintan Island. Mangrove ecotourism in Bintan Island is managed with a primary emphasis on empowerment. The Tourism Awareness Group (POKDARWIS) plays a significant role in and contributes significantly to the growth of the tourism industry on Bintan Island. The penta helix model is a framework that recognizes the role of five key actors or stakeholders in the development and implementation of policies and initiatives. These five actors are:

1. Government: The role of the government is to provide the regulatory framework and policies that support the management and conservation of mangrove ecosystems. In the case of mangrove ecotourism policy, the government has the responsibility to create regulations and policies that ensure the sustainable use of mangrove resources, protection of the environment and promote the development of ecotourism industry.
2. Industry: The private sector plays a crucial role in the development and management of ecotourism activities in mangrove ecosystems. In the case of mangrove ecotourism policy, the private sector includes tour operators, hotels, and restaurants that cater to tourists visiting mangrove areas. Their role is to provide services and facilities that support ecotourism activities while ensuring sustainable use of resources.
3. Academia: Academia comprises educational and research institutions that play a vital role in generating and disseminating knowledge about mangrove ecosystems and their conservation. The role of academia in mangrove ecotourism policy is to conduct research

and provide expert advice on ecological, economic, and social aspects of mangrove management.

4. Community: Local communities are important stakeholders in the management of mangrove ecosystems. They have traditional knowledge and practices that are crucial in the protection and conservation of mangrove forests. In the case of mangrove ecotourism policy, local communities play a significant role in promoting ecotourism activities, providing cultural and ecotourism experiences, as well as ensuring the sustainable use of resources.
5. Non-governmental organizations (NGOs): NGOs are organizations that operate independently of the government and are mainly driven by social, environmental, and humanitarian causes. They play a crucial role in promoting sustainable development and protecting the environment. In the case of mangrove ecotourism policy, NGOs play a significant role in promoting sustainable and responsible tourism practices, advocacy, and awareness-raising activities.

As for the Pokdarwis, they represent the community sector and play a significant role in implementing the government policies and initiatives in mangrove ecotourism. They are responsible for organizing community-based tourism activities and developing sustainable tourism products based on local resources and culture. Their role in mangrove ecotourism policy is to contribute to the sustainable management and conservation of mangrove ecosystems while promoting economic development and preserving cultural heritage.

Table 1.
POKDARWIS in Bintan Island in Mangrove Ecotourism

Nama POKDARWIS	Jenis Kegiatan	Lokasi
Sumpat	<i>Mangrove Tour</i>	Warden Village
<i>Mangrove Tour</i>	<i>Mangrove</i>	Sebong Lagoi Village
Ecowisata Tosela	<i>Mangrove Rekreasi</i>	South Toapaya Village
<i>Mangrove Bintan Lestari Conservation</i>	<i>Mangrove</i>	Sebung Pereh Village
<i>Green Mangrove</i>	<i>Mangrove</i>	Tembeling Village

Source: DIKBUDPAR Bintan 2021

With awareness about the role of POKDARWIS in the continuity of ecotourism activities, the Government has made several efforts to increase POKDARWIS activities in their respective environments. Some things the Government has done include: conducting tourism awareness group competitions, coaching and counselling tourism awareness groups, tourism HR training at the POKDARWIS level, and others. Based on the findings of the POKDARWIS conditions in Bintan Island, only five villages have become Mangrove ecotourism activities that the community in Bintan Island can manage. This means that indirectly the current Government's role has not shown good cooperation, so the potential of coastal areas that can be made as Mangrove tourism objects on their mapping has not been fully implemented properly.

Ecotourism along the coast may greatly improve community empowerment if local leaders work together. Thus, a new POKDARWIS was established, with the intention of boosting the Bintan Island economy. Mangrove ecotourism in Bintan Island is undergoing development with the goal of bolstering community initiatives' ability and involvement as subjects and beneficiaries of this change. POKDARWIS is a community institution acting as a manager of ecotourism, and it plays a crucial role in helping to foster an environment favorable to the sector's expansion, which in turn helps to boost regional development through the tourist industry. The success of the Sebong River Mangrove Forest as a prototype ecotourism project is more evidence of this.

