
Blue Economy Resources, Community Participation, and Tourism Infrastructure as Predictors of Rural Tourism Development and Livelihood Sustainability in South-East Nigeria

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Abstract: *This study examines the role of the blue economy in promoting rural tourism development and livelihood sustainability in South-East Nigeria. Despite the region's abundant aquatic resources such as rivers, lakes, and wetlands, these assets remain underutilized for tourism development and rural economic transformation. Drawing on Blue Economy Theory, Community-Based Tourism Theory, and Sustainable Livelihoods Theory, the study investigates how blue economy resources, tourism infrastructure, and community participation influence rural tourism development and, subsequently, livelihood sustainability. A quantitative research design was adopted using a cross-sectional survey of 400 respondents drawn from rural communities across five states in South-East Nigeria. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results reveal that blue economy resources ($\beta = 0.32, p < 0.001$), tourism infrastructure ($\beta = 0.29, p < 0.001$), and community participation ($\beta = 0.28, p < 0.001$) all have significant positive effects on rural tourism development. Furthermore, rural tourism development significantly influences livelihood sustainability ($\beta = 0.56, p < 0.001$) and mediates the relationships between the independent variables and livelihood outcomes. The model explains 61% of the variance in rural tourism development and 31% in livelihood sustainability, indicating substantial explanatory power. The findings underscore the importance of integrating blue economy strategies with rural tourism planning to enhance local economic development. Specifically, the study highlights the need for improved tourism infrastructure, increased community involvement, and sustainable utilization of aquatic resources to drive tourism growth and improve rural livelihoods. This study contributes to the literature by providing empirical evidence on the nexus between the blue economy and rural tourism development in an inland (non-coastal) context, which has received limited scholarly attention. It also offers policy-relevant insights for government agencies, tourism planners, and development practitioners seeking to leverage aquatic resources for sustainable rural development in Nigeria and similar developing economies.*

Keywords: blue economy, rural tourism development, community participation, tourism infrastructure, livelihood sustainability, South-east Nigeria.

INTRODUCTION

Tourism has emerged as one of the most significant sectors contributing to global economic development, employment generation, and regional integration. In many developing countries, tourism serves as a strategic tool for rural transformation, poverty reduction, and diversification of local economies. Rural tourism, in particular, has attracted increasing scholarly and policy attention because of its capacity to stimulate local entrepreneurship, preserve cultural heritage, and promote sustainable resource utilization. When effectively managed, rural tourism can create employment opportunities, enhance community participation in economic activities, and contribute to the socio-economic development of marginalized communities (Olagunju, 2024).

In recent years, the concept of the blue economy has gained prominence as a framework for sustainable development that promotes the responsible use of aquatic and marine resources for economic growth, improved livelihoods, and environmental sustainability. The blue economy encompasses activities such as fisheries, maritime transport, coastal tourism, aquaculture, marine biotechnology, and water-based recreation. Scholars have argued that the blue economy represents a viable pathway for diversifying Nigeria's economy beyond oil dependency by harnessing its extensive water resources, inland waterways, and coastal ecosystems (Adepoju et al., 2023).

Nigeria possesses abundant aquatic resources including rivers, lakes, wetlands, and coastal ecosystems that can support tourism development and rural livelihood diversification. These natural assets provide opportunities for various forms of tourism such as eco-tourism, water-based recreation, cultural tourism, and community-based tourism. Research has shown that tourism activities associated with aquatic ecosystems can stimulate economic activities in rural communities through the development of hospitality services, local crafts, transportation, and recreational enterprises (Abasi-Eyo et al., 2025).

The integration of blue economy principles into rural tourism development has become increasingly important for sustainable community development. Blue economy tourism initiatives can enable rural communities to utilize water-based resources such as rivers, lakes, and wetlands for tourism activities, including fishing tourism, boat tours, waterfront recreation, and eco-tourism experiences. Such initiatives can also promote community-based tourism models, where local residents actively participate in tourism planning, management, and benefit distribution. Studies on community-based tourism indicate that local participation in tourism enterprises such as homestays, cultural tours, and traditional food services can significantly enhance rural economic resilience while promoting sustainable destination development (Ijose & KC, 2025).

The South-East region of Nigeria presents considerable potential for blue economy-driven tourism development due to the presence of numerous inland water bodies, wetlands, and culturally rich rural communities. Several states in the region including Abia State, Anambra State, Ebonyi State, Enugu State, and Imo State possess rivers, lakes, and water-based cultural landscapes, such as

Anam Beach, Agulu Lake, Azumini Blue River, Godfrey Okoye Univeristy Lake, River Niger, Uburu Salt Lake, Okposi Salt Lake, etc., that can support sustainable tourism development. These areas host numerous rural settlements where traditional livelihoods such as fishing, agriculture, and riverine trade remain dominant. Integrating blue economy initiatives into tourism development in these communities could create new opportunities for income generation, employment, and cultural preservation.

Furthermore, rural tourism aligned with blue economy strategies can promote sustainable development by encouraging the conservation of aquatic ecosystems and cultural heritage resources. Sustainable tourism models emphasize a balance among economic growth, environmental protection, and social inclusion, ensuring that tourism development does not compromise the ecological integrity of natural resources or the socio-cultural identity of host communities. As global tourism increasingly shifts toward experiential and nature-based tourism, rural destinations with unique aquatic and cultural landscapes have become attractive to domestic and international tourists.

