

Marine tourism's economic impact on sustainable livelihoods in Mombasa County, Kenya

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Abstract

Purpose: This study explored how economic aspects of marine tourism influence sustainable livelihoods in Mombasa County, Kenya.

Methods: The study was conducted in Mombasa County, Kenya, using a mixed-methods approach guided by sustainable tourism development theory and stakeholder theory. Quantitative data were collected using structured questionnaires from 384 community members and analyzed using SPSS version 23 for regression and descriptive statistics. Qualitative data were gathered through in-depth interviews with 73 key informants, including beach operators and tourism officials, and analyzed thematically.

Results: Findings revealed a statistically significant positive relationship between marine tourism's economic aspects and sustainable livelihoods. The study also identified key challenges such as income inequality, dependency on seasonal tourism jobs, and limited participation in decision-making processes.

Conclusion: The study concludes that marine tourism contributes positively to sustainable livelihoods in Mombasa County, but its benefits are unevenly distributed and highly vulnerable to seasonal fluctuations. Strengthening community participation and diversifying income sources beyond tourism are essential for long-term livelihood resilience.

Limitations: The cross-sectional design limits the ability to assess long-term changes, and findings may not be generalizable beyond Mombasa County.

Contribution: This study informs tourism management, sustainable development, and coastal management by emphasizing community involvement and economic diversification to maximize benefits and mitigate negative impacts.

Keywords: *Economic Aspects, Kenya, Marine Tourism, Sustainable Livelihood*

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1. Introduction

Marine tourism plays a crucial role in promoting sustainable livelihoods, particularly in coastal communities where dependence on natural resources is high (Charles, 2022). A livelihood is considered sustainable if it can withstand external pressures, enhance available resources, and prevent resource depletion, thereby fostering environmental stewardship and economic resilience (Baporikar, 2019). In many coastal regions, marine tourism has emerged as a key driver of economic growth, offering opportunities for local communities to improve their means of subsistence. It supported local cultural heritage, strengthened community social service capacity, and revitalized cultural practices, thereby

contributing positively to the socio-economic well-being of these communities (Bhuiyan, Darda, Habib, & Hossain, 2020).

However, marine tourism also presents significant challenges to sustainable livelihoods due to resource overuse, unequal distribution of benefits, climate change impacts, inadequate policy implementation, and cultural disruptions (Praptiwi et al., 2021). For example, the expansion of marine tourism infrastructure in the United States led to sustainability concerns, prompting the National Oceanic and Atmospheric Administration (NOAA) to establish standards and regulations to balance economic benefits with environmental protection (Gazal, Andrew, & Burns, 2022). In Southeast Asia, countries such as Thailand have become popular marine tourism destinations, significantly contributing to their economic development. Indonesia, the Philippines, and Malaysia have adopted marine tourism initiatives that emphasize the sustainable development of their marine resources, thereby showcasing unique regional activities while promoting environmental conservation (Wenhai et al., 2019).

Similarly, Egypt's Red Sea coast and South Africa's coastline attract tourists with activities such as diving, snorkeling, and wildlife viewing, which significantly boost their local economies (Jonas, Radder, & Van Eyk, 2019; Kostiania, Kostianoy, Lavrova, & Soloviev, 2020). Central to these global efforts is the concept of the blue economy, which promotes the sustainable use of ocean resources for economic growth, improved livelihoods and ecosystem health (Bank, 2017). The blue economy framework emphasizes the integration of economic activities, such as marine tourism, with environmental conservation and social inclusion, ensuring that coastal communities benefit equitably while preserving marine ecosystems for future generations. This approach has gained traction globally as a means of addressing the dual challenges of economic development and environmental sustainability in coastal regions.

In Kenya, the coastal region, particularly Mombasa County, has developed as a major hub for marine tourism, with activities ranging from beach vacations and water sports to ocean wildlife viewing (Owuor, Icely, & Newton, 2019). The growth of marine tourism in Kenya has included the expansion of beach facilities, hotels, and other infrastructure catering to both domestic and international tourists. However, this growth was accompanied by significant environmental challenges, including pollution, poor waste management, and degradation of marine ecosystems, which posed risks to the sustainability of livelihoods that relied on these resources (Rasowo, Orina, Nyonje, Awuor, & Olendi, 2020). Local communities in Mombasa actively participate in and benefit from marine tourism-related economic activities, facilitated by the blue economy framework that emphasizes the sustainable use of marine resources (Mshai, Kariuki, & Ndubi, 2022).

