

BETWEEN NATURAL ASSETS AND INFRASTRUCTURE GAPS: COMMUNITY PERSPECTIVES ON SUSTAINABLE COASTAL TOURISM IN TOMINI BAY

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Abstract: The aim of this study is to analyze the socio-cultural attitudes of communities living around four coastal tourist sites in Tomini Bay, Lahe Island, Bitila Island, Pinomontiga Beach, and South Leato Beach. The results will be used to evaluate the potential of these communities to support sustainable tourism development. This study uses a descriptive-observational design in four purposefully selected locations in Tomini Bay: Lahe Island, Bitila Island, Pinomontiga Beach, and South Leato Beach. Each site represents different ecological settings, community structures, and levels of tourism readiness. Data were collected through field observations, semi-structured interviews, and questionnaire-based Likert-type assessments, then analyzed descriptively to produce an integrated understanding of community perceptions, resource utilization patterns, and the socio-ecological context that shape tourism development opportunities in the region. The results show very high community support for tourism (87.5–100%) and positive attitudes toward tourists (77.5–100%). Attractions were consistently rated as good (70–77%), while amenities varied greatly, from very poor in Bitila (14%) and poor in Lahe (21%) to moderate in Pinomontiga (57%) and good in South Leato (76%). Accessibility was rated as moderate to good (55–77%). These findings confirm that the main strength of the destination lies in its natural assets, but limitations in infrastructure, particularly sanitation, clean water, and supporting facilities, are a major obstacle. This study highlights the importance of social acceptance as the foundation for sustainable coastal tourism development within the framework of the blue economy, as well as the need for gradual infrastructure improvements, integrated coastal management and conservation, and community-focused investment strategies. Further research is recommended to explore aspects of community economic readiness, including income diversification, entrepreneurial potential, and access to financing, in order to strengthen the benefits of tourism for local communities.

Keywords: blue economy, coastal management, coastal conservation, community readiness, marine ecotourism

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INTRODUCTION

Tourism continues to be one of the pillars of global economic growth, particularly through its contribution to job creation, increased income, and the strengthening of various related sectors through a strong multiplier effect (Sumarabawa et al., 2015; Dolon et al., 2025). In Indonesia, this development is driven by its extraordinary natural and cultural wealth. As the largest archipelagic country in the world, Indonesia has a diversity of marine and coastal ecosystems that open up great opportunities for marine tourism (Aswita et al., 2020; Hamzah et al., 2025). Various studies show that coastal and marine tourism can expand the livelihoods of coastal communities, providing alternatives to the traditional fishing sector (Hasan et al., 2022). However, these economic benefits are often accompanied by ecological risks. Poorly managed tourism practices can cause coral reef degradation, disturbance to marine animal behavior, and other ecosystem damage (Paula et al., 2018). The tension between economic opportunities and environmental threats underscores the importance of a more sustainable approach to tourism. In recent decades, the concept of sustainable tourism has gained increasing attention.

This approach emphasizes ecosystem protection, preservation of local culture, and long-term economic sustainability, in contrast to mass tourism practices that are oriented toward quick profits (Bennett et al., 2019; Shabrina et al., 2026). The marine ecotourism framework is further linked to the idea of the blue economy, which places the sea and coastal resources as natural capital for sustainable economic growth, improved welfare, and ecosystem health (Voyer et al., 2018). Coastal tourism is even projected to be one of the largest contributors to the global blue economy by 2030 (Hamzah et al., 2025).

This potential and these challenges are clearly evident in Tomini Bay, one of the largest and most productive coastal areas in Indonesia. Areas such as Botubarani, with its whale shark tourism, and Olele, with its coral ecosystems, have demonstrated

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how marine tourism can attract international attention (Akbar et al., 2019). However, some locations in the Tomini Bay region still face obstacles such as uneven planning, a lack of basic studies, and minimal documentation of the potential and perceptions of the community regarding tourism development. These inequalities risk affecting the sustainability of the ecosystem, local economic opportunities, and the preservation of the cultural identity of coastal communities.

