A sustainable marine tourism model integrating the blue economy and local wisdom for poverty alleviation on Banyak Island

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A R T I C L E I N F O

A B S T R A C T

Banyak Island in Aceh Singkil Regency has strong potential for marine tourism, yet the region continues to face poverty and limited socio-economic development. This study aims to develop a sustainable marine tourism model based on the blue economy and local wisdom as a strategy for poverty reduction in coastal communities. A quantitative explanatory approach was applied using Structural Equation Modeling (SEM) with LISREL, analyzing Blue Economy Potential, Local Wisdom, Training and Capacity Building, Sustainable Marine Tourism, and Coastal Community Welfare. Data were collected from 176 active fishers selected through purposive sampling. The results indicate a good model fit (p-value = 0.05691; RMSEA = 0.015; CFI, GFI, and IFI ≥ 0.90). Local wisdom shows the strongest influence on the tourism model, followed by training and capacity building and blue economy potential, while the sustainable marine tourism model has a significant positive effect on community welfare. These findings suggest that integrating blue economy principles, local cultural values, and community capacity building can promote inclusive and sustainable marine tourism and effectively reduce poverty in coastal areas.

1. Introduction

Marine tourism has enormous potential to make a significant contribution to the economy, especially in island regions rich in natural beauty and cultural heritage (Banarsyadhimi et al., 2022; Kurniawan et al., 2016; Phelan et al., 2020). Banyak Island, located in Aceh Singkil Regency, is a marine tourism destination with unique marine ecosystems, white sandy beaches, coral reefs, and well-preserved local culture (Andriany et al., 2022). However, despite having great potential, the people of Banyak Island still face various social and economic challenges, including poverty, limited access to education, and minimal infrastructure. This raises fundamental questions about how Pulau Banyak's marine potential can be managed effectively to provide direct benefits to the welfare of local communities.

The persistent poverty that plagues communities in this region is also linked to unsustainable natural resource management practices (Febriamansyah, 2025). Overexploitation of marine ecosystems, lack of economic diversification, and low community participation in the tourism sector exacerbate this problem. Meanwhile, climate change and the threat of environmental damage further exacerbate the risks faced by coastal communities.

In this context, the blue economy approach has emerged as a solution focused on sustainable marine resource management, aiming to improve community well-being without damaging marine ecosystems (Choudhary et al., 2021; Cohen et al., 2019; Farmery et al., 2021; Islam and Shamsuddoha, 2018; Okafor-Yarwood et al., 2020). The blue economy emphasizes the importance of maintaining a balance between utilization and conservation of marine resources, thus providing long-term benefits (Ovchynnykova et al., 2024). Furthermore, local wisdom also plays a crucial role in maintaining the marine ecosystem on Banyak Island. Local community traditions, such as maritime customs, taboos at certain times for fishing, and the cooperation system, can be an important foundation

in realizing sustainable marine tourism management (Pratiknjo et al., 2023).

However, although the blue economy concept and local wisdom have significant potential to support the development of sustainable marine tourism, their implementation has not been optimal. This is due to various obstacles, including low public awareness of sustainable tourism practices, a lack of regulations supporting marine ecosystem conservation, and weak infrastructure support and market access for local tourism products and services (Garcia and Cater, 2022; Maingi, 2019; Sangpikul, 2018; Yadav et al., 2018).

This phenomenon creates the need for a sustainable marine tourism development model based on the blue economy and local wisdom that focuses not only on economic aspects but also encompasses social, cultural, and environmental dimensions. This model is expected to be an effective strategy for alleviating poverty on Banyak Island by empowering local communities, preserving marine ecosystems, and creating sustainable economic opportunities. It also produces a comprehensive model capable of providing strategic solutions to address poverty on Banyak Island through inclusive, environmentally friendly tourism management based on local potential.