Despite these economic opportunities, the region faces challenges such as inadequate natural resources, environmental degradation, and pollution, which threaten the sustainability of these livelihoods (Mulwa, 2021). Tourism and fishing are crucial sources of revenue and employment in Mombasa County, underpinning the region's economic stability. However, these industries are highly susceptible to external pressures, such as deteriorating environmental conditions and economic downturns (Mwawaza, Kariuki, & Ndubi, 2022). Despite its economic significance, the tourism sector has not translated into financial security for many residents. According to a recent FinAccess survey, only 14.4% of Mombasa County's citizens are financially secure, highlighting a worrying gap between the tourism sector's economic potential and local communities' livelihoods (Management, 2022).

This gap is further exemplified by studies conducted in other areas. For example, Bhuiyan et al. (2020) found that marine tourism in Bangladesh provided economic opportunities for local women and young people but also led to social tensions and conflicts, indicating that the benefits of tourism are not always evenly distributed among the local population. Similarly, Grydehøj (2019) observed that marine tourism can improve living standards in nearby areas by creating jobs through the utilization of natural resources. However, to maximize these benefits, there needs to be a focus on ensuring that tourism development is inclusive and sustainable.

In Mombasa, the marine tourism sector holds significant potential for economic growth but is hindered by environmental challenges, such as coral reef degradation, pollution, and poor waste management practices. Woodhead et al. (2021) noted that environmental factors, such as coral reef degradation, negatively affect fishery productivity, which in turn impacts the livelihoods of fishermen who depend on these resources. This underscores the need for a balanced approach that integrates both economic and environmental considerations in marine tourism development. Despite the Kenyan government's efforts, such as developing policy frameworks to promote sustainable tourism, challenges remain in their implementation. (2020) identified gaps in institutional, legal, and regulatory frameworks that continue to hinder the growth of a sustainable marine tourism sector in Mombasa (Kadagi, Wambiji, & Swisher, 2020). Addressing these challenges is crucial for creating sustainable solutions that enhance the livelihoods of local communities.

This study examined the economic aspects of marine tourism and its effects on the sustainable livelihoods of local communities in Mombasa County. It explored how marine tourism influences the socio-economic conditions of these communities, focusing on balancing economic development and environmental conservation through the lens of the blue economy framework. By addressing these gaps, this study contributes to strategies that could enhance the sustainable development of marine tourism, ultimately benefiting the local communities in Mombasa.

2. Literature Review

2.1 Theoretical framework

2.1.1 Theory of Sustainable Tourism Development

The Theory of Sustainable Tourism Development emphasizes the importance of a collaborative approach in designing and implementing tourism initiatives to maximize benefits and minimize negative impacts on local communities. According to Tahiri, Kovaçi, and Trajkovska Petkoska (2022), responsible tourism practices should involve lawmakers, local residents, and businesses working together to harness the potential economic benefits while addressing environmental and social risks. Kuntai (2020) highlighted that governments must consider the socio-cultural, economic, and environmental implications of tourism activities before making strategic decisions. This theory is particularly relevant to marine tourism, which relies heavily on coastal and marine ecosystems, as it underscores the need to balance economic gains with sustainable use of natural resources to support the livelihoods of coastal communities.

Marine tourism, which encompasses activities such as snorkeling, scuba diving, beach recreation, and wildlife viewing, plays a critical role in supporting the livelihoods of coastal communities by generating income, creating employment opportunities, and fostering economic diversification (Harker et al., 2022). However, it also poses risks such as environmental degradation, resource depletion, and socioeconomic inequalities if not managed sustainably (Praptiwi et al., 2021). The Theory of Sustainable Tourism Development is thus crucial for understanding how marine tourism can be structured to enhance economic resilience, promote environmental stewardship, and ensure equitable benefits for coastal communities. Key dimensions of this theory in the context of marine tourism include: (1) economic sustainability, which focuses on generating stable income and employment for local communities; (2) environmental sustainability, which emphasizes the conservation of marine ecosystems; and (3) social sustainability, which ensures community involvement and equitable benefit distribution.

In the context of Mombasa County, this study applied the principles of Sustainable Tourism Development to examine the economic aspects of marine tourism and its impact on the livelihoods of local communities. By focusing on how well-planned tourism policies can benefit both the local population and the management of tourism destinations, this study explored whether marine tourism activities contribute to economic resilience and environmental stewardship in the region. The findings highlight the need for comprehensive tourism strategies that not only drive economic growth but also ensure the long-term sustainability of marine resources and the well-being of local communities, particularly by addressing challenges such as pollution, over-reliance on tourism, and unequal benefit distribution.

2.1.2. Stakeholder theory

Stakeholder Theory, introduced by Freeman (1984), defines a stakeholder as "any group or individual who can affect or is affected by the achievement of an organization's objectives." This theory emphasizes that organizations, including those in the tourism sector, must create value for all stakeholders, not just for the proprietors or investors (Salman, Jaafar, Mohamad, & Khoshkam, 2023). In the context of marine tourism development, it is essential to involve all relevant stakeholders, such as local communities, government bodies, tourism operators, environmental groups, and tourists, in the planning and execution processes to achieve sustainable outcomes. Failing to include key stakeholders can lead to conflicts and environmental degradation and undermine the success of tourism initiatives. In marine tourism, stakeholders play distinct yet interconnected roles that influence economic impact, sustainability, and community livelihoods.