The importance of increasing understanding of tourism potential through developing tourism destinations and managing jointly between the community and the Government. In addition, the waste problem is also an obstacle to tourism development on Bintan Island. The lack of attention to garbage and waste has made tourism activists experience impacts that affect the sustainability of the mangrove ecosystem. In this case, stakeholders may issue policies supporting tourism activists' activities to facilitate coordination and collaboration to improve the tourism sector on Bintan Island. According to tourism activists in Bintan Island, it is necessary to maximize the function of POKDARWIS to anticipate and coordinate so that environment-based tourism can be maximized.

Especially in the community sector. Tourism activities in Bintan Island in the community-based tourism sector are minimal, accompanied by tourism development objectives that have not affected or impacted the community. The involvement of LAM Bintan in the development of ecotourism in coastal areas is not more in the formal sector but relatively informal. Customs and tourism, especially ecotourism, greatly influence tourism development in Indonesia, which is very thick with culture and customs in several regions and regions. In the context of the culture and customs or traditions of the coastal areas, ecotourism development is still in the stage of harmonizing tourism development in Bintan Island.

Indigenous issues and the role of people who work on customs and traditions in maintaining and maintaining values related to ecotourism destinations should be a top priority for local governments, especially policymakers. At present, customary institutions are rarely included in planning. Still, it is hoped that the development of Mangrove ecotourism or mangrove forests will continue to pay attention to the community's interests, especially fishermen in Bintan Island. This is the LAM of Bintan Island in its contribution does not have more power for how every activity or tourism activity in Mangrove ecotourism in coastal areas by involving the community is included in cultural agendas so that they remain sustainable by being included.

One of the most critical missions of DKP KEPRI is to develop local economic potential by guaranteeing partiality to the ordinary people and being able to manage tourism based on maritime and culture. The potential for environmental-based tourism from Mangrove is relatively high in Tanjungpinang and Bintan. However, no integrated land is yet to make a plan for fully utilizing the existing potential. There needs to be a synergy of roles between the Government, the private sector and the community to increase tourism through improving infrastructure, facilities and other supports. So the DKP stated that it would be ready to facilitate each stakeholder if this were very important to be discussed in the Mangrove ecotourism program on Bintan Island to strengthen the Management of Coastal Mangrove Ecotourism Collaboration on Bintan Island in a sustainable manner. Ecotourism management in mangrove areas on Bintan Island has several impacts when viewed from a collaborative governance perspective. Collaborative governance refers to a process where various stakeholders, including government agencies, non-governmental organizations, local communities, and businesses, work together to make decisions about environmental management. The impacts of ecotourism management in mangrove areas on Bintan Island from a collaborative governance perspective are:

1. Improved social and economic conditions for local communities: The development of ecotourism in mangrove areas on Bintan Island has had a positive impact on the social and economic conditions of local communities. Collaborative governance has ensured that local communities have been involved in the decision-making process, and have been able to benefit from the development of eco-tourism. Ecotourism has created job opportunities for local people, which has led to improved household income and overall economic conditions

of the area. A study conducted by (Tandjung et al., 2018) found that the development of sustainable tourism in Bintan Island has positively impacted the local economy and provided employment opportunities for the local community.

2. Enhanced conservation efforts: Collaborative governance has helped in enhancing the conservation efforts in mangrove areas on Bintan Island. The involvement of various stakeholders has led to the formulation and implementation of policies that ensure responsible tourism practices. This has helped in protecting the fragile mangrove ecosystem from further degradation. Ecotourism activities are also designed to promote environmental education for tourists, which helps in raising awareness about the importance of conservation. found that collaborative governance has helped in ensuring sustainable tourism practices leading to the conservation of mangrove habitats.
3. Inclusive decision-making process: Collaborative governance has ensured an inclusive decision-making process, where various stakeholders have been involved in developing policies and implementing ecotourism activities. This has helped in ensuring that the interests of all stakeholders are taken into account, including local communities, government agencies, and environmental organizations. This has also helped in ensuring that the benefits of ecotourism are distributed fairly to all stakeholders. A study conducted by (Atungulu & Zhang, 2018) found that collaborative governance has helped in ensuring that the interests of all stakeholders are taken into account, leading to more inclusive decision-making in ecotourism management.