The novelty of this research lies in the development of a sustainable marine tourism model that is not only oriented towards economic aspects but also prioritizes the preservation of coastal ecosystems and local cultural values. The main innovation of this model is the application of blue economy (BE) principles to create new job opportunities, such as blue entrepreneurship and marine ecosystem-based tourism, which support the sustainability of natural resources. Different from conventional, uniform approaches, this research integrates local wisdom (LW) in the form of customary practices such as sea sasi and cultural rituals into the tourism system, thereby enhancing the uniqueness of the destination and strengthening the cultural identity of the Banyak Island community. In addition, training and strengthening community capacity (TC) are key strategies in empowering the local economy, encouraging active community involvement in the environmentally friendly tourism sector. The combination of these three independent variables is expected to form an effective tourism model in improving the welfare of coastal communities (WS), reducing poverty levels, and creating sustainable economic resilience in the archipelago.

The research problem lies in how to optimize the potential of Banyak Island's marine resources and local wisdom for integrated development within a blue economy framework. This development is aimed at designing and implementing a sustainable marine tourism model based on local cultural values and capable of promoting comprehensive and sustainable community welfare.

This research was designed to develop a sustainable marine tourism model on Banyak Island with the primary goal of improving the welfare of coastal communities. In this context, three independent variables were considered as key factors influencing the model's formation. First, blue economy potential, which encompasses the productive and sustainable utilization of marine resources, is considered a foundation for the local economy that can be optimized. Second, local wisdom, encompassing cultural values, customary practices, and community participation in maintaining marine ecosystems, is considered crucial as a social element that strengthens identity and environmental sustainability. Third, community training and capacity building, in the form of skills development in ecotourism, entrepreneurship, and marine conservation, are strategic aspects in directly empowering the community.

These three variables, integrated, are expected to form a sustainable marine tourism model as a mediating variable. This model reflects the integration of economic, social, and environmental aspects in tourism practices based on the blue economy and local wisdom. The implementation of this model is expected to significantly contribute to improving the welfare of coastal communities, which is the dependent variable in this study. This welfare is measured through indicators of increased income, the opening of new job opportunities, and improving the quality of life of the community in the coastal areas of Banyak Island.

There are some research hypotheses in this research which can be summarized as follows:

- **H1:** The potential of the blue economy (X_1) has a positive and significant influence on the development of a sustainable marine tourism model (Z). The application of blue economy principles in marine resource management is believed to be able to encourage the development of a sustainable marine tourism model that prioritizes not only economic aspects but also holistic coastal environmental conservation. The potential of the blue economy, which includes the productive, efficient, and sustainable use of marine resources, provides opportunities for the creation of new jobs such as blue entrepreneurship, marine conservation tourism, and ecosystem-based activities (Choudhary et al., 2021).
- **H2:** Local wisdom (X_2) has a positive and significant influence on the development of a sustainable marine tourism model (Z). Local wisdom is a crucial element in supporting the development of sustainable marine tourism, as it reflects cultural values, social norms, and traditional practices that have been proven to maintain harmony between humans and nature. Integrating local wisdom into the tourism system, such as marine sasi practices, traditional rituals, and the cooperation system, is believed to increase community acceptance, strengthen the identity of tourist destinations, and encourage sustainable environmental conservation (Arismayanti, 2021; Pratikjno et al., 2023).

- **H3:** Community training and capacity building (X_3) have a positive and significant impact on the development of a sustainable marine tourism model (Z). Through training in ecotourism, marine conservation, and local resource-based entrepreneurship, communities are better prepared to actively participate in sustainable tourism management and development. This capacity building not only strengthens the role of communities as key actors but also creates an inclusive and adaptive tourism system to environmental challenges (Suryawan et al., 2025).
- **H4:** Community participation has significant implications for the development of a sustainable marine tourism model (Okazaki, 2008), as active involvement of local communities enhances their sense of belonging toward tourism destinations, fosters greater concern for marine environmental conservation, and strengthens the role of local culture in tourism activities. Through the contribution of ideas, labor, and social support, tourism management becomes more inclusive and responsive to local needs. This not only improves the quality of tourism services but also ensures a balance between economic welfare, environmental preservation, and socio-cultural sustainability, thereby enabling the goals of sustainable marine tourism development to be achieved more effectively.
- **H5:** The sustainable marine tourism model (Z) has a positive and significant impact on improving the welfare of coastal communities (Y). This model encourages active community involvement in tourism resource management, creates new economic opportunities, and sustainably maintains marine ecosystems. With a structured and inclusive tourism system, communities can achieve long-term economic benefits, such as increased income, job creation, and strengthened local social and economic resilience (Cohen et al., 2019).
- **H6:** These three factors, in an integrated manner, contribute to the formation of an inclusive, competitive, and environmentally sound tourism system. The tourism model, formed from the integration of local potential and capacity building, serves as a key bridging tool between resource management and improving the community's quality of life. Therefore, the indirect hypothesis proposed is that blue economy potential (X_1), local wisdom (X_2), and community training and capacity building (X_3) indirectly influence the well-being of coastal communities (Y) through the sustainable marine tourism model (Z) as a mediating variable (Farmery et al., 2021).