For instance, local communities are both beneficiaries and stewards of marine resources, relying on tourism for income while being responsible for resource conservation. Government bodies are critical in policy formulation and enforcement, ensuring that marine tourism aligns with sustainability goals, such as those outlined in the Blue Economy framework (Bank, 2017). Tourism operators drive economic activity by providing services and infrastructure; however, they must adopt sustainable practices to minimize environmental harm. Environmental groups advocate for ecosystem protection, whereas tourists influence demand and economic benefits through their preferences and behaviors.

Thus, Stakeholder Theory is vital for understanding how these diverse roles and interests can be harmonized to support sustainable livelihoods in coastal regions. Key dimensions of Stakeholder Theory in the context of marine tourism include: (1) stakeholder identification, which involves recognizing all groups affected by or affecting marine tourism; (2) stakeholder engagement, which emphasizes inclusive decision-making processes; and (3) stakeholder impact, which assesses how marine tourism affects the economic, social, and environmental well-being of each group, particularly local communities. These dimensions are critical for addressing challenges such as unequal benefit distribution, environmental degradation, and conflicts over resource use, all of which impact the sustainability of coastal livelihood.

This theory is particularly relevant to this study, which focuses on the economic aspects of marine tourism and its impact on the sustainable livelihoods of local communities in Mombasa County. This study examined how engaging local stakeholders in the marine tourism sector influences economic opportunities and sustainability. As noted by Ndeche, Kariuki, and Ndubi (2021), incorporating local communities' perspectives into tourism planning is crucial for reducing conflicts and enhancing social cohesion. By applying Stakeholder Theory, this study analyzed the dynamics between local communities and other stakeholders involved in marine tourism, highlighting the importance of community engagement in ensuring that economic benefits are equitably distributed and contribute to sustainable livelihoods.

The application of Stakeholder Theory in this context helped to reveal how the involvement of local communities in decision-making processes related to marine tourism could enhance their economic resilience. It also shows the significance of multi-stakeholder collaboration in promoting sustainable development that supports both the economic well-being of local residents and the conservation of Mombasa's coastal and marine ecosystems. For example, the study explored how government policies, tourism operator practices, and community initiatives can be aligned to mitigate environmental pressures, such as coral reef degradation, while maximizing economic benefits, such as job creation and income generation.

2.2. Empirical review

Harker et al. (2022) investigated the ties within livelihoods and wellness at Watamu Marine National Park and Reserve in Kilifi County, Kenya, creating development in beach facilities and improved infrastructural conditions. The study reveals that marine tourism pursuits, including scuba diving and snorkeling, enhance regional economies and sustain local livelihoods. This study aimed to fill this gap

by collecting data from residents of Mombasa County, Kenya. Grydehøj (2019) focused on Grydehøj (2019) marine island economies, namely the Maritime Silk Road of the 21st Century and international island economic cooperation. This study was empirical and relied on secondary data. It draws attention to the financial advantages that marine tourism has for nearby areas, including the development of jobs to build and work at accommodation areas: hotels, resorts, and inns that raise income. The study focused on the economic factors of marine tourism, whereas the current study investigated four aspects.

Singgale and Simange (2018) examined how rural tourism affected local communities' way of life in Indonesia's North Maluku Province's coastline region. According to the report, rural tourism has improved local communities' financial well-being by fostering new job opportunities and stimulating economic activity. It was also determined that the availability of essential amenities and infrastructure is essential for the development of rural tourism. To counteract adverse effects on the environment and local culture, this study underlines the significance of sustainable tourism practices and community involvement in tourism planning and management. The previous study was based in a rural setting in Indonesia, while the current study was based in an urban setting in Mombasa County, one of the largest cities in Kenya.

Similarly, Prakasa, Sawu, and Ulinuha (2025) focused on community empowerment in marine ecotourism in the Spermonde Archipelago, Indonesia. This study developed a framework that promotes political, economic, and environmental inclusion. It was found that while communities were economically motivated to participate in tourism, limited skills and awareness constrained their full engagement. This resonates with the situation in Mombasa, where community involvement in marine tourism exists but is often limited by capacity gaps and resource constraints. In another Indonesian case, Soeswoyo, Arafah, Oktadiana, and Budiman (2025) examined the role of cultural preservation in sustainable tourism in the Cimande Tourism Village.