NVivo Analysis of the Penta-helix Approach to Managing Mangrove Ecotourism Collaboration on Bintan Island.

The penta-helix is a portion of a team whose members supplement one another to foster an atmosphere of cooperation by each contributing to the success or failure of a given task. There is a place for mangrove ecotourism on Bintan Island among both institutional and informal organizations. Ecotourism in locations with great natural potential along the coast may benefit from a boost from the penta-helix in Mangrove ecotourism. Bintan Island's natural attractions have the potential to boost the local economy and attract new visitors if proper management is implemented. The following table displays the NVivo export findings for discussing Mangrove ecotourism based on Collaborative Governance using the penta-helix method, as determined by the results of the Coding study on processed data from interview transcripts of informants who have processed the data.

Table 2.
The results of Explore NVivo on the Research Interview Transcript

Name	Files	References
Government	24	549
Community	15	175
Business	23	147
Media	24	102
Academic	10	23

Source: NVivo Data Processed 20 2022

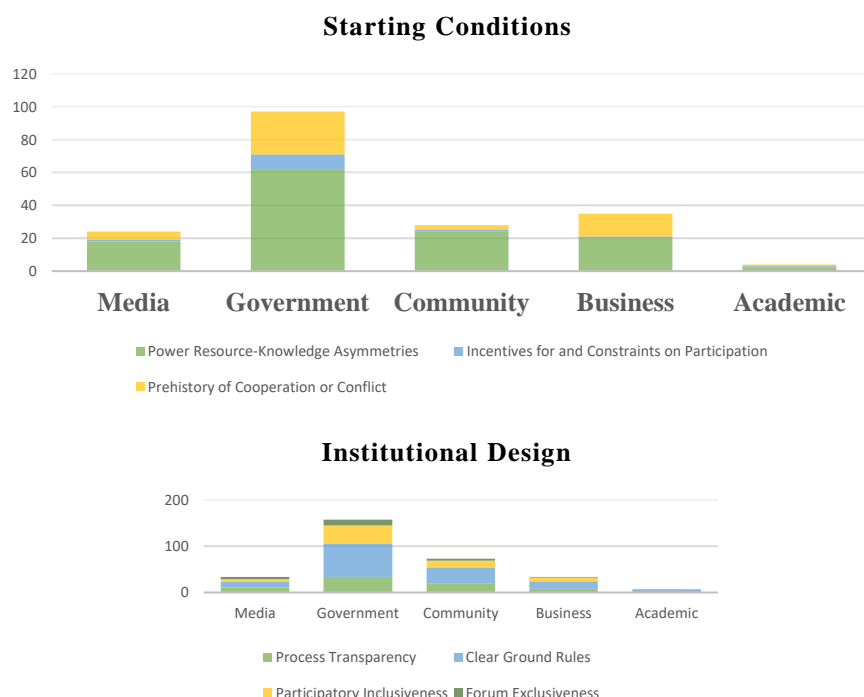
Based on the data in the table above, it seems that the informants on Bintan Island have grasped the concepts of creating Mangrove ecotourism via the penta-helix technique of Collaborative Management. In NVivo processing, governmental and media entities predominate in files and references. However, based on the information provided, it seems that the informants on Bintan Island have grasped the concepts of creating Mangrove ecotourism via the penta-helix

technique of Collaborative Management, and the governmental and media entities have played a significant role in this. This information could be useful for policymakers and researchers interested in promoting collaborative management techniques for sustainable tourism development. This demonstrates that the government is familiar with ecotourism in Mangroves and the role that the media plays in getting the word out to the people. The state of Mangrove ecotourism on Bintan Island is a constant topic of media coverage, since they are essential in relaying signals to the government. However, interviews conducted by researchers suggest that few academics and members of the local community play a significant part in the penta-helix approach to Mangrove ecotourism based on Collaborative Management on Bintan Island.