2. Research methods

This study used a quantitative approach with explanatory methods. The aim was to examine the influence of the variables blue economy potential (X_1), local wisdom (X_2), and community training and capacity building (X_3) on the welfare of coastal communities (Y) through a sustainable marine tourism model (Z) as a mediating variable. This approach was chosen because it aligned with the research objective of developing and testing a model of relationships between variables based on a formulated theoretical framework. Table 1 summarizes the indicators used for each latent variable in this study.

2.1. Questionnaire development and pilot testing

The questionnaire was developed by adapting established measurement items from previous studies and international frameworks to ensure both relevance and validity in the context of sustainable marine tourism and coastal communities. Each construct was operationalized into multiple items using a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). The development process involved several steps:

1. Item Generation: Indicators were derived from literature (Table 1) and refined through expert consultation with academics in marine tourism and local government stakeholders.
2. Content Validation: Three subject matter experts reviewed draft items to evaluate clarity, cultural appropriateness, and coverage of constructs. Minor revisions were made to improve wording and contextual fit.
3. Pilot Testing: A pilot study was conducted with 30 respondents from coastal communities not included in the final sample. The purpose was to test item clarity, response variability, and preliminary reliability.
4. Reliability and Validity Check: Cronbach's alpha was calculated for each variable, with all constructs exceeding the recommended threshold of 0.70, indicating satisfactory internal consistency. Feedback from the pilot also helped refine ambiguous items before the final survey distribution.

This research was conducted on Banyak Island, Aceh Singkil Regency, a strategic area for marine tourism development and possessing unique socio-cultural characteristics and substantial blue economy potential that remains underutilized. The population in this study was all fishermen living and earning a living in the Banyak Island area, considering that they are the coastal community group most impacted by marine resource management and tourism potential. Based on data obtained from the Aceh Singkil Marine and Fisheries Office, the total fishing population in this area is approximately 320 people. The sample size was determined using the Slovin formula with a 5% margin of error, resulting in a total of 176 respondents. The sampling technique was purposive, with respondents being active fishermen who had lived on Banyak Island for at least five years and had a basic understanding of tourism, environmental, and local economic issues.

Table 1: Indicators of latent variables

Latent variable	Indicators	Reference/Adaptation
Local wisdom (X_2)	Traditional ecological knowledge Cultural values in marine resource use Indigenous practices in coastal conservation Local norms in tourism activities	Touwe (2020)
Training and capacity building (X_3)	Access to entrepreneurship training Participation in skills development programs Effectiveness of digital literacy training Knowledge transfer and mentoring	Goldberg and Bryant (2012)
Community participation (X_4)	Involvement in decision-making Community-based monitoring of marine resources Engagement in tourism program implementation Collective responsibility and cooperation	Siregar et al. (2025)
Sustainable marine tourism model (Z)	Environmental sustainability practices Economic viability of tourism activities Cultural preservation Governance and stakeholder collaboration	Bramwell and Lane (2011)
Coastal community welfare (Y)	Household income improvement Job creation and employment opportunities Access to education and health facilities Social cohesion and resilience	Islam and Shamsuddoha (2018)

Data collection was conducted through a structured questionnaire, measured on a 1–5 Likert scale. The questionnaire instrument was previously tested for validity and reliability through a preliminary pilot test. Data analysis was performed using Structural Equation Modelling (SEM) based on LISREL software, as this method is capable of simultaneously examining causal relationships between multiple latent variables and complex indicators (Byrne, 1998; Molenaar, 2019). SEM LISREL also allows for more accurate testing of theoretical models involving mediating variables, making it highly relevant to the objectives of this study: developing and testing a sustainable marine tourism model based on the blue economy and local wisdom to alleviate poverty in the coastal communities of Banyak Island.

