



Implementation of Blue Economy in the Development of Bangka Belitung Islands Province

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Abstract. This study explores the implementation of the blue economy concept in the Bangka Belitung Islands Province, which faces various issues such as environmental damage, pollution, and unsustainable use of natural resources. These issues have adversely affected sectors such as fisheries, tourism, and community well-being. Utilizing a descriptive qualitative methodology, data were gathered through observation, document analysis, and personal interviews, The study used a SWOT analysis, the analysis reveals that both internal and external factors impacting the implementation of the blue economy highlight significant challenges, particularly those related to environmental issues degradation, inadequate infrastructure, and poor institutional coordination. However, there are substantial opportunities, such as technological innovations and strong stakeholder backing. The research concludes that despite the challenges, the blue economy's implementation holds significant potential, it holds the potential for substantial economic, social, and environmental benefits for Bangka Belitung Islands. To fully capitalize on this potential, integrated and sustained efforts are essential to address the existing challenges.

Keywords: Blue Economy, Sustainable Management of Natural Resource, SWOT Analysis.

1 Introduction

This research adopts a qualitative methodology with a descriptive research design to thoroughly explore the subject. Descriptive research, as highlighted by Rusandi and Muhammad Rusli [11], is intended to gain an in-depth understanding of phenomena by examining both contextual factors and participant experiences. By employing this method, researchers can interpret the meanings that individuals or groups associate with various social or humanitarian issues. In this study, the focus is on analyzing the development of the blue economy in the Bangka Belitung Islands, utilizing qualitative data obtained from multiple sources for a comprehensive evaluation.

In this study, a descriptive qualitative approach rooted in postpositivist philosophy is utilized, positioning the researcher as a key instrument in interpreting the natural environment. Representatives from the Fisheries and Marine Department of Bangka Belitung Islands Province and Central Bangka Regency served as primary informants.

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Data collection involved multiple techniques, including observation, document analysis, literature review, and personal interviews, with triangulation applied to enhance the validity of the results. Additionally, a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) was performed to assess internal and external factors, offering a comprehensive perspective of the current situation [6].

2 Method

2.1 Methods and data collection

This study adopts a qualitative methodology, utilizing a descriptive research design to thoroughly investigate the phenomenon under examination. As described by Rusandi and Muhammad Rusli [11], descriptive research seeks to provide a comprehensive depiction of a phenomenon, emphasizing both the contextual environment and the experiences of participants. This research approach enables scholars to analyze and comprehend the meaning that individuals or groups attribute to social or humanitarian concerns, allowing for a deeper investigation of these complexities. In this study, the emphasis is on exploring the implementation of the blue economy in Bangka Belitung Islands Province. This study seeks to offer a comprehensive evaluation of the factors shaping the development of the blue economy by utilizing qualitative data gathered from diverse sources. The analysis takes into account different perspectives and contextual intricacies to ensure a thorough understanding.

2.2 Research instrument and data analysis

The descriptive qualitative methodology employed in this study follows a postpositivist perspective, where the researcher acts as the primary instrument for analyzing real-world settings. Key informants included representatives from the Fisheries and Marine Department of Bangka Belitung Islands Province and Central Bangka Regency. Data collection was conducted through various methods, including observation, document review, published material analysis, and personal interviews, with triangulation used to ensure data validity. A SWOT analysis was utilized to assess internal and external factors to comprehensively understand the current circumstances.

3 Result and Discussion

3.1 Prospects and Obstacles in Implementing the Blue Economy

Sustainable management of fisheries resources and marine is vital for maintaining economic stability in this archipelagic region. However, challenges such as inadequate infrastructure investments, particularly in crucial sectors like port facilities and maritime transportation, continue to impede the effective implementation of blue economy initiatives [5]. Additionally, successful outcomes require not only the proper enforcement

of regulations and policy implementation but also coordinated efforts among local governments, institutions, and stakeholders [3].

The Bangka Belitung Province holds significant potential for fostering a blue economy, largely supported by advancements in technology, including integrated marine monitoring systems and sustainable mariculture practices. These innovations are crucial for enhancing the effective management and optimization of marine resources. Maintaining resource sustainability is especially important in managing traditional fisheries located in conflict-prone regions [2].

Investing in maritime infrastructure, marine tourism, and related industries can provide significant economic benefits to local communities. Furthermore, promoting collaboration across public authorities, private businesses, and local communities can collaborate to overcome regulatory challenges and resource constraints.