This is because there is no enthusiasm for promoting Mangrove ecotourism among those involved in the community's Collaborative Governance. Academic research on Mangrove ecotourism on Bintan Island as a pattern of collaboration are still lacking from a scholarly perspective, however this is limited to the development of Mangrove ecotourism on Bintan Island. Incentives are provided to encourage people to participate voluntarily in collaborative activities (Savage et al., 2011). In the current penta-helix model based on Collaborative Management that existing on Bintan Island, the researcher seeks to establish a hierarchy based on the engagement of players in Mangrove ecotourism. In the following graphic, researchers' processed findings from utilizing NVivo are shown.

The Penta-Helix Concept is a framework for collaborative governance that brings together five different stakeholders: government, industry, academia, civil society, and individuals. This approach recognizes that all of these groups have a role to play in creating sustainable and equitable development. In this framework, each of the five stakeholders has a specific role to play in decision-making, implementation, and monitoring of initiatives. The government provides policy leadership, regulations, and incentives to support sustainable development. Industry brings expertise and resources to create economic opportunities and innovations. Academia provides research and education to inform decision-making and develop new technologies. Civil society advocates for the interests of marginalized groups and encourages participation and transparency

Graph 1.
Collaborative Governance in the Penta-Helix Approach





Source: processed Nvivo 20 2022

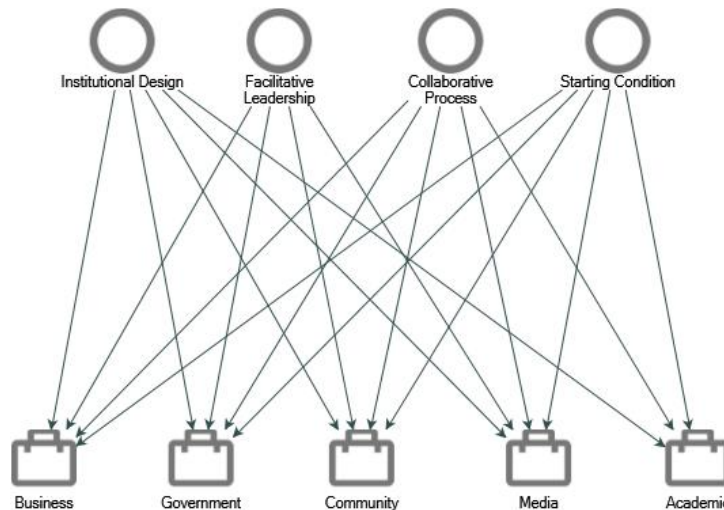
Finally, individuals bring their perspectives and experiences as consumers and community members. The Penta-Helix concept emphasizes collaboration, dialogue, and partnership among all five stakeholders. Through open communication and mutual understanding, stakeholders work together to align their interests and create shared goals. This approach helps to build trust and to ensure that decisions are made in the best interests of all involved. The Penta-Helix Concept is a collaborative governance framework that recognizes the importance of involving multiple stakeholders in decision-making and implementation. By promoting open communication, partnership, and mutual understanding, it aims to create sustainable and equitable development for all.

When compared to other variables, the principal role variable that serves as the foundation of Collaborative Governance has the highest level, which is consistent with this indication showing that the number of hierarchical levels is greatest in the government component. This demonstrates the need of bolstering the local government's Collaborative Governance framework for Mangrove ecotourism on Bintan Island. Facilitating institutional actions in formal and informal collaboration might help actualize a good pattern of cooperation in the development and administration of Mangrove ecotourism.