This information gap highlights the need for a comprehensive assessment that combines social, economic, and environmental dimensions. A number of publications emphasize the importance of carrying out carrying capacity studies and adopting an Integrated Coastal Management approach to ensure that tourism development does not threaten fragile coastal ecosystems (Supriyanto, 2022; Sahami et al., 2024). In this context, community perceptions become a key aspect: the support, concern, and assessment of local communities regarding tourism potential are crucial to the success of sustainable development. This study offers a scientific contribution by presenting an analysis based on coastal community perceptions of the potentials and challenges of sustainable tourism, situated within the framework of the blue economy and integrated coastal management. By integrating social, economic, and environmental dimensions at a local scale that has received limited attention to date, this study provides new empirical insights relevant to the development of sustainable coastal tourism in eastern Indonesia.

MATERIALS AND METHODS

Data Collecting

This study uses a descriptive-observational design to describe the socio-cultural conditions of coastal communities and assess the potential for sustainable tourism in Tomini Bay, Gorontalo Province. This design is commonly used in tourism studies because it allows researchers to capture community experiences, local dynamics, and the socio-ecological context that influences the direction of tourism development (Sayuti, 2023; Tháo et al., 2024).

Tomini Bay was chosen as the study area because it has rich socio-cultural diversity and coastal ecosystems, including fishing communities with a long history of marine resource utilization. Four locations were purposively selected to represent variations in regional characteristics, namely Lahe Island (Pohuwato), Bitila Island (Boalemo), Pinomontiga Beach (Bone Bolango), and South Leato Beach (Gorontalo City). Each location has a different combination of ecological conditions, community structure, and level of tourism readiness, thus providing a comprehensive picture of the potential for sustainable tourism development in Tomini Bay. The research locations are shown in Figure 1.

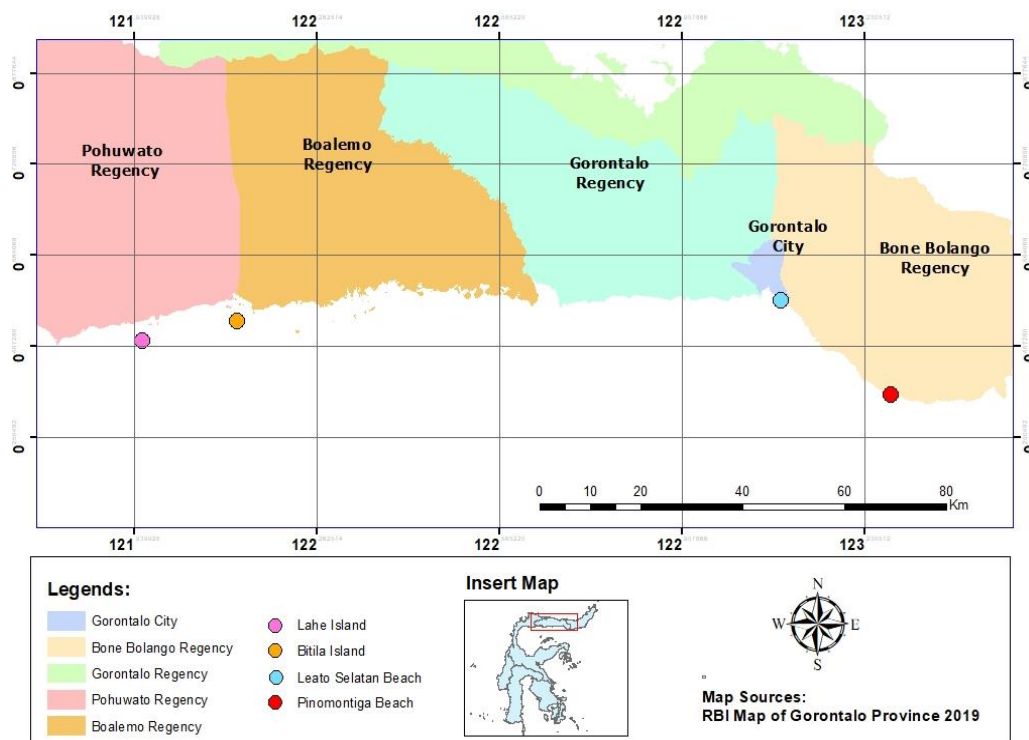


Figure 1. Research location map of Tomini Bay, Gorontalo Province (Source: Author's own work)