The study identified nine core cultural elements central to tourism appeal but also highlighted challenges such as low community participation, insufficient stakeholder support, and a lack of digital marketing. The study's emphasis on intangible cultural heritage as a tourism driver is particularly relevant for Mombasa, where Swahili culture and coastal traditions present untapped opportunities for sustainable tourism. Broadening the geographic scope, Apriani, Kamsariaty, Sarinastiti, Yuliastuti, and Sukmayadi (2023) investigated sustainable tourism practices in Bali, using structural equation modeling to assess environmental, social, and economic sustainability. While the study acknowledged progress in sustainability efforts, it also noted ongoing challenges in balancing economic growth with environmental protection and ensuring equitable benefit distribution.

These findings align with the Kenyan context, where marine tourism contributes to economic activity but often fails to translate into widespread financial stability for local communities. In the Philippines, Lichauco (2022) studied resort-related tourism growth in Montalban, Rizal, using systems theory to assess the interconnections between economic viability, environmental degradation, and social welfare. While resorts were found to be commercially successful, the study revealed the overexploitation of natural resources, declining groundwater quality, and precarious employment conditions for tourism workers. This mirrors the situation in parts of Mombasa, where infrastructure-driven tourism development has raised concerns about environmental sustainability and livelihood quality.

Ekpah (2021) investigated the ecotourism potential and wildlife status of the Lekki Conservation Centre in Lagos, Nigeria. The study revealed a significant decline in wildlife species over a ten-year period, emphasizing the impact of tourism and environmental stressors on the biodiversity. The findings highlight the importance of biodiversity monitoring and ecotourist feedback in shaping conservation policy, paralleling Mombasa's concerns with marine ecosystem degradation.

3. Research Methodology

This study adopted a mixed-methods approach to investigate the effects of marine tourism economic aspects on local communities' sustainable livelihoods in Mombasa County, Kenya. The study was conducted using a cross-sectional survey design, which allowed data collection at a single point in time

to capture the current economic, social, and environmental impacts of marine tourism on local livelihoods. The mixed-methods approach integrated both quantitative and qualitative data, leveraging the strengths of each to provide a comprehensive understanding of the research problem. This approach was guided by the theoretical framework, specifically the Theory of Sustainable Tourism Development and Stakeholder Theory, to ensure that the methodology addressed key dimensions of marine tourism, including economic sustainability (e.g., employment, income generation, and economic diversification), environmental sustainability (e.g., resource conservation and pollution impacts), social sustainability (e.g., community involvement and cultural impacts), and stakeholder dynamics (e.g., roles, engagement, and conflicts).

Quantitative data were collected using structured questionnaires administered to community members, local business operators and stakeholders in the marine tourism sector. The questionnaires were designed to capture data on various aspects of marine tourism, such as employment opportunities, income levels, economic diversification, access to marine resources, community participation in tourism planning, and perceptions of environmental impacts, in alignment with the principles of Sustainable Tourism Development Theory. Qualitative data were gathered through in-depth interviews with key informants, including representatives from government bodies, marine protected areas (MPAs), beach operators, environmental groups, and local community leaders. These interviews explored stakeholder roles, engagement processes, conflicts, and the broader socio-economic and environmental implications of marine tourism, reflecting the dimensions of the Stakeholder Theory.

This approach enabled triangulation of the data, thereby enhancing the validity of the research findings by cross-validating quantitative trends with qualitative insights. The target population comprised various stakeholders impacted by marine tourism, including local residents, business operators and employees of regulatory bodies in Mombasa County. A stratified random sampling technique was used to select a representative sample of 384 respondents from the larger community, ensuring the proportional representation of different groups (e.g., fishermen, tourism workers, and local entrepreneurs) to capture diverse perspectives on the economic, social, and environmental contributions of marine tourism.

Purposive sampling was employed to identify 73 key informants for interviews, selected based on their expertise, roles, and influence in the marine tourism sector, such as policymakers, environmental advocates, and community leaders. This was done to provide insights into the dynamics of stakeholders and sustainability challenges. Quantitative data were analyzed using the Statistical Package for Social Sciences (SPSS) version 23, where descriptive statistics such as means, frequencies, and percentages were computed to summarize the economic, social, and environmental impacts of marine tourism in the area.

Furthermore, simple linear regression was used to assess the relationship between the economic aspects of marine tourism (e.g., employment, income generation, and economic diversification) and sustainable livelihoods, while also exploring associations with environmental and social factors (e.g., resource access and community empowerment). This analysis was informed by Sustainable Tourism Development Theory, which emphasizes the interplay of economic, environmental, and social dimensions in achieving sustainability. Qualitative data were analyzed thematically to identify patterns and insights related to the economic benefits, environmental challenges, social impacts, and stakeholder dynamics faced by local communities, thus providing a deeper understanding of how marine tourism influences their socioeconomic well-being and aligns with the principles of Stakeholder Theory).