3.2 Policies in Blue Economy Implementation

The Indonesian Government introduced Presidential Regulation No. 16/2017 as a foundational legal framework for creating a comprehensive Ocean Policy [10]. This regulation aims to advance sustainable marine development, encompassing blue economy initiatives, providing the legal foundation for effective marine resource management [4]. This regulation lays the groundwork for the coordinated management of marine resources considers economic, ecological, and socio-cultural factors. It also promotes the development of environmentally sustainable industries like marine tourism, responsible fishing, and renewable energy initiatives in the marine sector.

Furthermore, the Bangka Belitung Provincial Government introduced Regional Regulation No. 7/2017 [8] aimed at promoting sustainable management of coastal areas and small islands. This regulation establishes guidelines for local authorities to effectively manage coastal regions, emphasizing marine conservation and empowering coastal communities.

Kedaireka Funding Initiative for the Mangrove Crab and Squid Aquaculture Sector.

This initiative represents a partnership between academics, practitioners, and local government entities, led by IPB in collaboration with the Provincial Government of Bangka Belitung Islands Province and the Government of Central Bangka Regency to advance mangrove crab aquaculture [13]. The aquaculture process involves multiple stages, including hatchery, nursery, growth phase, and product finishing. Furthermore, technical assistance is provided for the development of squid attractors and seawater batteries at Kulur Ilir Village Beach. The project aims to optimize both upstream and downstream activities within the Bangka squid fisheries, with the dual goals of conserving squid populations and enhancing the well-being of fishermen affected by pollution from tin mining [1].

Regional Conservation Areas in Bangka Belitung

The Bangka Belitung Islands Province contains an extensive Regional Conservation Area (KKD) spanning 627,612.90 hectares, outlined in the Coastal Zone and Small Islands Zoning Plan (RZWP-3-K) (Peraturan Daerah Kabupaten Bangka Tengah, 2014 dan [9]. This sizable conservation area reflects the commitment of the local government to safeguarding and maintaining natural resources, particularly within coastal regions and small islands. The creation of this Marine Protected Area (MPA) is crucial for preserving marine ecosystem balance, protecting biodiversity, and maintaining the natural beauty of marine environments, which also contributes significantly to the tourism appeal of the Bangka Belitung Islands.

The Role of PT Timah Tbk as a State-Owned Enterprise in Bangka Belitung

Since 2021, PT Timah Tbk has initiated sustainable marine reclamation projects aimed at restoring squid populations around Bangka and Central Bangka [12]. Recognizing the importance of squid in both ecosystems and the economy, the company uses a restocking approach by managing squid eggs on artificial reefs. This initiative seeks to boost squid populations and help stabilize marine ecosystems affected by mining activities.

3.3 Discussions

SWOT Analysis on the Implementation of the Blue Economy in Bangka Belitung Province

The findings from the survey on the implementation of the blue economy in Bangka Belitung Province are presented below:

EXTERNAL FACTORS	INTERNAL FACTORS
<p style="text-align: center;">OPPORTUNITIES (O)</p> <ol style="list-style-type: none"> 1. Sustainable development of the marine and maritime tourism sector 2. Increased seafood exports 3. Technological innovations in integrated ocean monitoring systems and sustainable mariculture 4. Investment opportunities in maritime infrastructure, marine tourism, and the marine industry 5. Collaboration between local government, private sector, and local communities 6. Potential to become a blue economy centre in Indonesia 7. Development of marine renewable energy 8. Utilisation of Regional Conservation Areas for ecotourism and research 	<p style="text-align: center;">STRENGTH (S)</p> <ol style="list-style-type: none"> 1. Strategic location in the Karimata Strait and Java Sea 2. Long coastline (1,200 km) with 79.90% marine area 3. Rich marine and fisheries resources 4. High attraction of material tourism (beaches, snorkelling, diving) 5. High marine biodiversity (coral reefs, mangrove forests) 6. Large area of Regional Conservation Area (KKD) (627,612.90 Hectares) 7. The existence of the Kedaireka Funding programme for the mud crab farming industry 8. Support from a BUMN (PT Timah Tbk) in sea reclamation and squid restocking efforts
<p style="text-align: center;">THREATS (T)</p> <ol style="list-style-type: none"> 1. Marine environmental degradation and water pollution 2. Threats to marine biodiversity 3. Over-exploitation of marine resources 4. Climate change and its impact on marine ecosystems 5. Competition with other regions in blue economy development 6. Fluctuations in marine commodity prices in the global market 7. Potential conflicts of interest between different sectors (fisheries, tourism, conservation) 8. The economy's dependence on the mining sector, which could hinder the transition to a blue economy 	<p style="text-align: center;">WEAKNESS (W)</p> <ol style="list-style-type: none"> 1. Poverty rate is relatively high (4.52% in 2023), especially in remote areas 2. Slowing economic growth (4.38% in 2023) 3. Limited maritime infrastructure 4. Lack of adequate technology for blue economy development 5. Sub-optimal coordination between local government, relevant institutions, and stakeholders 6. Ineffective policy implementation in supporting the blue economy 7. Limited maritime infrastructure, including ports and seafood processing facilities 8. Limited human resources skilled in managing and developing the marine and fisheries sector