Data were collected through field observations and semi-structured interviews. Observations were conducted to document physical and social characteristics, including coastal morphology, infrastructure conditions, and patterns of resource use. This approach is in line with common practices in socio-cultural tourism studies that emphasize the connection between ecological conditions and community activities (Elviandri et al., 2024). Semi-structured interviews were used to explore community perceptions of livelihoods, customs, tourism activities, and the opportunities and threats they perceive. This method allows informants to express their views more freely, which is important in complex and interrelated socioeconomic contexts (Nian et al., 2023; Sayuti, 2023). Approximately 40 informants were interviewed at each location. Informants consisted of various groups: fishermen, community leaders, women, and youth. This selection

followed a participatory rural appraisal approach, which not only aimed to obtain data but also encouraged community involvement and ensured the representation of local voices (Lukman et al., 2022; Rojabi et al., 2023).

The emphasis on community participation is important to ensure the validity of the findings and the relevance of the local socio-cultural context (Baihaqi & Annida, 2024; Hamzah et al., 2024). This study adhered to the ethical guidelines of socioeconomic community research. Prior to data collection, the appropriate local authorities granted research approval. All participants provided informed verbal consent before participating in interviews and surveys. Participants' identities were kept anonymous, and all information collected was treated confidentially and used solely for academic research purposes.

Data Analysis

The data used in this study were obtained through questionnaires distributed to respondents, containing questions with response options ranging from very positive to very negative. Community participation in this research was assessed using a Likert scale. According to Sugiyono (2020), the Likert scale is used to measure opinions, attitudes, and perceptions of individuals or groups regarding social phenomena.

In this study, the Likert scale consists of four response options, each assigned a score for quantitative analysis, as outlined: Strongly Agree (score 4); Agree (score 3); Disagree (score 2); and Strongly Disagree (score 1). To determine the percentage of each response, a percentage statistical formula is applied (Sugiyono, 2020) as shown by equation 1:

$$P (\%) = \frac{F}{N} \times 100 \quad [1]$$

Where: P = Percentage of responses; F = Frequency of each response option selected by respondents; N = Total number of respondents; The next step is to calculate the Total Score (TS) for each response category, using the equation 2 from Sugiyono (2020):

$$TS = \text{Weight value (4,3,2,1)} \times F \quad [2]$$

Where: TS = Total Score; F = Frequency of each response;

To interpret the results, the maximum possible score must first be calculated using the equation 3 from Sugiyono (2020):

$$\text{Maximum Possible Score} = \text{Maximum Likert Score} \times \text{Number of Respondents} \quad [3]$$

In this study, the maximum Likert score is 4, and the number of respondents at each research site is 40, resulting in a maximum score of: $4 \times 40 = 160$. To obtain the interpretation percentage, the equation 4 from Sugiyono (2020) is used:

$$\text{Percentage} (\%) = \frac{\text{Total respondent score}}{160} \times 100 \quad [4]$$

To interpret the score representing the level of community participation in Tomini Bay, the percentage values are classified into five categories, as follows: Very Poor: 0–19.99%; Poor: 20–39.99%; Moderate: 40–59.99%; Good: 60–79.99%; Very Good: 80–100%. The data was then analyzed descriptively, organizing information from observations and interviews to produce a coherent picture of the socio-cultural conditions and perceptions of the community. Descriptive analysis was chosen because it is able to explain qualitative findings thematically and provides a strong basis for assessing the potential for sustainable tourism at each research location.

RESULTS AND DISCUSSION

Community Agreement and Attitudes Toward Tourism Development

Research findings show that communities in four coastal locations in Tomini Bay, Lahe Island, Bitila Island, Pinomontiga Beach, and South Leato Beach, generally support tourism development.

This support is demonstrated by the large number of respondents who support tourism development and have a favorable attitude towards visitors. However, the level of openness varies between locations and reflects tourism experiences, social conditions, and uneven infrastructure readiness. On Lahe Island, the majority of the community expressed support (87.5%) and showed a friendly attitude towards visitors (80%). This pattern illustrates a community that has long interacted with tourists, resulting in a gradual social adaptation to tourism activities (Figures 2 and 3). This long-term interaction helps maintain a balance between economic opportunities and social stability.