4. Results and Discussion

4.1 Demographic Profile and Participation in Beach Recreation

4.1.1 Economic aspects of marine tourism

This study sought to determine the influence of the economic aspects of marine tourism on the sustainable livelihoods of local communities in Mombasa County, Kenya. Respondents were requested to express their level of agreement with a list of statements characterizing the economic aspects of marine tourism within their local communities. The propositions were structured using a 5-point Likert

scale with 1 signifying “Strongly disagree” and 5 representing “Strongly agree.” The outcomes derived from the response analysis are summarized in Table 1.

Table 1. Descriptive statistics for economic aspects of marine tourism

Statement	N	Mean	SD
The environmental impact of marine tourism on our community's infrastructure has been adequately addressed	300	4.06	0.80
The beaches in Mombasa County are clean	300	4.04	0.80
The growth of marine tourism has increased the availability of job opportunities in the hotel industry	300	4.01	0.82
The development of hotels due to marine tourism has led to the displacement of local residents	300	4.01	0.80
The growth of marine tourism has led to increased traffic congestion in our community	300	4.00	0.83
The beaches in Mombasa County have opened job opportunities for the locals	300	3.98	0.85
The availability of quality beach facilities has improved due to marine tourism	300	3.97	0.82
The growth of marine tourism has led to an increase in property value in our community	300	3.97	0.83
Marine tourism has led to the development of better infrastructure in our community	300	3.95	0.81
Marine tourism has led to the development of more and better hotels in our community	300	3.95	0.80
The beaches in the region are often populated during the weekend	300	3.95	0.80
The community benefits from the revenue generate by marine tourism through the development of better infrastructural facilities	300	3.92	0.82
Overall Mean Score	300	3.98	0.24

Source: Researcher (2024)

The results show that marine tourism has manifested economically through the growth of the hotel industry, as evidenced by the increased availability of job opportunities in the hotel industry ($M = 4.01$, $SD = 0.82$) and the development of more and better hotels in the community ($M = 3.95$, $SD = 0.80$). This growth has also led to an increase in property values in the community ($M = 3.97$, $SD = 0.83$). These findings reflect the economic sustainability dimension of the Sustainable Tourism Development Theory, which emphasizes the role of tourism in generating income and employment opportunities (Tahiri et al., 2022).

The economic impacts are further reflected in the improved availability of quality beach facilities ($M = 3.97$, $SD = 0.82$) and cleanliness of beaches in Mombasa County ($M = 4.04$, $SD = 0.80$), which have opened job opportunities for locals ($M = 3.98$, $SD = 0.85$). Marine tourism has also contributed to the development of better infrastructure in the community ($M = 3.95$, $SD = 0.81$), and the community benefits from the revenue generated by marine tourism through the development of better infrastructure facilities ($M = 3.92$, $SD = 0.82$). These results align with the environmental sustainability dimension of the Sustainable Tourism Development Theory, suggesting efforts to address environmental impacts through infrastructure improvements. However, the high agreement on cleanliness ($M = 4.04$, $SD = 0.80$) may indicate perceptions rather than actual environmental outcomes (Kuntai, 2020).

However, the growth of marine tourism has also led to some negative economic and social consequences, such as increased traffic congestion ($M = 4.00$, $SD = 0.83$) and the displacement of local residents due to hotel development ($M = 4.01$, $SD = 0.80$), with respondents strongly agreeing with both. These findings highlight the challenges to social sustainability, as emphasized by Sustainable Tourism Development Theory, and underscore the need for inclusive stakeholder engagement, as

advocated by Stakeholder Theory, to mitigate such negative impacts (Freeman, 1984; Salman et al., 2023).

Overall, the results reveal that the economic dimensions of marine tourism in Mombasa County are characterized by a mix of benefits and drawbacks. The overall mean score of 3.98 (SD = 0.24) suggests that respondents held a favorable view of marine tourism's economic impact on their community despite some negative consequences, reflecting the complex interplay of economic, environmental, and social dimensions of sustainability.

4.1.2. Sustainable livelihood of local community members

Respondents were requested to express their level of agreement with a set of statements characterizing the sustainable livelihood of local community members. These statements were formulated using a 5-point Likert scale, with 1 representing “strongly disagree” and 5 representing “strongly agree”. Table 2 presents the findings derived from the descriptive analysis of the responses.