Fig. 1. Matrix SWOT Analysis

IFAS & EFAS

Table 1. Table IFAS

<i>MATRIX INTERNAL FACTOR EVALUATION STRATEGY (IFAS)</i>				
INTERNAL FACTORS	BOBOT (1-100%)	GRADE SCALE (1-9)	BOBOT X GRADE SCALE	DESCRIPTION
STRENGTH (S)				
1 Strategic location in the Karimata Strait and Java Sea	0,1	8	0,8	Angka 9: amat sangat setuju
2 Long coastline (1,200 km) with 79.90% marine area	0,1	7	0,7	Angka 8: sangat setuju
3 Rich marine and fisheries resources	0,1	8	0,8	Angka 7: setuju
4 High attraction of material tourism (beaches, snorkelling, diving)	0,1	8	0,8	Angka 6: sedikit setuju
5 High marine biodiversity (coral reefs, mangrove forests)	0,1	8	0,8	Angka 5: sedang/netral
6 Large area of Regional Conservation Area (KKD) (627,612.90 Hectares)	0,1	8	0,8	Angka 4: sedikit tidak setuju
7 The existence of the Kedaireka Funding programme for the mud crab farming industry	0,1	8	0,8	Angka 3: tidak setuju
8 Support from a BUMN (PT Timah Tbk) in sea reclamation and squid restocking efforts	0,1	8	0,8	Angka 2: sangat tidak setuju
8 Support from a BUMN (PT Timah Tbk) in sea reclamation and squid restocking efforts	0,1	8	0,8	Angka 1: amat sangat tidak setuju
WEAKNESS (W)				
1 Poverty rate is relatively high (4.52% in 2023), especially in remote areas	0,1	-7	-0,7	Tanda Negatif adalah Kelemahan
2 Slowing economic growth (4.38% in 2023)	0,1	-7	-0,7	
3 Limited maritime infrastructure	0,1	-7	-0,7	
4 Lack of adequate technology for blue economy development	0,1	-8	-0,8	
5 Sub-optimal coordination between local government, relevant institutions, and stakeholders	0,1	-7	-0,7	
6 Ineffective policy implementation in supporting the blue economy	0,1	-8	-0,8	
7 Limited maritime infrastructure, including ports and seafood processing facilities	0,1	-7	-0,7	
8 Limited human resources skilled in managing and developing the marine and fisheries sector	0,1	-7	-0,7	
TOTAL	1,6	5	0,5	

Table 2. Table EFAS

<i>MATRIX EXTERNAL FACTOR EVALUATION STRATEGY (EFAS)</i>				
EXTERNAL FACTORS	BOBOT (1-100%)	GRADE SCALE (1-9)	BOBOT X GRADE SCALE	DESCRIPTION
OPPORTUNITY (O)				
1 Sustainable development of the marine and maritime tourism sector	0.1	8	0.8	Angka 9 : amat sangat setuju
2 Increased seafood exports	0.1	8	0.8	Angka 8 : sangat setuju
3 Technological innovations in integrated ocean monitoring systems and sustainable mariculture	0.1	8	0.8	Angka 7 : setuju
4 Investment opportunities in maritime infrastructure	0.1	7	0.7	Angka 6 : sedikit setuju
5 Collaboration between local government, private sector, and local communities	0.1	8	0.8	Angka 5 : sedang/netral
6 Potential to become a blue economy centre in Indonesia	0.1	7	0.7	Angka 4 : sedikit tidak setuju
7 Development of marine renewable energy	0.1	8	0.8	Angka 3 : tidak setuju
8 Utilisation of Regional Conservation Areas for ecotourism and research	0.1	8	0.8	Angka 2 : sangat tidak setuju
8 Utilisation of Regional Conservation Areas for ecotourism and research	0.1	8	0.8	Angka 1 : amat sangat tidak setuju