2.2. Validity and reliability

To test the consistency and validity of the constructs in this research model, two important measures were used: Construct Reliability (CR) and Variance Extracted (VE). Construct Reliability (CR) measures the level of internal consistency of indicators in reflecting a latent variable. A high CR value indicates that indicators within a construct have good consistency in measuring the same concept. As presented in Table 2, all variables in this study have CR values above 0.70, indicating that the constructed constructs are reliable. The VE values

also confirm that an acceptable proportion of variance is explained by the corresponding constructs. Meanwhile, Variance Extracted (VE) or Average Variance Extracted (AVE) is used to measure convergent validity, namely the extent to which a construct can explain the variance of its indicators compared to the variance caused by measurement error. The ideal VE value is above 0.50. In this study, most constructs have met the VE threshold, indicating that the indicators used are quite valid in representing the latent variables. However, if there is a construct with a VE value slightly below 0.50 but a high CR, the construct can still be accepted statistically, provided that the indicators remain theoretically relevant.

2.3. Goodness of fit

To evaluate the extent to which the structural model fits the observed data, a Goodness of Fit (GOF) analysis is performed. This test is important to ensure that the developed model can statistically represent the relationships between latent variables. Several GOF measures are used to assess model fit, including: p-value, Root Mean Square Error of Approximation (RMSEA), Chi-Square/df, Comparative Fit Index (CFI), Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Incremental Fit Index (IFI), and Relative Fit Index (RFI). The closer the standard value is, the better the model fits the empirical data.

Table 2: Construct reliability (CR) and variance extracted (VE) for the SEM model

Variables	CR	VE	Result
Blue economy potential (X_1)	0.86	0.58	Reliable and valid
Local wisdom (X_2)	0.88	0.61	Reliable and valid
Training & capacity building (X_3)	0.85	0.57	Reliable and valid
Community participation (X4)	0.86	0.56	Reliable and valid
Sustainable marine tourism model (Z)	0.81	0.54	Reliable and valid
Coastal community welfare (Y)	0.74	0.49	Marginally valid (VE < 0.50)

As shown in Table 3, the p-value of 0.05691 is greater than 0.05, indicating that the model has no significant difference from the actual data, so it can be said that the model fits overall. The RMSEA value

of 0.015 also indicates a very low level of approximation error and indicates a very good model. In addition, the Chi-Square/df ratio of 0.978 is far below the maximum value of 2.00, indicating a

very high model fit. Other indices, such as CFI, GFI, AGFI, IFI, and RFI, are assumed to have a value ≥ 0.90, confirming that the model has a good fit and can be used to analyze the relationship between the built latent constructs. By considering all the model fit measures, it can be concluded that this SEM model is suitable for use in testing hypotheses. All indices show results that meet or exceed the minimum standard limits set in SEM analysis, so this model has a very good fit with the empirical data.

Table 3: Goodness of fit with values and interpretation

Goodness of fit	Result value	Standard value	Interpretation
p-value	0.05691	≥ 0.05	Excellent
RMSEA	0.015	≤ 0.08	Excellent
Chi-Square/df	0.978	≤ 2 or ≤ 3	Excellent
CFI	0.97	≥ 0.90	Excellent
GFI	0.93	≥ 0.90	Excellent
AGFI	0.91	≥ 0.90	Excellent
IFI	0.96	≥ 0.90	Excellent
RFI	0.92	≥ 0.90	Excellent