Table 2. Descriptive statistics for sustainable livelihood of local community members

Statement	N	Mean	SD
I am able to provide my household with the basic needs	300	4.08	0.80
I am unemployed but at times I earn income by guiding tourists in the marine sector	300	4.05	0.83
My side hustle is within the tourism sector	300	4.05	0.80
Living in Mombasa County is expensive	300	4.01	0.78
I live a comfortable life	300	3.99	0.84
My primary source of income is generated from the tourism sector	300	3.98	0.79
I am employed in the tourism sector	300	3.95	0.83
I have started a business within the tourism sector in Mombasa County	300	3.94	0.84
Overall Mean Score	300	3.94	0.84

Source: Researcher (2024)

The manifestation of sustainable livelihoods of local community members in Mombasa County is characterized by a sense of self-sufficiency and economic resilience. The majority of community members can provide their households with basic needs, with a mean score of 4.08 (SD = 0.80), indicating high economic security. Additionally, many community members have found alternative sources of income within the tourism sector, with mean scores of 4.05 (SD = 0.83) for earning income by guiding tourists and 4.05 (SD = 0.80) for having a side hustle in the sector, indicating that they can diversify their income streams and adapt to changing economic conditions. These findings reflect the economic sustainability dimension of the Sustainable Tourism Development Theory, which emphasizes the role of tourism in enhancing income and employment opportunities (Tahiri et al., 2022).

However, the study also revealed that living in Mombasa County can be expensive, with a mean score of 4.01 (SD = 0.78), which may pose a challenge to community members' ability to save and invest in their livelihoods, potentially undermining long-term economic resilience. Despite this, many community members report living comfortable lives, with a mean score of 3.99 (SD = 0.84), suggesting that they can manage their finances effectively and maintain a decent standard of living. This balance between economic benefits and challenges highlights the need for social sustainability, as emphasized by the Sustainable Tourism Development Theory, to ensure that economic gains translate into broader well-being and equity (Kuntai, 2020).

The tourism sector appears to play a significant role in the livelihoods of community members, with many reporting that their primary source of income is generated from the sector (mean score = 3.98, SD = 0.79) and that they are employed in the sector (mean score = 3.95, SD = 0.83). Furthermore, some community members have started their own businesses within the tourism sector, with a mean score of 3.94 (SD = 0.84), indicating a high level of entrepreneurship and innovation. These findings align with

Stakeholder Theory, which emphasizes the importance of community engagement and empowerment in tourism development to ensure equitable economic benefits (Freeman, 1984; Salman et al., 2023).

Overall, the manifestation of sustainable livelihood of local community members in Mombasa County is characterized by a sense of economic resilience, adaptability, and innovation, with many community members able to diversify their income streams and maintain a decent standard of living despite the challenges posed by the high cost of living in the area. However, reliance on tourism as a primary income source raises concerns about economic vulnerability, particularly in light of environmental and social sustainability challenges, which are critical dimensions of sustainable livelihoods according to the theoretical framework.

4.2. Inferential statistics

Before conducting the regression analysis, the linear association between the economic aspects of marine tourism and sustainable livelihood was investigated using Pearson's correlation analysis, as shown in Table 3.

Table 3. Pearson correlation matrix for economic aspects and sustainable livelihoods

	1	2
1.Sustainable livelihood	1	
2. Economic aspects	.29**	1

* $p < .05$, ** $p < .01$

Source: Researcher (2024)

The results revealed a statistically significant positive correlation between sustainable livelihoods and economic aspects ($r = .29$, $p < .01$), indicating a moderate strength of association. This finding suggests that improvements in economic conditions related to marine tourism are positively associated with enhanced sustainable livelihood outcomes, highlighting the significance of economic factors in supporting the well-being of local communities involved in marine tourism activities. This relationship supports the Sustainable Tourism Development Theory's proposition that economic development through tourism can enhance community well-being, provided that environmental and social impacts are managed properly.

A simple linear regression analysis was used to achieve this objective. The results of the regression models are summarized in Table 4.

Table 4. Regression results for effect of economic aspects on sustainable livelihood

Predictor	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	β		
(Constant)	3.04	0.23		13.27	.000
Economic Aspects Composite Score	.284	0.05	0.29	5.28	.000

Note: $F(1, 298) = 27.88$, $p < .001$, $R^2 = .086$

Source: Researcher (2024)

The results indicate that $R^2 = .086$, implying that economic aspects of marine tourism account for 5.1% of the variation in the sustainable livelihood of local communities in Mombasa County. The ANOVA results, $F(1, 298) = 27.88$, $p < .001$, indicate that the regression model was statistically significant in predicting the effect of the economic aspect of marine tourism on the sustainable livelihood of the local communities in Mombasa County. Based on the results, the following prediction equation was derived:

$$\text{Sustainable livelihood} = 3.04 + 0.284 * \text{Economic Aspects}$$

The model suggests that an increase in the economic aspects of marine tourism by one unit would improve the sustainable livelihood of local communities in Mombasa County by a factor of 0.284. This effect was found to be statistically significant ($t(299) = 5.28, p < .001$). In light of these findings, H_{02} was rejected, and it was concluded that the economic aspects of marine tourism have a significant influence on the sustainable livelihood of local communities in Mombasa County. However, the relatively low R^2 value suggests that economic aspects alone do not fully explain sustainable livelihoods, reinforcing the importance of environmental and social dimensions, as well as stakeholder dynamics, as highlighted by the theoretical framework (Freeman, 1984; Tahiri et al., 2022).