Despite these opportunities, the integration of blue economy principles into rural tourism development remains relatively underexplored in many parts of Nigeria, especially in the South East. While several policy discussions emphasize the economic potential of the blue economy, empirical research examining how these initiatives can support rural tourism development and community livelihoods remains limited. This gap is particularly evident in South-East Nigeria, where rural communities possess significant water-based tourism resources but often lack the institutional support, infrastructure, and investment needed to transform them into sustainable tourism products.

Statement of the Problem

Despite Nigeria's vast endowment of inland and coastal water resources, the country has yet to fully harness its blue economy potential for sustainable rural tourism development. Many rural communities situated around rivers, lakes, and wetlands continue to depend predominantly on subsistence fishing and small-scale agriculture, which, although essential, yield relatively low and unstable incomes. These livelihood systems are highly vulnerable to environmental degradation, climate variability, and market fluctuations, thereby exacerbating rural poverty, unemployment, and increasing rates of rural-urban migration (World Bank, 2023; Food and Agriculture Organization, 2022).

The blue economy paradigm has been globally recognized as a viable pathway for promoting economic diversification, environmental sustainability, and inclusive growth, particularly for communities dependent on aquatic ecosystems (United Nations, 2023; Bennett et al., 2021). However, in Nigeria, the operationalization of blue economy strategies within rural development frameworks remains largely fragmented and underdeveloped. Empirical evidence suggests that the utilization of aquatic resources is constrained by inadequate investment, weak institutional

coordination, limited technical capacity, and low community awareness, thereby limiting their contribution to local economic development (Adepoju et al., 2023; Kabil et al., 2023).

Furthermore, the integration of tourism development with aquatic resource management in rural Nigeria remains insufficient. Although water-based tourism such as river tourism, eco-tourism, recreational fishing, and cultural waterfront experiences has demonstrated strong potential for rural transformation globally, these opportunities remain largely untapped in Nigeria due to poor infrastructure, weak destination planning, and inadequate marketing systems (Gössling et al., 2018; Lee et al., 2022). Existing studies on Nigeria's tourism sector consistently highlight deficiencies in transportation networks, accommodation facilities, and tourism support services as major impediments to destination competitiveness and sustainable tourism growth (Okonkwo & Afoma, 2022; Nwokorie & Obiora, 2023).

Another critical limitation lies in the low level of community participation in tourism planning and governance. The literature on community-based tourism emphasizes that active local involvement is essential for ensuring equitable benefit distribution, resource conservation, and long-term sustainability (Rogerson & Rogerson, 2020; Ijose & KC, 2025). However, in many developing contexts, including Nigeria, tourism initiatives are often top-down in approach, with minimal engagement of host communities. This undermines local ownership, reduces economic inclusivity, and weakens the sustainability of tourism interventions.

In the South-East Nigeria, there is a notable paucity of empirical research examining the nexus between blue economy resources and rural tourism development. While the region is endowed with extensive inland waterways and culturally rich rural landscapes, scholarly attention has largely focused on coastal or urban tourism systems, leaving inland rural tourism dynamics underexplored. Consequently, there is limited empirical evidence on how blue economy assets can be strategically leveraged to drive tourism development and improve rural livelihoods in this region.

Given these gaps, there is a compelling need for a systematic and empirically grounded investigation into the role of blue economy resources in facilitating rural tourism development in South-East Nigeria. Specifically, understanding how aquatic resources, tourism infrastructure, and community participation interact to influence rural tourism outcomes is critical for informing policy and practice. Addressing this gap will not only contribute to academic discourse but also provide evidence-based insights for policymakers, development practitioners, and stakeholders seeking to promote sustainable livelihoods, economic diversification, and regional development through tourism. This study, therefore, responds to this need by examining how blue economy initiatives can be effectively integrated into rural tourism development strategies, thereby advancing sustainable socio-economic transformation in South-East Nigeria.

Empirical Review of Related Studies

Recent empirical literature has increasingly examined the nexus between the blue economy, rural livelihoods, and tourism development, particularly in developing economies where aquatic resources play an important role in socio-economic transformation. Scholars have emphasized that blue economy initiatives such as fisheries, inland water transportation, eco-tourism, and water-based recreation can support rural development by diversifying livelihoods, promoting sustainable resource use, and enhancing tourism opportunities (Bennett et al., 2021; Okafor & Uduma, 2023). Empirical evidence from different contexts highlights how these initiatives contribute to economic growth, community empowerment, and environmental sustainability.

Blue Economy and Economic Development

Several studies have investigated the contribution of blue economy sectors to economic growth and development. Bennett et al. (2021) conducted a global empirical assessment of blue economy initiatives and found that sustainable marine resource management significantly enhances economic productivity while promoting environmental conservation. Using cross-national policy analysis, the authors concluded that fisheries, coastal tourism, and maritime services represent critical pillars of the blue economy capable of driving sustainable economic growth. In the same vein, Lee, Kim, and Shin (2022) examined the relationship between blue economy activities and economic development in coastal Asian economies using panel data analysis. Their findings revealed that marine tourism, fisheries production, and maritime trade significantly contribute to GDP growth and employment generation. The study emphasized that investments in maritime infrastructure and tourism facilities are essential for maximizing the economic benefits of blue economy initiatives.