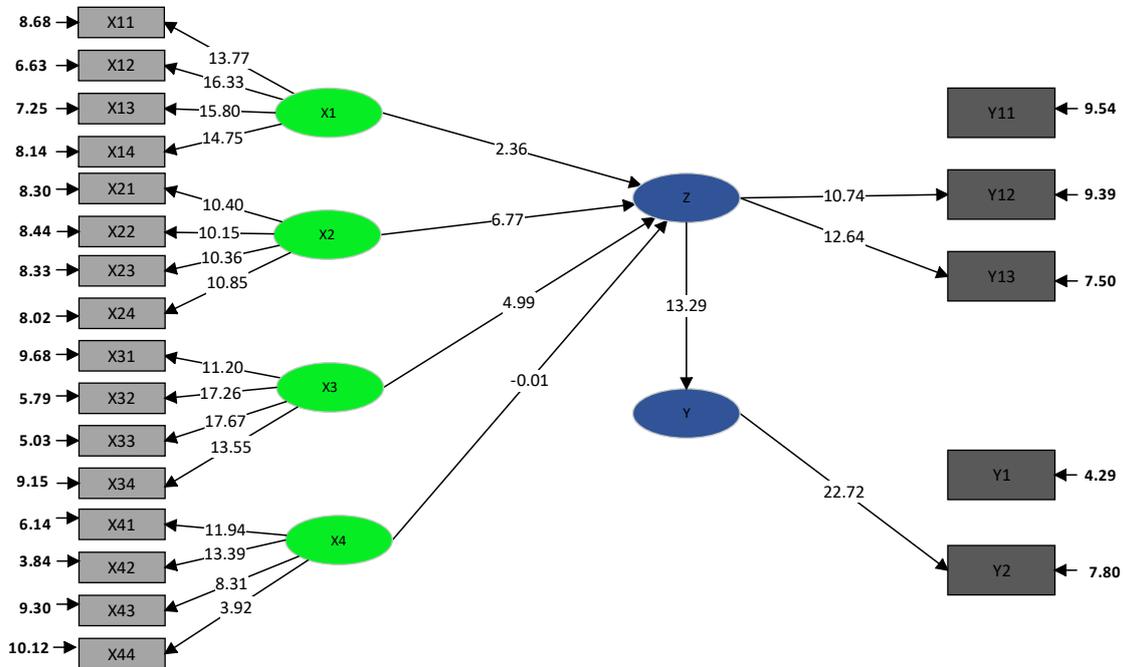## 2.4. Results of the structural model

The structural model is used to test the relationships between latent variables, whether exogenous or endogenous, to determine the strength, direction, and significance of causal pathways hypothesized in the research framework. The structural equation modeling (SEM) output from LISREL provides estimates of the regression weights (path coefficients), as well as significance levels,

enabling researchers to verify hypotheses and theoretical relationships among constructs. In this study, latent constructs X1 to X4 are exogenous variables, Z is a mediating (intervening) variable, and Y is the endogenous dependent variable. Each latent construct is measured by multiple indicators, as seen in the measurement model.

Fig. 1 illustrates the study's structural model, depicting the hypothesized relationships among the latent constructs examined. The model represents the causal pathways specified in the conceptual framework and serves as the basis for testing the proposed research hypotheses.

Based on the results of the Structural Equation Modeling (SEM) analysis using LISREL, the research model consisting of exogenous variables, namely Blue Economy Potential (X_1), Local Wisdom (X_2), Training and Capacity Building (X_3), and one additional variable (X_4), the intervening variable Sustainable Marine Tourism Model (Z), and the endogenous variable Coastal Community Welfare (Y) showed adequate results. Evaluation of the goodness of fit of the model produced a Chi-Square value of 174.22 with a degree of freedom (df) of 178 and a p-value of 0.05691, which is above the threshold of 0.05. This indicates that the model is not significantly different from the actual data. The RMSEA value of 0.015 also indicates that the model has a very low level of approximation error, so it can be concluded that the model has a very good fit with the data. The Chi-Square/df ratio of 0.978 strengthens the conclusion that the model is in the fit category.