The content analysis of the 30 key informant interviews conducted across different institutions that facilitate marine tourism in Mombasa County revealed several emergent themes, as shown in Table 5.

Table 5. Emergent themes for the effect of economic aspects on sustainable livelihood

Theme	Code	Description	Frequency
Dependence on Tourism Sector	Primary income source	Reliance on tourism sector as primary source of income	18
	Diversified income	Income sources beyond the tourism sector	12
Economic impacts	Positive impacts	Highlights of positive economic impacts of marine tourism	24
	Negative impacts	Highlights of negative economic impacts of marine tourism	11
Promoting sustainable livelihoods	Community-based initiatives	Suggestions of leveraging marine tourism to promote sustainable livelihoods through community-based enterprises and revenue-sharing schemes	20
	Diversification	Emphasis on the importance of diversifying the local economy beyond marine tourism to ensure sustainable livelihoods	14

Source: Researcher (2024)

The interviews revealed that a significant portion of the respondents (18 out of 30) depended on the tourism sector as their primary source of income. As one tour guide noted,

"My entire livelihood is tied to the success of the marine tourism industry. When the tourist numbers are down, it directly affects my earnings and ability to support my family."

In contrast, 12 of the 30 respondents reported having diversified income sources, which may provide them with greater economic resilience. As a hotel manager explained,

"While the tourism sector is a major part of our business, we have also invested in other ventures to reduce our reliance on a single industry."

Most respondents (24 out of 30) acknowledged the positive economic impacts of marine tourism, such as job creation, increased income, and improved infrastructure. As a county government official stated,

"Marine tourism has been a significant driver of economic growth in Mombasa, providing employment opportunities for many residents and generating revenue for the local economy."

However, a smaller number of respondents (11 out of 30) highlighted the negative economic impacts, including the uneven distribution of benefits and the vulnerability of the local economy to seasonal fluctuations. As a KWSTI representative noted,

"While marine tourism has brought some economic benefits, the gains have been disproportionately captured by larger businesses and tourism operators, leaving many local community members struggling to sustain their livelihoods."

Regarding strategies to promote sustainable livelihoods, 20 of the 30 respondents emphasized the importance of community-based initiatives, such as leveraging marine tourism for community enterprises and revenue-sharing schemes. A beach operator suggested,

"Community-based tourism projects, like local handicraft markets and guided tours, could help ensure that more economic benefits stay within the community."

Additionally, 14 of the 30 respondents emphasized the importance of diversifying the local economy beyond marine tourism to build economic resilience. As a NEMA official stated,

"While marine tourism is a vital component of our local economy, we need to explore other economic opportunities and industries to reduce our reliance on a single sector and provide more sustainable livelihoods for the community."

The content analysis of the key informant interviews highlighted the significant role of the economic aspects of marine tourism in shaping the sustainable livelihoods of local communities in Mombasa County. While the industry has generated positive economic impacts, such as job creation and increased income, there are concerns about the uneven distribution of these benefits and the vulnerability of the local economy to seasonal fluctuations. To promote more sustainable livelihoods, the respondents suggested leveraging community-based initiatives and diversifying the local economy beyond marine tourism. These qualitative findings align with both the Sustainable Tourism Development Theory and Stakeholder Theory. The emphasis on community-based initiatives reflects the social sustainability dimension of the Sustainable Tourism Development Theory, which calls for inclusive tourism practices that empower local communities (Tahiri et al., 2022).

Similarly, the focus on stakeholder roles, such as those of community members, government officials, and tourism operators, underscores the importance of multi-stakeholder collaboration, as advocated by the Stakeholder Theory (Freeman, 1984; Salman et al., 2023). The call for economic diversification also highlights the environmental sustainability dimension, as it seeks to reduce pressure on marine ecosystems while enhancing economic resilience (Kuntai, 2020). Overall, both the quantitative and qualitative findings are consistent with previous research that has shown the economic benefits of marine tourism for local communities, but they also emphasize the need for sustainable approaches to mitigate negative impacts (Grydehøj, 2019; Harker et al., 2022; Singgalen & Simange, 2018). The study's recommendations for community-based initiatives and diversification of the local economy align with previous studies that have advocated community involvement in tourism planning and leveraging marine economies for local development (Grydehøj, 2019; Singgalen & Simange, 2018).