In the Nigerian space, Adepoju, Abdullahi, and Maji (2023) conducted an empirical assessment of the blue economy as a strategy for economic diversification. Using qualitative analysis of policy documents and sectoral data, the study found that Nigeria's aquatic resources including rivers, coastal ecosystems, and inland waterways provide substantial opportunities for tourism development, fisheries expansion, and maritime transportation. The authors concluded that effective governance frameworks and strategic investment are required to harness the full potential of the blue economy. In a related study, Umehai, Okeke, and Eze (2024) employed time-series data to examine the impact of fisheries and maritime activities on economic development in Nigeria. Using an autoregressive distributed lag (ARDL) model, the study found that fisheries production and marine transportation significantly influence employment generation and poverty reduction in coastal communities.

Blue Economy and Rural Livelihoods

The relationship between blue economy initiatives and rural livelihood development has also attracted significant scholarly attention. Cisneros-Montemayor et al. (2020) examined the socio-economic impacts of marine resource utilization on coastal communities across several developing countries. Using mixed-method research approaches, the study found that fisheries and tourism activities significantly improve household income levels and reduce rural poverty when managed

sustainably. Similarly, Okafor and Uduma (2023) investigated the impact of fisheries development on rural livelihoods in Nigeria. Using survey data from fishing communities, the authors found that fishing activities and aquaculture enterprises contribute significantly to income generation and food security. However, the study identified key constraints such as limited access to credit, poor infrastructure, and inadequate government support. In another empirical study, Esin and Okon (2024) examined the socio-economic implications of blue economy initiatives in the Niger Delta region. Using structured questionnaires and regression analysis, the authors found that community participation in fisheries, aquaculture, and marine tourism activities positively influences household income and employment levels. Akinwale and Ogunleye (2022) analyzed the impact of coastal resource management on rural community livelihoods in West Africa. The results indicated that communities involved in sustainable fisheries management and eco-tourism activities experience higher levels of income diversification and economic resilience.

Rural Tourism Development and Community Participation

A substantial body of literature has also examined the role of rural tourism in promoting community development. Rural tourism has been widely recognized as a mechanism for stimulating local economic growth, promoting cultural preservation, and encouraging environmental conservation (Lane & Kastenholz, 2015). For example, Briedenhann and Wickens (2021) investigated the impact of rural tourism on community development in several European destinations. Using survey data from tourism stakeholders, the study found that rural tourism activities significantly contribute to employment generation, small business development, and local economic diversification. In Africa, Rogerson and Rogerson (2020) examined the development of rural tourism in Southern Africa and found that tourism activities such as cultural festivals, nature tourism, and heritage tourism play a crucial role in promoting rural economic development. Olagunju (2024) examined the role of rural tourism initiatives in revitalizing rural communities in Nigeria. The study employed a survey of tourism stakeholders and found that tourism development promotes job creation, enhances local entrepreneurship, and improves rural infrastructure. Another empirical study by Nwokorie and Obiora (2023) examined the influence of tourism infrastructure on rural tourism development in Nigeria. Using structural equation modeling (SEM), the study found that accessibility, accommodation facilities, and tourism amenities significantly influence tourist satisfaction and destination competitiveness.

Tourism Development and Aquatic Resources

Research has also explored the relationship between aquatic resources and tourism development. Hall (2001) conducted one of the earliest empirical assessments of coastal and marine tourism, highlighting that marine ecosystems, beaches, and water-based recreation represent major drivers of tourism demand globally. Gössling, Scott, and Hall (2018) analyzed the sustainability of coastal tourism development and found that environmental management and conservation policies are critical for maintaining tourism competitiveness. Abasi-Eyo, Imikan, and Ekong (2025) assessed the tourism potential of coastal communities in Akwa Ibom State using survey data from local residents and tourism operators. The study identified beaches, mangrove ecosystems, and cultural heritage resources as key tourism attractions capable of supporting sustainable tourism

development. However, the study also highlighted major challenges including inadequate infrastructure, weak tourism marketing strategies, and insufficient investment in tourism facilities. In a related study, Okonkwo and Afoma (2022) investigated tourism destination competitiveness in Nigeria and found that environmental quality, tourism infrastructure, and hospitality service quality significantly influence tourist satisfaction and destination loyalty.

Blue Economy and Tourism Development

More recent studies have begun to examine the integration of blue economy initiatives with tourism development. Bennett et al. (2021) noted that marine tourism represents one of the fastest-growing sectors of the blue economy and provides significant opportunities for sustainable economic development. Farmaki (2021) also examined the relationship between coastal tourism and blue economy development in Mediterranean destinations. Using stakeholder interviews and tourism performance data, the study found that sustainable marine tourism contributes significantly to employment generation and regional economic development. In same vein, Kabil et al. (2023) investigated the role of coastal tourism in supporting the blue economy in North Africa. Their findings indicated that investments in coastal tourism infrastructure significantly enhance tourism competitiveness and economic development. In Nigeria, Nwokorie (2021) examined the relationship between hospitality service quality and tourism competitiveness. The study found that service quality in accommodation, food services, and tourism facilities significantly influences tourist satisfaction and destination loyalty.