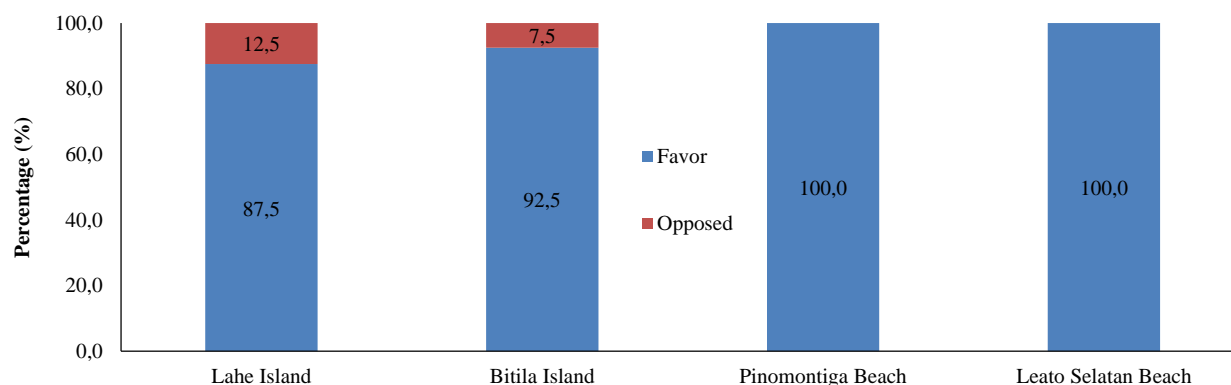


Figure 2. Community agreement to develop research site as a tourism area (Source: Author's own work)

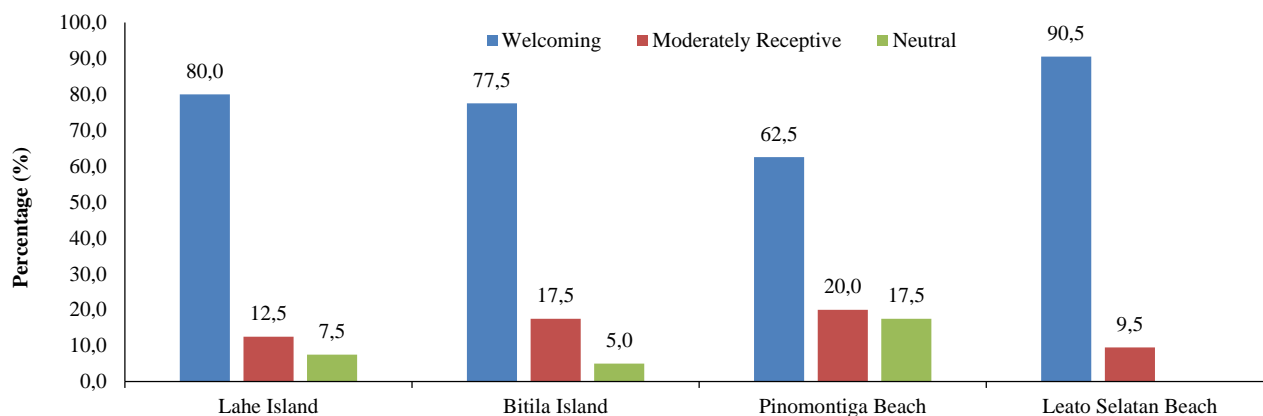


Figure 3. Attitudes of residents at the research site towards visitor arrivals (Source: Author's own work)

Bitila Island shows a similar pattern. Since developing as a tourist destination in the period 2006–2008, its community has shown a very high level of support (92.5%) and the majority are friendly (77.5%). This configuration reflects strong social capital that supports community participation in the joint management of the destination, including environmental maintenance and the provision of tourism services (Ali et al., 2024; Hamzah et al., 2024).

Pinomontiga Beach, a new destination since 2020–2022, has strong support for tourist development (100%), however sentiments toward visitors vary. A total of 62.5% welcome visitors, with the remainder being either receptive or ambivalent. This variation indicates that the community sees economic opportunities but is still waiting for the presence of formal management structures, basic infrastructure, and clear governance, all of which are frequently required for greater social acceptance (Butler & Dodds, 2022; Kusuma et al., 2025).