5. Conclusion

5.1. Conclusion

This study investigated the influence of the economic aspects of marine tourism on the sustainable livelihoods of local communities in Mombasa County, Kenya. Using a mixed-methods approach, this study employed both quantitative surveys and qualitative interviews to capture a comprehensive view of how marine tourism affects local economic well-being. The quantitative findings demonstrated a statistically significant positive relationship between the economic aspects of marine tourism—such as employment, income generation, and infrastructure development—and indicators of sustainable livelihood. These results suggest that improvements in marine tourism activities are directly associated with enhanced economic resilience in local communities.

Qualitative insights further enriched these findings by providing context-specific narratives from stakeholders. Interview data revealed that while marine tourism creates jobs and income, many

community members remain vulnerable due to seasonal fluctuations, unequal benefit distribution, and limited ownership of tourism enterprises in the area. Respondents emphasized the need for community participation, local enterprise development, and economic diversification beyond tourism to achieve sustainable long-term sustainability. Together, the two methods provided a complementary perspective: while the surveys quantified the relationship between marine tourism and livelihoods, the interviews uncovered nuanced challenges and proposed local solutions, reinforcing the importance of integrating stakeholder perspectives into marine tourism planning.

Although this study focused solely on economic aspects, it acknowledges that social and environmental dimensions are also critical to the sustainability of livelihoods. These were not explored in depth because of the scope and resource limitations of the current study. Future research should incorporate these dimensions to provide a more holistic assessment of sustainable development in coastal communities. Acknowledgements to maximize the benefits of marine tourism and ensure sustainable livelihoods, this study recommends the promotion of community-based tourism enterprises supported by training, capacity building, and policy frameworks that foster equitable benefit sharing. Additionally, the development of complementary sectors, such as sustainable fishing, aquaculture, and locally produced goods, can reduce dependency on tourism and enhance economic resilience.

5.2. Limitations

The cross-sectional design of this study captured economic impacts at a single time point, limiting our understanding of temporal variations and causal relationships. While this approach provides valuable insights into current tourism-livelihood relationships, it cannot account for seasonal fluctuations in tourist arrivals and spending, which significantly affect community income. The design also prevents the assessment of long-term livelihood sustainability, as it does not track the evolution of economic conditions over time. Future longitudinal studies should better capture these dynamic changes and provide more robust evidence of sustained impact.

The study's deliberate focus on economic aspects, while methodologically sound for addressing the specific research aims, means that the social and environmental dimensions of sustainable livelihoods received limited attention. This focused approach was necessary given the resource constraints and the study's defined objectives; however, it may not capture the full complexity of community sustainability. The exclusion of a detailed social infrastructure analysis (education, healthcare access) and environmental impact assessment was a conscious methodological choice that enabled a deeper economic analysis while creating opportunities for future interdisciplinary research.

5.3. Suggestions

Given the limitations identified in the current study, several suggestions can be made to enhance future research on the economic impact of marine tourism on sustainable livelihoods in Mombasa County. First, adopting a longitudinal research design would be instrumental in addressing the limitations of the cross-sectional approach. A longitudinal study would enable researchers to track changes over time and capture the dynamic nature of economic benefits and sustainability of livelihoods. This approach would allow for a more nuanced understanding of how seasonal variations, policy changes, and external shocks influence marine tourism economic contributions. By collecting data at multiple points in time, researchers can establish causal relationships and better assess the long-term impact on local communities. Moreover, longitudinal studies can provide insights into the adaptive capacities of communities and their ability to cope with economic fluctuations, thus offering a more comprehensive picture of sustainable livelihoods.

Second, future studies could adopt a comparative approach by examining the differences in the impact of marine tourism on sustainable livelihoods across various coastal communities in Kenya or the broader East African region. Such a comparative analysis could shed light on the role of local contexts, cultural factors, and governance structures in shaping marine tourism development outcomes. This knowledge can inform the development of more context-specific policies and strategies to promote sustainable livelihoods through marine tourism.

Finally, expanding the scope of the study to include social and environmental dimensions would provide a more holistic understanding of sustainable livelihoods. Future research should incorporate indicators related to social well-being, such as access to education, healthcare, and social infrastructure, and environmental sustainability, such as biodiversity conservation and waste management. This would enable researchers to assess the broader impacts of marine tourism and identify potential trade-offs between economic growth and social and environmental goals of marine tourism. Furthermore, incorporating participatory approaches, such as community-based monitoring and evaluation, can empower local communities and ensure that their perspectives and priorities are adequately reflected in the research. By adopting a more comprehensive approach that integrates economic, social, and environmental dimensions, future studies can provide more actionable recommendations for promoting sustainable marine tourism and enhancing the livelihoods of local communities in Mombasa.

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