The term "making government decisions" refers to the act of the authorities exercising their authority. This phrase may also be used to describe the procedure itself, or the circumstance in which rules apply. Actors that represent stakeholder interests often occupy positions of authority within an organization or government (March & Heath, 2008). In addition, the involvement of academics in overseeing or participating in Collaborative Governance-based Mangrove ecotourism is one of the four indicators of Collaborative Governance that does not exhibit symptoms of the penta-helix component. Collaborative Management on Bintan Island suggests these factors have little effects on the tourist industry in the mangroves. Because of this breakdown in communication and coordination, the administration of Mangrove

ecotourism has fallen on the shoulders of the penta-helix (Besley & Coate, 2003). Is the penta-helix idea adequate to the five existent components in the instance of Collaborative Governance-based Mangrove ecotourism on Bintan Island? The following diagram displays the results obtained by researchers using Nvivo.

Figure 2.
Collaborative Governance Relationship in the Penta-Helix Concept



Source: processed Nvivo 20 2022

Another explanation is that the academic component is not much affected since the collaborator's involvement is restricted to the study of a need-based item. For scientific research into growing and managing other players in the Mangrove ecotourism industry, a reliable reference on the subject is necessary. To further improve the Penta-Helix Method, the researcher performed a Collaborative Governance Relationship Mapping Analysis. In order to describe whether or not a general relationship exists between theoretical concepts and case studies in research, NVivo mapping is used to chart the involvement of stakeholder actors in developing mangroves as ecotourism. After analyzing the interview transcripts, researchers may determine the direction of the link between the study's indicators and variables via an exploration of Mapping Coding for both Cases and Nodes.

The following results reveal that academics are the only group without a readily accessible link to the impact between indicators or components in the context of Collaborative Governance's penta-helix model. Based on interviews with key informants, we know that academics have never been formally or informally involved in the development of Mangrove ecotourism on Bintan Island because there is no evidence of a leadership facilitation relationship line between them and the ecotourism industry. However, based on the available information, it is possible to infer that academics have not been formally or informally involved in the development of Mangrove ecotourism on Bintan Island. Here are some reasons that support this inference:

1. Lack of academic research: A quick search on academic databases such as JSTOR, Google Scholar, or Scopus did not yield any peer-reviewed articles or studies on the development of Mangrove ecotourism on Bintan Island. This suggests that academics have not conducted any research on this topic, which would have been a prerequisite for their involvement in the development process.

2. Absence from official reports: The official Tourism Development Master Plan for Bintan Island, published in 2019 by the Bintan Tourism Agency, does not mention the involvement of academics in the development of Mangrove ecotourism. The report acknowledges the role of various stakeholders such as the government, local communities, and tour operators, but there is no reference to academic institutions or researchers.
3. Limited local academic institutions: Bintan Island has limited local academic institutions, and most of them offer courses in hospitality, tourism, and business management. There are no specific academic programs or departments focused on mangrove ecology or conservation. This suggests that there may not be a pool of local academics with the relevant expertise to contribute to Mangrove ecotourism development.

While it may not be possible to provide a definitive proof, the absence of academic research, their absence from official reports and the limited local academic institutions suggest that academics have not been involved formally or informally in the development of Mangrove ecotourism on Bintan Island. This indicates that the potential for growth and suggestions for policy improvements on Bintan Island's Mangrove ecotourism collaboration based on Collaborative Governance are unaffected by the influence of higher institutions. This is because the Stakeholders have a group within the organization looking at the viability of Mangrove ecotourism along the coast of Bintan Island. Bintan Island's Mangrove Ecotourism is a prime example of the five pillars of DMO establishment and administration under Collaborative Governance in Coastal Ecotourism.

Ecotourism has been recognized as a valuable means of promoting conservation and sustainable development. When managed effectively, it can benefit local communities by providing employment opportunities and promote the conservation of natural resources. However, ecotourism can also have negative impacts on local communities and ecosystems, such as overuse of natural resources, degradation of cultures, and excessive tourism. Efficient ecotourism management requires careful planning, management, and monitoring of both natural resources and tourist activities. It also entails collaborating with local communities, government entities, and other stakeholders to achieve long-term sustainability goals. Whether analyzing a specific organization or looking at ecotourism more generally, it's important to evaluate how practices are supporting sustainability and benefiting local communities, while also minimizing negative environmental impacts.