Theoretical Framework

This study is anchored on three complementary theoretical perspectives: Blue Economy Theory, Community-Based Tourism (CBT) Theory, and Sustainable Livelihoods Theory (SLT). These theories collectively provide a conceptual foundation for understanding how aquatic resources, community participation, and tourism infrastructure influence rural tourism development and livelihood sustainability.

Blue Economy Theory

The concept of the blue economy emerged as a sustainable development paradigm emphasizing the responsible use of aquatic and marine resources for economic growth, improved livelihoods, and environmental sustainability. The blue economy framework promotes the sustainable utilization of ocean and inland water resources for sectors such as fisheries, maritime transport, aquaculture, coastal tourism, and marine biotechnology (Bennett et al., 2021). The theoretical premise of the blue economy is rooted in the idea that aquatic ecosystems represent valuable natural capital that can drive economic development when properly managed. Blue economy activities are expected to generate employment, stimulate investment, and enhance economic diversification while maintaining ecological sustainability. Scholars argue that tourism is one of the most promising sectors within the blue economy because it utilizes aquatic ecosystems—such as rivers, lakes, wetlands, and coastal environments as attractions for recreational and experiential tourism activities (Gössling et al., 2018). In developing countries, blue economy tourism has the potential to promote rural development by transforming aquatic resources into sustainable tourism

products. In South-East Nigeria, numerous inland water bodies and wetlands provide opportunities for water-based tourism activities such as boat tours, fishing tourism, eco-tourism, and cultural waterfront experiences. The blue economy framework therefore, provides an important theoretical lens for examining how aquatic resources can contribute to rural tourism development and livelihood sustainability.

Community-Based Tourism Theory

Community-Based Tourism (CBT) theory emphasizes the active participation of local communities in tourism planning, development, and management. The theory suggests that tourism initiatives are more sustainable and beneficial when residents are involved in decision-making processes and receive direct economic benefits from tourism activities (Briedenhann & Wickens, 2021). CBT is based on the principle that tourism development should empower local communities by providing opportunities for entrepreneurship, employment, and cultural preservation. When communities participate in tourism development, they become stakeholders in the conservation of natural and cultural resources that attract tourists. Empirical research shows that community participation enhances tourism sustainability by promoting local ownership of tourism enterprises and ensuring equitable distribution of tourism benefits (Rogerson & Rogerson, 2020). Community involvement also contributes to improved visitor experiences because residents often provide authentic cultural and environmental knowledge. In rural areas, tourism enterprises such as homestays, cultural festivals, local cuisine services, handicraft production, and guided tours are often managed by community members. Within the blue economy framework, communities living near aquatic resources can develop tourism activities such as fishing tourism, boat tours, and waterfront cultural events. Therefore, CBT theory provides a useful framework for understanding how community participation influences rural tourism development and sustainable livelihood outcomes.

Sustainable Livelihoods Theory

The Sustainable Livelihoods Theory (SLT) provides a framework for analyzing how individuals and communities utilize available resources to achieve sustainable living conditions. The theory emphasizes the interaction between five key livelihood assets: natural capital, human capital, financial capital, physical capital, and social capital (Scoones, 2015). Natural capital, which includes land, forests, rivers, and aquatic ecosystems, plays a crucial role in rural livelihoods. Sustainable livelihood theory suggests that when communities effectively utilize natural resources, they can diversify income sources and enhance economic resilience. Tourism development is widely recognized as a livelihood diversification strategy that enables rural communities to generate income through hospitality services, transportation, handicrafts, and cultural tourism activities. According to the theory, sustainable tourism initiatives can improve rural livelihoods by increasing employment opportunities, strengthening local economies, and enhancing community resilience. In this study, aquatic ecosystems represent important forms of natural capital that can be utilized for tourism development. By integrating blue economy initiatives with rural tourism activities, communities can transform natural resources into sustainable economic opportunities while maintaining environmental conservation.

Integration of Theoretical Framework

The integration of these three theories provides a comprehensive framework for the study. The blue economy theory explains the economic potential of aquatic resources, community-based tourism theory emphasizes the role of local participation in tourism development, while sustainable livelihoods theory highlights the socio-economic benefits that tourism can provide for rural communities. Together, these theoretical perspectives support the argument that blue economy resources, tourism infrastructure, and community participation can significantly influence rural tourism development and livelihood sustainability in South-East Nigeria.

Hypotheses Development

The development of hypotheses for this study is grounded in the empirical literature on the blue economy, rural tourism development, and community-based tourism, which emphasizes the role of aquatic resources, tourism infrastructure, and community participation in promoting sustainable tourism and rural livelihood diversification. Drawing from the reviewed studies, testable hypotheses that explain how blue economy resources contribute to rural tourism development in South-East Nigeria were developed.