South Leato Beach demonstrates the highest constant level of societal support and acceptance. All respondents support development (100%), and 90.5% are pleasant to visitors. This positive view is bolstered by the location's proximity to the city center and its frequent use as a local recreational place. This circumstance is consistent with research indicating that extensive socioeconomic contacts can foster more amicable community-tourism partnerships (Sarker et al., 2023; Hamzah et al., 2024). The warm reception of visitors and support for tourism growth, notably in Pinomontiga and South Leato, exemplifies the power of social capital, which can serve as the foundation for community-driven tourist management. These findings are consistent with previous research, which has shown that high social support is linked to more effective tourism implementation, better resource management, and increased socio-ecological resilience (Voyer et al., 2018; Bennett et al., 2019; Torsney et al., 2025).

Perceived Attraction by Site

The results of the study show that all research locations demonstrate a good level of perceived tourism attractiveness, with average scores ranging from 70% to 77% (Table 1). Community perceptions consistently highlight the strength of natural capital, particularly clean beaches, stretches of white sand, coastal panoramas, and the availability of photo spots, which collectively constitute the core elements of coastal tourism appeal in Tomini Bay.

Table 1. Perceived attraction quality at the research site (Source: Author's own work)

Type of Perception	Average Score (%)			
	Lahe Island	Bitila Island	Pinomontiga Beach	South Leato Beach
The condition of the site is well maintained and clean	73	66	63	77
There are interesting photo locations/spots on the site	78	69	79	71
There is a stretch of clean white sand on the site	75	68	66	77
There is a beautiful panorama on the site	83	77	78	71
Average	77	70	71	74
Criteria	Good	Good	Good	Good

Lahe Island had the highest average score (77%), which was mostly determined by ratings of beach cleanliness and magnificent view. Bitila Island (70%) and Pinomontiga Beach (71%) had relatively balanced evaluations across all attraction categories, indicating that environmental quality remains the most important asset despite variances in destination development levels. South Leato Beach achieved an average score of 74% due to a combination of immaculate beach conditions, white sand, and easy visual access to the coastline. The consistent “good” classification across all sites suggests that natural attraction is not the main differentiating factor among destinations but rather represents a broadly shared baseline asset in Tomini Bay. This finding reinforces the argument that, in small-island and tropical coastal contexts, natural capital forms the foundational basis of tourism attractiveness (Novanda et al., 2023), while variations in destination readiness are more strongly shaped by other factors such as facilities, accessibility, and governance.

Perceived Amenity by Site

The adequacy of amenities best reflects differences in tourism preparation among research areas (Table 2). Lahe Island and Bitila Island have very low amenity rankings (21% and 14%, respectively), but Pinomontiga Beach is in the middle

group (57%), and South Leato Beach is in the good category (76%). This pattern highlights amenities as the key differentiator between Tomini Bay tourism sites. The majority of essential facilities, including as restrooms, clean water, waste bins, food kiosks, gazebos, changing rooms, and clear ticketing information, are missing from Lahe and Bitila Islands. Parking spots, naturally shaded places, and the presence of security personnel are the only facilities considered suitable at these locations. This mismatch reveals that service infrastructure development has not kept up with the usage of natural attraction potential, limiting the quality of the visitor experience. Pinomontiga Beach is in a transitional state, and right now it has the most important services, such as bathrooms, clean water, places to eat, and changing rooms. But the fact that there are no staff on site and no clear information about ticket prices shows that management is not ready for the improvements in physical infrastructure, which means the destination is still in the middle of its expansion.

South Leato Beach, on the other hand, has a more diverse set of amenities. The availability of practically all essential facilities, combined with the presence of workers and a well-defined ticketing system, suggests that this area has developed a solid service foundation to support more structured and sustained tourism activities. Overall, these findings reinforce empirical evidence that basic amenities, particularly sanitation, access to clean water, and effective service management, are not merely complementary features but critical determinants of tourist satisfaction and the long-term sustainability of coastal destinations (Woyo & Slabbert, 2021; Purwadinata & Ambarwati, 2023). Without targeted interventions in these areas, destinations with high natural appeal risk stagnation following the initial phase of visitor growth.