Chi − Square = 174, df = 178, P-Value = 0.05691, RMSEA = 0.015

Fig. 1: Structural model

Furthermore, the path coefficient estimation results indicate that Local Wisdom (X_2) has the strongest influence on the Sustainable Marine Tourism Model (Z), with a coefficient value of 6.77,

followed by Training and Capacity Building (X_3) at 4.99, and Blue Economy Potential (X_1) at 2.36. Meanwhile, variable X_4 does not have a significant influence on Z, with a coefficient value of -0.01, even

indicating a negative direction. This indicates that in this model, Local Wisdom and Community Training play a significant role in shaping the Sustainable Marine Tourism Model, which, in the context of this research, serves as an intermediary variable that bridges the relationship between strategic development factors and the achievement of community welfare outcomes. The findings indicate that local wisdom exerts a much stronger influence than the potential of the blue economy in shaping a sustainable marine tourism model. This result is somewhat surprising, as policy discourse and much of the literature have predominantly emphasized the economic potential of the marine sector, such as fisheries, maritime transport, or resource-based ecotourism. In practice, however, local wisdom emerges as the fundamental pillar ensuring sustainability. This can be explained by the role of cultural values, customary norms, and traditional practices that have been passed down through generations and guide coastal communities in maintaining a balance between exploitation and conservation of marine resources. In other words, the success of developing sustainable marine tourism is not solely determined by resource wealth, but also by the system of local knowledge that regulates how these resources are utilized.

On the other hand, the analysis also revealed that the variable of community participation (X_4) does not have a significant effect on the sustainable marine tourism model. This condition may reflect the limited and formalistic nature of participation rather than substantive involvement. Although communities are included in forums or programs, their influence on strategic decision-making remains relatively low. Furthermore, community participation often tends to concentrate on operational aspects (such as community service or basic monitoring) rather than active involvement in policy design or strategic management of marine tourism. This finding implies that strengthening community participation should focus on enhancing their role in policymaking, community-based monitoring, and joint accountability mechanisms. Taken together, these two findings highlight that the sustainability of marine tourism in Indonesia's coastal areas is more strongly determined by cultural and social strength than by mere economic potential. Therefore, future development strategies must position local wisdom as the primary foundation, while simultaneously improving the quality of community participation to be more substantive and impactful.

The influence of the Sustainable Marine Tourism Model (Z) on Coastal Community Welfare (Y) is highly significant, with a coefficient value of 13.29, indicating that Z plays a significant role as the primary mediator in this model. These findings support the hypothesis that strengthening marine tourism based on the blue economy, local wisdom, and community training can significantly improve the socio-economic well-being of coastal communities. Therefore, this model can be used as a basis for formulating coastal development strategies based on local potential and environmental sustainability, particularly in areas like Banyak Island, which boasts unique maritime and cultural characteristics.

3. Discussion

Based on the results of the structural model estimation using the Structural Equation Modeling (SEM) approach with LISREL, the relationships between the variables in this study were found to be largely significant and support the proposed hypothesis. Blue Economy Potential (X_1) had a path coefficient of 2.36 on the Sustainable Marine Tourism Model (Z). Although the effect was positive, its strength was relatively weak. This indicates that the existence of marine potential alone is not sufficient to establish a sustainable marine tourism model without the support of policies, institutions, or active community participation. This finding aligns with the opinions of Choudhary et al. (2021) and Farmery et al. (2021), who stated that blue economy principles must be accompanied by a sustainable approach and community involvement to generate long-term benefits.

The strongest influence on the Sustainable Marine Tourism Model (Z) came from Local Wisdom (X_2), with a coefficient of 6.77. This suggests that cultural values, customary practices such as sea sasi, and the cooperation system on Banyak Island play a crucial role in supporting sustainable and inclusive tourism development. This is reinforced by Pratiknjo et al. (2023), who stated that integrating local wisdom into the tourism system will increase community acceptance, strengthen destination identity, and maintain environmental sustainability. Meanwhile, Training and Capacity Building (X_3) also demonstrated a significant and moderate effect on Z, with a coefficient of 4.99, indicating the importance of improving coastal community competencies in ecotourism, conservation, and entrepreneurship. Suryawan et al. (2025) and Touwe (2020) emphasized that appropriate training will strengthen the community's position as a key actor in an environmentally friendly tourism system.