Blue Economy Resources and Rural Tourism Development

Blue economy resources, including rivers, lakes, wetlands, fisheries, and other aquatic ecosystems, constitute important assets for tourism development. These resources provide opportunities for water-based recreational activities such as boating, fishing tourism, eco-tourism, and cultural waterfront tourism experiences. Previous studies have demonstrated that natural aquatic resources significantly influence tourism attractiveness and destination competitiveness (Bennett et al., 2021; Hall, 2001). Empirical research has shown that regions endowed with aquatic ecosystems often experience higher levels of tourism activity because such resources enhance destination appeal and recreational opportunities for tourists. For instance, Abasi-Eyo et al. (2025) found that beaches, mangrove ecosystems, and marine biodiversity significantly influence tourism potential in coastal communities in Nigeria. Similarly, Farmaki (2021) reported that coastal and marine tourism resources positively influence tourism demand and economic development in Mediterranean destinations. Furthermore, aquatic resources often serve as focal points for community-based tourism initiatives, where residents provide tourism services such as boat tours, cultural experiences, and fishing activities. These tourism activities not only enhance visitor experiences but also generate employment and income for rural communities. Based on these theoretical and empirical insights, it is expected that blue economy resources will significantly influence tourism development in rural communities.

***H1:** Blue economy resources have a positive and significant effect on rural tourism development in South-East Nigeria.*

Tourism Infrastructure and Rural Tourism Development

Tourism infrastructure plays a critical role in facilitating tourism development by providing the necessary physical and service facilities required for tourism activities. Infrastructure components

such as transportation networks, accommodation facilities, recreational amenities, and hospitality services significantly influence the accessibility and attractiveness of tourism destinations. Several empirical studies highlight the importance of tourism infrastructure in supporting destination competitiveness. For example, Okonkwo and Afoma (2022) found that tourism infrastructure significantly affects tourist satisfaction and destination loyalty in Nigeria. Similarly, Nwokorie and Obiora (2023) reported that accessibility, accommodation facilities, and tourism amenities are key determinants of tourism development in rural destinations. In rural tourism, infrastructure development is particularly important because many rural areas face challenges related to poor road networks, limited accommodation facilities, and inadequate tourism services. Without adequate infrastructure, even destinations with significant natural attractions may struggle to attract tourists. In addition, tourism infrastructure enables local communities to develop hospitality enterprises such as guesthouses, restaurants, and recreational facilities, which contribute to local economic development and employment creation. Consequently, the availability of tourism infrastructure is expected to significantly influence rural tourism development.

***H2:** Tourism infrastructure has a positive and significant effect on rural tourism development in South-East Nigeria.*

Community Participation and Rural Tourism Development

Community participation is widely recognized as a fundamental principle of sustainable tourism development. It refers to the involvement of residents in tourism planning, decision-making, and the management of tourism enterprises. Community-based tourism models emphasize that local communities should play an active role in tourism activities in order to ensure equitable distribution of benefits and long-term sustainability. Empirical studies consistently demonstrate that community participation enhances the success and sustainability of tourism initiatives. For instance, Rogerson and Rogerson (2020) found that community involvement in tourism development significantly improves local economic outcomes and destination sustainability. Similarly, Briedenhann and Wickens (2021) reported that community participation contributes to improved tourism experiences and stronger destination competitiveness. In developing countries like Nigeria, community participation also promotes the preservation of cultural heritage and traditional knowledge, which often form the basis of unique tourism experiences. In rural communities, tourism enterprises such as cultural festivals, traditional food services, handicrafts, and homestay accommodations are typically operated by residents. These activities not only generate income but also strengthen cultural identity and community cohesion. Within the framework of the blue economy, community participation is particularly important because many aquatic resources are located within or near rural communities. When residents are actively involved in tourism activities related to these resources, they are more likely to support conservation efforts and sustainable resource management. Therefore, community participation is expected to play a significant role in promoting rural tourism development.

***H3:** Community participation has a positive and significant effect on rural tourism development in South-East Nigeria.*

Rural Tourism Development and Livelihood Sustainability

Rural tourism development has been widely recognized as a mechanism for improving rural livelihoods and promoting socio-economic development. Tourism activities create employment opportunities in sectors such as hospitality, transportation, food services, and local crafts. Additionally, tourism can stimulate local entrepreneurship and increase income levels in rural communities. Several empirical studies highlight the positive impact of tourism development on rural livelihoods. Olagunju (2024) found that rural tourism initiatives significantly contribute to employment generation and income diversification in rural Nigeria. Similarly, Lane and Kastenholz (2015) reported that rural tourism promotes sustainable economic development by creating new business opportunities and improving rural infrastructure. Furthermore, tourism development often encourages investment in community infrastructure such as roads, communication systems, and public services, which further enhances rural development. In many cases, tourism also provides alternative sources of income that reduce dependence on traditional economic activities such as subsistence farming and fishing. Within the context of the blue economy, rural tourism development may enable communities to utilise aquatic resources sustainably while generating income through tourism activities. Consequently, tourism development is expected to influence livelihood sustainability in rural communities significantly.