Table 2. Perceived amenity sufficiency at the research site (Source: Author's own work)

Type of Perception	Average Score (%)			
	Lahe Island	Bitila Island	Pinomontiga Beach	South Leato Beach
There is a parking area for visitors to the site	71	67	74	74
The ticket prices offered are affordable for tourists	0	0	0	77
There are shady places such as shady trees both inside and outside the site	81	75	74	75
There are places to eat both inside and outside the site	0	0	66	73
There are toilets in the site	0	0	73	75
There are trash bin facilities in the site	0	0	63	79
There is clean water in the site	0	0	69	71
There are officers on guard in the site	63	63	0	77
There is a gazebo in the site	0	0	72	77
There are changing rooms in the site	0	0	74	77
Average	21	14	57	76
Criteria	Poor	Very Poor	Moderate	Good

Perceived Accessibility by Site

Accessibility exhibits a relatively uniform pattern across the study sites, although clear differences in ease of access are evident. Access to Lahe Island and Bitila Island remains more limited than to Pinomontiga Beach and South Leato Beach. This finding is consistent with the literature emphasizing that safe and reliable transportation networks are essential for maximizing the economic and social benefits of tourism (Ilham & Sukmawati, 2021; Mulyana & Gayatri, 2022). Accessibility improvements, such as road renovations, directional signs, and better coordinated boat transportation systems, should be undertaken with caution to avoid putting additional strain on delicate coastal ecosystems (Rahmafritra et al., 2022; Santana et al., 2022). Lahe Island had an average accessibility score of 58%, while Bitila Island had a score of 55%, placing them both in the intermediate category (Table 3).

Respondents believed transportation was available and tourism activities were generally safe; nevertheless, poor road conditions near departure points remained a significant impediment. The combination of substantial natural attractions, limited facilities, and moderate accessibility is a common pattern among small island destinations, where transportation and service constraints may reduce overall competitiveness (Agius & Briguglio, 2021; Taufik et al., 2024).

Table 3. Perceived accessibility at the research site (Source: Author's own work)

Type of Perception	Average Score (%)			
	Lahe Island	Bitila Island	Pinomontiga Beach	South Leato Beach
The condition of the beach as the main attraction of this tourist attraction is clean	73	63	68	79
There are means of transportation to the site	82	76	73	79
Feel safe when playing on the site	79	81	75	75
The road conditions to the site are good (already paved)	0	0	74	76
Average	58	55	72	77
Criteria	Moderate	Moderate	Good	Good

By contrast, Pinomontiga Beach demonstrates better accessibility, with an average score of 72% (Table 3), supported by the availability of transportation, a high level of perceived safety, and paved road access. This alignment of environmental attractiveness, relatively adequate facilities, and accessible infrastructure indicates substantial potential for further development. Undamaged infrastructure and historical development support are critical assets for reactivating sites that have temporarily discontinued management activities through tighter governance and targeted promotional initiatives

(Kahraman & Cifci, 2022). South Leato Beach achieved the highest accessibility score at 77% (Table 3). Well-kept roads, a variety of transportation options, clean beach conditions, and good levels of safety and visitor comfort indicate that this location is relatively easy to reach and well positioned to support sustainable tourist operations.

DISCUSSION

The high and relatively consistent scores across all 4A components indicate that South Leato Beach has reached a more advanced stage of tourism readiness compared to other locations in Tomini Bay. This trend is in line with research that shows that coastal areas near big cities get all the facilities and services they need more quickly, making it easier to quickly put sustainability measures like visiting limits and regular environmental monitoring into place (Sarker et al., 2023; Bardhan & Sarkar, 2024). In the blue economy model, these conditions make South Leato an important place to find a balance between protecting coastal ecosystems and growing the economy. The fact that individuals are not all equally prepared near Tomini Bay shows how crucial it is to have a coastal management plan that is phased and appropriate to the area. South Leato is a perfect area to try out new methods for sustainability, such as visitor caps, zoning for tourism activities, and ecological monitoring based on indicators. These tools are best for places with adequate basic infrastructure (Bardhan & Sarkar, 2024; Sarker et al., 2023). The Lahe and Bitila Islands, on the other hand, need more basic policy changes, especially when it comes to clean water, sanitation, and basic service infrastructure. Limitations in these facilities not only risk reducing visitor experience quality but also increase the likelihood of environmental pressure and unequal distribution of economic benefits if visitation grows without adequate supporting services (Aji & Faniza, 2024).