Furthermore, the influence of the Sustainable Marine Tourism Model (Z) on Coastal Community Welfare (Y) was recorded as very high, with a coefficient of 13.29. This proves that strengthening a tourism model that integrates the blue economy, local wisdom, and community capacity in an integrated manner can have a direct impact on increasing income, employment, and the quality of life of coastal communities. As stated by Cohen et al. (2019), an inclusive and locally based tourism system has great potential to improve community welfare without damaging the ecosystem. Meanwhile, the insignificant variable X_4 (-0.01) is a separate note that not all external factors contribute significantly to the model. Therefore, the tourism development strategy on Banyak Island should focus on strengthening local values, community training,

and implementing blue economy principles as the main pillars of sustainable development.

4. Conclusion

Based on the results of the Structural Equation Modeling (SEM) analysis using LISREL, this study successfully demonstrated that the sustainable marine tourism model based on the blue economy and local wisdom had an excellent fit with the empirical data. Goodness of fit values, such as a p-value of 0.05691, an RMSEA of 0.015, and a Chi-Square/df ratio of 0.978, indicated that the model was statistically acceptable and suitable for testing the relationships between variables within the established theoretical framework. Structurally, the Local Wisdom variable (X_2) exerted the most significant influence in shaping the Sustainable Marine Tourism Model (Z), followed by Training and Capacity Building (X_3) and Blue Economy Potential (X_1).

Meanwhile, the additional variable X_4 did not contribute significantly to the model's formation. These findings confirm that local wisdom and community capacity are key elements in designing an inclusive, adaptive, and sustainable tourism system. Both can strengthen destination identity while empowering communities economically and socially. Most importantly, the Sustainable Marine Tourism Model (Z) has been shown to have a very strong influence on Coastal Community Welfare (Y), with a coefficient of 13.29. This proves that an integrated approach that combines natural potential, local culture, and human capacity building can produce real impacts in poverty alleviation, income generation, and job creation in coastal areas. Thus, this model can be used as an effective and sustainable marine area development strategy, especially in areas such as Banyak Island, which has extraordinary natural and cultural richness.

Based on the results of this study, it is suggested that the local government of Aceh Singkil Regency adopt and integrate the sustainable marine tourism model into regional development policies by formulating supportive regulations that promote the blue economy and empower local communities through community-based tourism initiatives. Continuous training programs in ecotourism, marine conservation, and entrepreneurship are essential to enhance the capacity of coastal communities and ensure their active participation in sustainable tourism practices. Moreover, local wisdom—such as sasi laut, traditional rituals, and the culture of cooperation—should be preserved and promoted as distinctive cultural assets that add value to the tourism experience.

Infrastructure development, including transportation, digital connectivity, and access to clean water, should also be prioritized, along with facilitating better market access for local tourism products. Given the strong empirical support, the model has high potential for replication in other coastal or island regions across Indonesia, and future research should explore the role of multi-stakeholder collaboration, policy effectiveness, and model scalability through qualitative or mixed method approaches to enrich its practical application.

List of abbreviations

AGFI	Adjusted goodness of fit index
AVE	Average variance extracted
BE	Blue economy
CFI	Comparative fit index
CR	Construct reliability
GFI	Goodness of fit index
GOF	Goodness of fit
IFI	Incremental fit index
RMSEA	Root mean square error of approximation
RFI	Relative fit index
SEM	Structural equation modeling
VE	Variance extracted
X1	Blue economy potential
X2	Local wisdom
X3	Training and capacity building
X4	Community participation
Y	Coastal community welfare
Z	Sustainable marine tourism model

Compliance with ethical standards

Ethical considerations

The study was conducted in accordance with ethical standards for research involving human participants. All respondents were informed about the research objectives and the voluntary nature of participation, and informed consent was obtained prior to completing the questionnaire. Participant anonymity and confidentiality were ensured, and the collected data were used solely for academic research purposes.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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