<i>MATRIX EXTERNAL FACTOR EVALUATION STRATEGY (EFAS)</i>					
EXTERNAL FACTORS	BOBOT (1-100%)	GRADE SCALE (1-9)	BOBOT X GRADE SCALE	DESCRIPTION	
<i>THREATS (T)</i>					
1	Marine environmental degradation and water pollution	0.1	-7	-0.7	<i>Tanda Negatif adalah Kelemahan</i>
2	Threats to marine biodiversity	0.1	-7	-0.7	
3	Over-exploitation of marine resources	0.1	-7	-0.7	
4	Climate change and its impact on marine ecosystems	0.1	-7	-0.7	
5	Competition with other regions in blue economy development	0.1	-7	-0.7	
6	Fluctuations in marine commodity prices in the global market	0.1	-7	-0.7	
7	Potential conflicts of interest between different sectors (fisheries, tourism, conservation)	0.1	-7	-0.7	
8	The economy's dependence on the mining sector, which could hinder the transition to a blue economy	0.1	-7	-0.7	
TOTAL		1.6	6	0.6	

The survey utilized a scale from 1 to 9, where a score of 1 indicated 'strongly disagree' and a score of 9 indicated 'strongly agree,' as demonstrated in Table 2. Negative values were used to represent weaknesses in this scale. The total value along the X-axis, with a cumulative sum of 0.5, was derived by multiplying each value by its corresponding weight. In constructing the SWOT curve, the next step was to determine scores for external factors. The matrix calculations for these external factors are detailed in the following section (see Fig. 2).

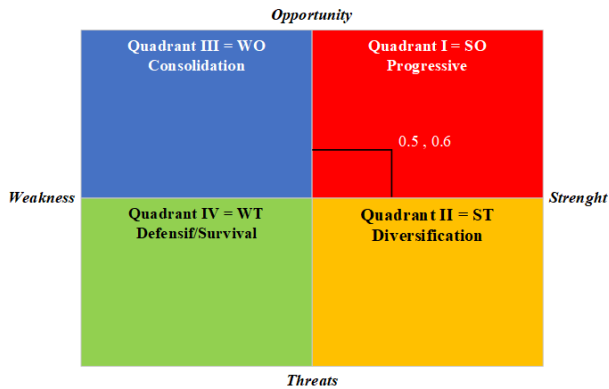


Fig. 2. SWOT Curve Result

4 Conclusions and Recommendations

4.1 Conclusions

Conclusions:

1. The SWOT analysis evaluation, incorporating IFAS and EFAS, places Bangka Belitung Islands in quadrant I (positive, positive), indicating substantial strengths and promising opportunities for establishing a blue economy in the region.
2. The Bangka Belitung Islands possess substantial potential for advancing a blue economy, largely because of their rich marine and coastal resources.
3. Although there are many opportunities, the implementation of the blue economy in Bangka Belitung faces several obstacles, including environmental issues, concerns about resource sustainability, inadequate infrastructure, and shortcomings in regulatory systems.
4. The growth of the blue economy could generate significant economic, social, and environmental benefits, playing a key role in achieving sustainable development goals (SDGs).
5. Achieving a sustainable blue economy requires cooperative efforts among government entities, the private sector, academic institutions, and local communities in Bangka Belitung Province.

4.2 Recommendations

Recommendation:

1. Foster regional development by leveraging marine and fisheries resources to stimulate economic growth.
2. Enhance coordination and build strong partnerships among institutions and stakeholders to ensure the successful implementation of the blue economy in Bangka Belitung Islands Province, while also encouraging investment in marine tourism, sustainable fisheries, and marine industries.
3. Secure sufficient funding to support blue economy projects, including the development of maritime infrastructure, marine conservation initiatives, and community empowerment programs in coastal regions.
4. Leverage technological innovations, such as marine biotechnology, sustainable aquaculture, and marine renewable energy, to drive economic growth while protecting marine ecosystems.
5. Strengthen regulatory frameworks and legal systems to support blue economy initiatives, and improve law enforcement to address issues like marine resource overexploitation and environmental pollution.

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