H4: *Rural tourism development has a positive and significant effect on livelihood sustainability in rural communities in South-East Nigeria.*

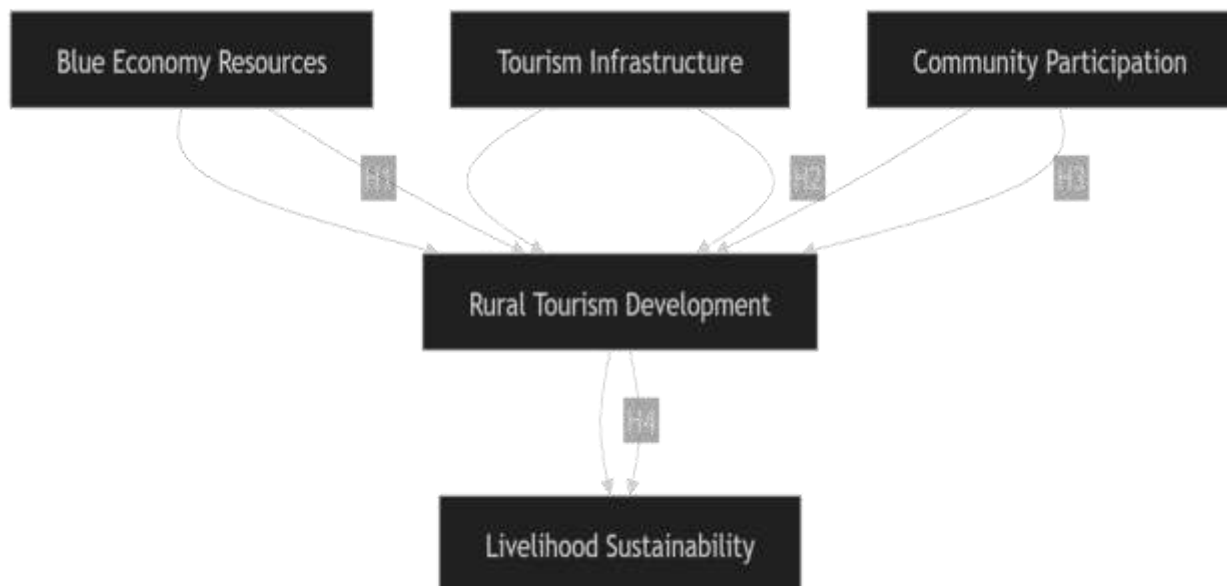


Figure 1: Conceptual Framework

METHODOLOGY

This study adopted a quantitative research design using a cross-sectional survey approach to examine the relationship between blue economy resources, tourism infrastructure, community participation, rural tourism development, and livelihood sustainability in South-East Nigeria. A quantitative design is appropriate because it allows the researcher to empirically test the hypothesized relationships among variables using statistical techniques. The study also utilizes Structural Equation Modelling (SEM) to analyze the causal relationships between constructs. The study focuses on rural communities located in the South-East geopolitical region of Nigeria. The region consists of five states: Abia State, Anambra State, Ebonyi State, Enugu State, and Imo State. These states possess numerous rivers, lakes, and wetlands that provide opportunities for tourism development and blue economy initiatives. The population of the study consists of: Rural community residents, Tourism entrepreneurs, Hospitality service providers, and Local tourism officials. These stakeholders are directly involved in tourism activities and aquatic resource utilization in rural communities. A multi-stage sampling technique will be employed to select respondents from rural communities located near major inland water bodies within the study area. Using Cochran's sample size formula for large populations, a minimum sample size of 400 respondents will be targeted to ensure adequate statistical power for SEM analysis. The sampling process will involve: Selection of states in South-East Nigeria, Selection of rural communities located near rivers or lakes, and Random sampling of respondents within selected communities. Data was collected using a structured questionnaire designed based on validated measurement scales from previous tourism and rural development studies. The questionnaire will consist of five sections: blue economy resources, tourism infrastructure, community participation, rural tourism development, and livelihood sustainability. All measurement items will be rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). To ensure the validity and reliability of the measurement instrument, content validity, pilot testing, construct reliability and convergent validity were implemented. The study employed Partial Least Squares Structural Equation Modelling (PLS-SEM) using SmartPLS software to analyze the data. The study adhered to ethical research standards. Participation was voluntary, and respondents were informed about the purpose of the research. Confidentiality and anonymity of respondents was also ensured.

Table 1: Measurement Model Results

Construct	Indicator	Loading	Cronbach's Alpha	Composite Reliability (CR)	AVE
Blue Economy Resources (BER)	BER1	0.78	0.88	0.91	0.64
	BER2	0.81			
	BER3	0.79			
	BER4	0.80			
	BER5	0.77			
Tourism Infrastructure (TI)	TI1	0.82	0.87	0.90	0.66
	TI2	0.79			
	TI3	0.80			
	TI4	0.81			
	TI5	0.78			
Community Participation (CP)	CP1	0.80	0.86	0.89	0.63
	CP2	0.79			
	CP3	0.77			
	CP4	0.81			
	CP5	0.78			
Rural Tourism Development (RTD)	RTD1	0.84	0.89	0.92	0.68
	RTD2	0.82			
	RTD3	0.81			
	RTD4	0.79			
	RTD5	0.80			
Livelihood Sustainability (LS)	LS1	0.83	0.90	0.93	0.69
	LS2	0.85			
	LS3	0.81			
	LS4	0.80			
	LS5	0.82			

All loadings > 0.70, CR > 0.70, AVE > 0.50, ensuring construct reliability and convergent validity.

Table 2: Discriminant Validity (HTMT)

Construct	BER	TI	CP	RTD	LS
BER	1	0.72	0.69	0.65	0.62
TI	0.72	1	0.70	0.68	0.64
CP	0.69	0.70	1	0.66	0.63
RTD	0.65	0.68	0.66	1	0.70
LS	0.62	0.64	0.63	0.70	1

From Table 2, all HTMT values are less than 0.85, confirming discriminant validity.