These findings gain further significance when situated within the distinct social context of Tomini Bay, which differs markedly from many well-established coastal tourism destinations. Much of the existing literature on community-based tourism and host-guest relationships focuses on tourism villages or customary villages that are deliberately positioned as “cultural stages,” such as Brayut Tourism Village or Sade Traditional Village in Lombok, as well as iconic destinations like Bali & Lombok (Utami et al., 2019; Putri et al., 2023; Triyasningrum et al., 2023). In such cases, professional actors commonly commodify and mediate interactions between local residents and visitors, reducing social relations to economic transactions and standardized attraction packages (Utami et al., 2019; Triyasningrum et al., 2023).

However, most of the fishing settlements on the shore and small islands of Tomini Bay were not developed as genuine tourist resorts. This environment allows people mostly have favorable things to say about tourism, even when the services and government aren't very good. But this "pre-destination" character also has weaknesses. If tourism growth happens without clear direction, it could lead to value conflicts, unequal benefit distribution, and environmental degradation because there are no formal rules or strong institutions to protect them (Utami et al., 2019; Putri et al., 2023; Triyasningrum et al., 2023).

Within this context, the development of community-based tourism (CBT) in Tomini Bay presents both opportunities and challenges. Community willingness to engage in transportation and food service provision demonstrates the potential of CBT as a mechanism for local economic empowerment and strengthened conservation incentives, as reported in previous studies (Hamzah et al., 2024). However, to avoid exploitative trajectories, CBT requires concrete policy support, including capacity-building programs, transparent benefit-sharing mechanisms, and equitable, well-regulated digital marketing strategies (Hidayat et al., 2023; Chen et al., 2025). Strong community support for tourism development must be managed caution. According to the literature, social legitimacy can deteriorate when economic advantages are unequally dispersed or environmental and social repercussions are poorly managed (Nazirullah et al., 2023; Baral & Saini, 2024). As a result, the policy implications of these findings include the necessity for ongoing participation mechanisms, such as community forums, grievance systems, and periodic reviews, to ensure that tourism development remains in line with local interests. Furthermore, increasing environmental risks associated with climate change necessitate the integration of adaptation strategies into coastal tourism planning. Climate-sensitive infrastructure design, disaster preparedness, multi-stakeholder collaboration, and the conservation of natural coastal buffers are critical components for maintaining destination resilience (Boqué-Ciurana et al., 2025). Given its higher level of readiness, South Leato has the potential to function as a pilot area for the implementation of nature-based solutions, early warning systems, and visitor safety standards before broader application across other areas of Tomini Bay.

This study has several limitations that should be acknowledged. The descriptive-observational approach based on community perceptions provides valuable baseline insights but does not fully capture temporal dynamics, quantitative ecological impacts, or long-term economic interactions associated with tourism development. Future research should integrate this approach with longitudinal analyses, biophysical environmental data, and economic evaluations to strengthen the evidence base for policy-making. Overall, the pattern of community perceptions and site readiness in Tomini Bay suggests that sustainable beach tourism can be realistically developed through a phased, context-sensitive approach: strengthening sites that are already prepared, upgrading basic facilities in less-developed locations, and ensuring transparent, equitable, and adaptive governance. This trajectory aligns closely with blue economy principles, which emphasise the balance between economic benefits, ecological resilience, and the empowerment of coastal communities.

CONCLUSION

This study shows that four coastal tourist sites in Tomini Bay, Lahe Island, Bitila Island, Pinomontiga Beach, and South Leato Beach, have strong potential for sustainable tourism development, marked by high community support and recognition of natural wealth as key assets of the destination. However, there are still significant gaps in the provision of basic amenities, especially in Lahe and Bitila, while accessibility is relatively better in Pinomontiga and South Leato. These findings confirm that socio-cultural readiness is already in place, but infrastructure strengthening is an urgent need in order

to optimize tourism potential within the framework of the blue economy. Going forward, gradual development that balances facility improvements, coastal ecosystem conservation, and community economic empowerment is necessary to ensure that tourism in Tomini Bay grows in an inclusive and sustainable manner.

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