- Coordination; With multi-sectoral and multi-dimensional tourism, the ideal tourist destination should consist of stakeholders in the form of organizations whose fields of work complement one another. These organizations include the Central Government through the Ministry of Culture and Tourism; the Regional Government through the Culture and Tourism Office at the Provincial, Island and City levels; the Association of Tourism Companies; the Association of Tourism Professionals, Non-Governmental Organizations; the College; Public; Investors/Developers; Press and Mass Media. Coordination between these stakeholders is essential to ensure that the destination is developed sustainably and that the benefits of tourism are shared fairly among the local community. The Central Government, through the Ministry of Culture and Tourism, plays a crucial role in developing policies and strategies for tourism development. The Regional Government, through its Culture and Tourism Office, is responsible for implementing these policies at the local level and for providing support to tourism businesses and the local community. The Association of Tourism Companies and Professionals represents the private sector in tourism and works closely with the government to develop the industry. Non-Governmental Organizations (NGOs) also play an important role in promoting sustainable tourism and protecting the environment and local culture. Colleges and universities can provide education and training in tourism, while the

public can participate in decision-making processes and share their opinions and concerns about tourism development. Investors and developers provide the necessary investment and expertise to develop tourism infrastructure and attractions. The press and mass media play a critical role in promoting the destination and providing information to tourists. They can also help to raise awareness about sustainable tourism practices and the importance of preserving local culture and the natural environment. In summary, coordination between these stakeholders is essential for the development of a sustainable and multi-dimensional tourism industry. Each stakeholder has a unique role to play and must work together to ensure that the benefits of tourism are maximized while minimizing negative impacts on the local community and environment.

- **Stakeholder Engagement;** Within each locality, several institutions and organizations are stakeholders with interest and influence. So far, the stakeholders are in a fragmented system. Therefore, each stakeholder needs integration and cooperation to form an effective DMO. So the development needs to involve all stakeholders, especially in the planning stage of establishing a DMO; formulate the DMO vision, mission and planning strategy and socialize it to the stakeholders involved so that the process goes in line with the dynamics of understanding the agreed DMO concept. Stakeholder engagement is crucial in the establishment and success of a Destination Management Organization (DMO). Involving various stakeholders from the start of the process ensures that everyone is on the same page and working towards a common goal. These stakeholders may include local businesses, government agencies, community groups, residents, and tourists. Here are some key steps to effective stakeholder engagement:
 1. **Identify and prioritize stakeholders:** Determine who the key players are in the destination and how they can contribute to the DMO. Prioritize stakeholders based on their level of influence and interest in the project.
 2. **Establish communication channels:** Create a system for regular communication between the DMO and stakeholders. This could include meetings, forums, social media, and other forms of communication.
 3. **Foster collaboration:** Encourage collaborative efforts between stakeholders to achieve common objectives. This can be achieved through partnerships, sponsorships, and other co-marketing initiatives.
 4. **Socialize the DMO vision:** Clearly communicate the vision, mission, and strategic goals of the DMO to all stakeholders. This allows stakeholders to understand what the DMO is trying to achieve and how they can contribute to its success.
 5. **Provide feedback opportunities:** Create a system for stakeholders to provide feedback and input on the DMO's activities and initiatives. This allows for continuous improvement and ensures that stakeholders feel heard and valued.

By engaging stakeholders throughout the process, the DMO can benefit from the insights and resources of all stakeholders, resulting in a more effective and sustainable tourism model.

- **Partnerships;** The development of DMO requires the existence of leadership characteristics in each party which enables the establishment of partnerships among stakeholders. A partnership is a cooperative relationship based on trust, independence and equality to achieve common goals. Partnerships are vital for the success of DMO because they bring together various stakeholders such as tourism operators, local governments, community organizations, and residents who have diverse interests, skills, and resources. By fostering partnerships, DMO can leverage the strengths and contributions of each stakeholder to

create a more integrated and coordinated approach to tourism development. Partnerships enable DMO to:

1. Align interests: Partnerships provide a forum for stakeholders to understand and align their interests towards a common goal of tourism development. They allow stakeholders to express their views, negotiate their interests, and find common ground to work towards a shared vision.
2. Share resources: Partnerships enable stakeholders to share resources such as knowledge, expertise, funding, and equipment. This pooling of resources can help to maximize the efficiency and effectiveness of tourism development efforts.
3. Build trust: Partnerships foster trust and confidence among stakeholders which is essential for effective collaboration. Trust enables stakeholders to work together towards long-term sustainable tourism development goals.
4. Create a sense of ownership: Partnerships create a sense of ownership and accountability among stakeholders towards tourism development. Stakeholders who are part of a partnership feel a stronger sense of responsibility towards the success of the project.
5. Improve decision-making: Partnerships facilitate better decision-making by bringing together diverse perspectives and expertise. This can lead to more informed, effective, and inclusive decision-making.
6. Enhance communication: Partnerships improve communication among stakeholders which is essential for effective collaboration. Better communication reduces the risk of miscommunication, improves transparency, and fosters a culture of collaboration.

Partnerships are essential for the success of DMO because they bring together stakeholders with diverse interests, skills, and resources to work towards a common goal of sustainable tourism development. By fostering partnerships, DMO can leverage the strengths and contributions of each stakeholder to create a more integrated and coordinated approach to tourism development.

- Shared Interests and Goals; DMO development is based on shared interests and goals. Stakeholders have various interests, and this diversity of interests is the responsibility of DMO actors to accommodate them. Interests that arise from both individuals and groups of individuals are components of goals that will later become common goals. So one of the functions of the DMO is to protect and accommodate stakeholders' interests while safeguarding the common interest. Through this process, stakeholders are encouraged to participate in the planning and development of the DMO, which enhances their commitment and ownership of the initiative. Shared interests and goals are important for the success of a DMO as they promote collaboration and cooperation among stakeholders. These interests and goals provide a common vision and purpose for the DMO, which helps to align efforts towards achieving the same objectives. When stakeholders are working towards a common goal, the resources and capabilities of each stakeholder can be combined to achieve greater impact. Furthermore, shared interests and goals also enable effective communication between stakeholders. When everyone is working towards a common goal, it is easier to communicate the progress of the initiative, identify challenges, and address any concerns that may arise. Shared interests and goals are essential for the development of a DMO. They allow stakeholders to work collaboratively towards a common purpose and create a sense of ownership of the initiative. It is crucial that DMOs accommodate the diverse interests of stakeholders while safeguarding the common interest.

Achievement of Indicators and Performance; an essential part of developing a DMO is evaluating the implementation of the plans that have been set. Evaluation is carried out to identify early deviations from the project's performance that has been developed, and then remedial steps that are right on target and timely can be formulated. Evaluation is carried out through the determination of performance indicators. The framework for determining performance indicators includes input, output, outcome, benefit and impact. The decision on performance outcomes also needs to be prepared to determine and assess the achievement of performance indicators for implementing activities, programs and policies that the DMO has chosen.

CONCLUSIONS

The institutional design in the findings shows institutional strengthening as evidenced by the absence of a Destination Management Organization (DMO) and Regional Management Organization (RMD), which should be able to facilitate factors affecting Collaborative Governance as supporting instruments for Stakeholders which are more classified in the Penta-Helix Approach. The Penta-Helix Approach allows future practitioners and researchers to understand, design or formulate better Collaborative Governance in the Future on Mangrove Ecotourism on the Coast of Bintan Island. The role of local Government includes; (a) Producing policies on management; (b) Implementing the policies they have made regarding management. In the Mangrove ecosystem area, developing community participation in managing coastal and marine natural resources, including mangrove forests, this can be done through various persuasive, educative and facilitation strategies. Coaching. Guidance materials include counselling about the importance of mangrove forests and their conservation, environmentally friendly ecotourism management and the importance of community organizations/groups. The educational strategy is carried out through training in the penta-helix approach. In conclusion, to ensure successful collaborative governance in the pentahelix approach, stakeholders including the government, private sector, civil society organizations, academia and research institutions, and tourists should work together to create a conducive environment for sustainable ecotourism in Bintan island.

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