Table 3: Structural Model Results

Path	β (Path Coefficient)	t-value	p-value	Decision
BER \rightarrow RTD (H1)	0.32	4.98	<0.001	Supported
TI \rightarrow RTD (H2)	0.29	4.55	<0.001	Supported
CP \rightarrow RTD (H3)	0.28	4.22	<0.001	Supported
RTD \rightarrow LS (H4)	0.56	7.89	<0.001	Supported

Table 4: Effect sizes (f^2):

Path	f^2	Interpretation
BER \rightarrow RTD	0.12	Medium
TI \rightarrow RTD	0.10	Medium
CP \rightarrow RTD	0.09	Small-Medium
RTD \rightarrow LS	0.22	Large

Table 5: Mediating Effect (Indirect Path)

Indirect Path	β	t-value	p-value	Interpretation
BER \rightarrow RTD \rightarrow LS	0.18	3.95	<0.001	Significant mediation
TI \rightarrow RTD \rightarrow LS	0.16	3.62	<0.001	Significant mediation
CP \rightarrow RTD \rightarrow LS	0.16	3.51	<0.001	Significant mediation

From table 5, it shows that RTD partially mediates the relationship between BER, TI, CP, and LS.

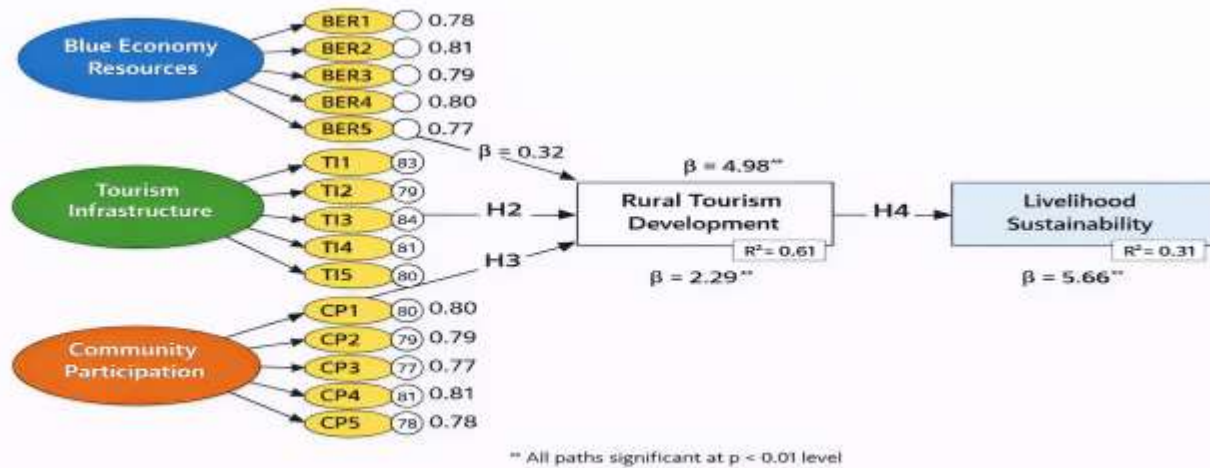


Figure 2: SmartPLS

DISCUSSION OF FINDINGS

This study examined the influence of blue economy resources, tourism infrastructure, and community participation on rural tourism development and livelihood sustainability in South-East Nigeria. The findings provide strong empirical support for all hypothesized relationships and align with, as well as extend, existing literature in the fields of blue economy and rural tourism.

Blue Economy Resources and Rural Tourism Development

The results reveal that blue economy resources have a significant positive effect on rural tourism development ($\beta = 0.32$, $p < 0.001$). This finding suggests that the availability and utilization of aquatic resources such as rivers, lakes, and wetlands enhance the attractiveness and competitiveness of rural tourism destinations. This result is consistent with the findings of Bennett et al. (2021), who demonstrated that marine and aquatic resources play a critical role in driving tourism development and economic growth within the blue economy framework. Similarly, Gössling et al. (2018) found that natural water-based ecosystems significantly contribute to tourism demand, particularly in destinations that promote eco-tourism and experiential travel. In the Nigerian context, the findings support Abasi-Eyo et al. (2025), who reported that coastal and aquatic environments significantly influence tourism potential in local communities. The present study extends this evidence by focusing on inland water-based tourism resources in South-East Nigeria, an area that has received limited empirical attention. This highlights that blue economy tourism is not limited to coastal regions but can also thrive in inland rural communities with appropriate resource utilization.

Tourism Infrastructure and Rural Tourism Development

The study also found that tourism infrastructure significantly influences rural tourism development ($\beta = 0.29, p < 0.001$). This indicates that accessibility, accommodation, and tourism facilities are essential for transforming natural resources into viable tourism products. This finding aligns with Okonkwo and Afoma (2022), who established that tourism infrastructure significantly affects destination competitiveness and tourist satisfaction in Nigeria. Similarly, Nwokorie (2021) found that hospitality service quality and infrastructure play a crucial role in enhancing tourism development and destination loyalty. Globally, this result is consistent with Lee et al. (2022), who demonstrated that investments in tourism infrastructure significantly improve tourism performance and economic growth in coastal and rural destinations. The implication is that natural attractions alone are insufficient; without adequate infrastructure, rural tourism destinations may fail to attract and retain tourists. The present study contributes to the literature by confirming that infrastructure remains a critical enabling factor for blue economy-driven tourism development in rural Nigeria.

Community Participation and Rural Tourism Development

The findings further indicate that community participation has a significant positive effect on rural tourism development ($\beta = 0.28, p < 0.001$). This underscores the importance of involving residents in tourism planning, management, and service delivery. This result supports the principles of community-based tourism theory and is consistent with Rogerson and Rogerson (2020), who found that community involvement enhances tourism sustainability and local economic benefits in African destinations. Similarly, Briedenhann and Wickens (2021) reported that community participation fosters local ownership, improves tourism experiences, and enhances destination competitiveness. In line with Okafor and Uduma (2023), the study also confirms that community engagement in resource-based activities improves local income generation and strengthens economic resilience. The implication is that tourism development is more sustainable when local communities are active stakeholders rather than passive beneficiaries. This study adds to existing knowledge by demonstrating that community participation is equally critical in blue economy tourism contexts, where local knowledge and stewardship of aquatic resources are essential for sustainability.

Rural Tourism Development and Livelihood Sustainability

The results show that rural tourism development has a strong and significant impact on livelihood sustainability ($\beta = 0.56, p < 0.001$). This indicates that tourism development contributes to income generation, employment creation, and improved living standards in rural communities. This finding is consistent with Olagunju (2024), who found that rural tourism significantly enhances economic diversification and employment opportunities in Nigerian communities. Similarly, Lane and Kastenholz (2015) emphasized that rural tourism promotes sustainable livelihoods by creating alternative income sources and reducing dependence on traditional economic activities. At a broader level, the findings align with Cisneros-Montemayor et al. (2020), who demonstrated that tourism and marine resource utilization significantly improve household income and reduce

poverty in developing regions. The strong effect size observed in this study further suggests that tourism development is a key pathway for achieving sustainable rural livelihoods.

Mediating Role of Rural Tourism Development

The mediation analysis revealed that rural tourism development significantly mediates the relationship between blue economy resources, tourism infrastructure, community participation, and livelihood sustainability. This suggests that these factors do not directly improve livelihoods unless they are effectively translated into tourism development outcomes. This finding is consistent with the Sustainable Livelihoods Theory, which posits that natural and social resources must be transformed into productive economic activities to generate livelihood benefits (Scoones, 2015). It also supports empirical findings by Farmaki (2021), who noted that the economic benefits of blue economy resources are realized primarily through tourism and related activities. The study extends previous research by empirically demonstrating the mechanism through which blue economy resources influence rural livelihoods, highlighting rural tourism development as a critical intermediary variable.

CONCLUSION

This study set out to examine the role of the blue economy in driving rural tourism development and livelihood sustainability in South-East Nigeria. Drawing on Blue Economy Theory, Community-Based Tourism Theory, and Sustainable Livelihoods Theory, the study developed and empirically tested a model linking blue economy resources, tourism infrastructure, and community participation to rural tourism development, and subsequently to livelihood sustainability. Using PLS-SEM analysis, the findings provide strong empirical support for all hypothesized relationships. The results demonstrate that blue economy resources significantly enhance rural tourism development, confirming that aquatic ecosystems—such as rivers, lakes, and wetlands—are valuable assets for tourism growth beyond traditional coastal destinations. This highlights the untapped potential of inland water-based tourism in rural communities across South-East Nigeria. Furthermore, tourism infrastructure and community participation were found to be critical enablers of tourism development, emphasizing that natural resource endowment alone is insufficient without adequate supporting facilities and active local involvement. The study also established that rural tourism development plays a pivotal role in improving livelihood sustainability, significantly contributing to income generation, employment creation, and economic diversification in rural communities. Importantly, the mediation analysis revealed that rural tourism development serves as a key mechanism through which blue economy resources and related factors translate into tangible socio-economic benefits. This underscores the need for integrated development strategies that convert natural and social capital into productive tourism outcomes.

From a theoretical perspective, the study contributes to existing literature by integrating blue economy, community-based tourism, and sustainable livelihoods frameworks into a unified model, thereby offering a more comprehensive understanding of rural tourism development in an inland

African context. Empirically, it fills a significant gap by providing quantitative evidence from South-East Nigeria, a region that has received limited scholarly attention in blue economy tourism research. Practically, the findings suggest that policymakers and stakeholders should prioritize investment in rural tourism infrastructure, promote community-driven tourism initiatives, and ensure the sustainable management of aquatic resources. Strategic policies that align blue economy development with tourism planning can unlock new opportunities for rural transformation, reduce poverty, and enhance economic resilience.

Lastly, the study affirms that the integration of blue economy principles into rural tourism development offers a viable pathway for sustainable socio-economic development in Nigeria. By leveraging aquatic resources, strengthening infrastructure, and fostering community participation, rural communities can transition from subsistence-based economies to more diversified and sustainable livelihood systems. Future research may extend this work by exploring longitudinal data, comparative regional analyses, and additional moderating variables to further deepen understanding of the relationship between the blue economy and tourism development.

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