Awareness and Adoption of Climate Change Adaptation Strategies among Coastal Tourism Stakeholders in the Blue Economy Framework

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Article information	Abstract
 	The study assesses the Awareness and Adoption of Climate Change Adaptation Strategy among Coastal Tourism Stakeholders in the Blue Economy Framework. The target population consists of stakeholders in the coastal tourism sector, including tourism operators, community members that are involved in tourism activities, local government officials and the representatives of environmental or conservation organizations. A stratified random sampling technique was used for the selection of the respondents. The sample size were 300 respondents. Structured questionnaire was used for the collection of data. Descriptive statistics of mean and standard deviation was used to answer the research questions while the Inferential Statistics of Chi-square and Parson Product Moment Correlation Coefficient were used to test the hypotheses at 0.05 level of significance. The results revealed that there is a significant relationship between level of awareness on climate changes, it's impacts and the adoption of climate changes adaptation strategies among coastal tourism stakeholders and there is a significant awareness of climate change and adaptation strategies among coastal tourism stakeholders. The researcher recommended that: unique climatic issues that coastal regions face, governments, environmental groups, and tourism associations should create and carry out awareness programs. Social media, community gatherings, and seminars are all efficient ways to reach a large audience. Stakeholders' comprehension of climate risks and adaptation strategies can be strengthened through training sessions, educational seminars, and digital learning materials centered on regional climate.

1. Introduction

Many countries have made the blue economy-which emphasizes sustainable economic growth from marine and coastal resources a priority because of its potential to boost economic development, improve biodiversity, and support livelihoods. A vital source of revenue and jobs for millions of people worldwide, the coastal and marine industries especially tourism are important parts of the blue economy. However, viability and the resilience of the industries affects the climate changes. Natural ecosystems and the economies that rely on them are at risk due to the rising of sea levels,

ocean acidification, and an increase in the frequency and severity of extreme weather events. These climatic effects jeopardize marine biodiversity, coral reef health, and coastal infrastructure all of which are vital to tourism [1]

Global economic discourse has undergone a paradigm shift in the twenty-first century due to the awareness of the role that oceans play in the sustainable development. Blue Economy is a concept that prioritizes social equity and the environmental sustainability using marine resources to advance economic development [2]. In the face of shifting geopolitical conditions and environmental challenges, governments are looking into various strategies to succeed economically. One of the most important regions for the growth of Blue Economy projects is now the Indo-Pacific Region [3]. Fisheries, aquaculture, renewable energy, marine biotechnology, and coastal tourism are just a few of the many economic sectors and activities that are included in the Blue Economy concept [4]. Promoting the long-term, responsible use of ocean resources, putting management plans into action that consider the entire ecosystem, and integrating environmental considerations into financial planning and decision-making are the main goals.
[5] opined the Blue Economy essentially represents a move away from traditional resource usage techniques and toward a thorough and all-encompassing approach that prioritizes resilience and long-term sustainability. According to the World Bank, the Blue Economy is the practical use of ocean resources to advance economic growth, improve people's quality of life, and generate employment opportunities while preserving the marine ecosystems [6].

Divergent viewpoints enclosed around the natural capital and social equity which give rise to conflicts within sustainable development approaches. The future of the global ocean economy is currently moving towards a Blue Economy [7]. In response to these issues, adaptation measures have become essential, with the goal of preserving coastal tourism and safeguarding marine habitats in the face of climate change. Creating Marine Protected Area (MPAs) would lead to repairing coral reefs, implementing ecotourism, and embracing sustainable tourist practices. These strategies aim to reduce environmental deterioration, preserve biodiversity, and strengthen coastal economies' resilience. However, local stakeholders such as tourism operators, residents, and legislators must be aware of, embrace, and actively participate in these methods for them to be successful.

Coastal cities' environmental quality and biodiversity have been negatively impacted by the ongoing expansion of human activity [8,9]. The social and economic sectors may be impacted, particularly marine and coastal tourism, which is the primary engine of coastal cities' economies and it provides an individual with a livable wage. The physical environment is the variety of natural resources which includes fisheries, aquaculture, and water quality. Numerous environmental issues, such as climate changes, the loss and depletion of natural resources, plastic pollution, air, water, light and sound pollution, and species disturbance and extinction, may be exacerbated by the activities carried out in the tourism sector [10].

The Mediterranean region is predicted to have over 500 million foreign visitors by 2030 due to its coastal towns' remarkable weather, which makes it one of the most popular destinations worldwide. Additionally, the rate of tourist arrivals in Europe and North Africa is increasing by 13% annually [11]. The social and economic sectors will benefit from the sustainable growth of tourism. The coastal environment may suffer some effects at all levels (pollution, waste, infrastructure, and already-stressed ecosystems). According to the other researches, these delicate ecosystems are under a great deal of stress due to the rapid growth of the coastal tourism [11,12].

The UN Decade of Ocean Science for Sustainable Development (2021-2030) presents a pertinent chance to coordinate international efforts to halt and reverse the deterioration of marine

environments and guarantee that ocean science advances in the direction of the equitable and sustainable development of the world's oceans [13].

Addressing the needs of marine environment requires the adaptation of national climate changes programs. According to [14], adaptation planning must take into account the levels of interest involved because some national level adaptation strategies and policies fail to address the climate risk faced by some impoverished communities because they are either difficult to implement locally or do not respond to local needs. Despite the significance of these adaption measures, further research is required to determine how knowledgeable stakeholders in coastal tourism are and its effects on the Blue Economy.

Research indicates that stakeholders' understanding and implementation of adaptation methods varies greatly, depending on a number of characteristics, including information availability, economic reliance on tourism, and educational attainment. Stakeholders' readiness to embrace these strategies and support their implementation is greatly influenced by their knowledge of and attitudes toward adaption practices. Improving resilience in coastal tourism requires determining the present awareness and adoption levels, as well as the perceived obstacles to and drivers of these practices. (15) attested that, awareness of climate change impacts was high, adaptation of adaptation strategies was limited by lack of funding and institutional support. (16) also found that, stakeholders' perception of climate changes risks and benefits influenced their adoption of adaptation The study seeks to assess the level of awareness and adoption of climate changes adaptation strategies among coastal tourism stakeholders within the blue economy framework, identify key barriers and facilitators influencing the adoption of climate changes adaptation strategy among stakeholders and to examine the relationship between stakeholders' awareness levels and their adoption of adaptation strategy's.

Research Questions
1. What is the level of awareness of climate changes and adaptation strategy among coastal tourism stakeholders?
2. What are the primary barriers and facilitators that influence the adaptation of climate changes strategy in coastal tourism sectors?

Research Hypotheses
1. H_{01}: There is no significant relationship between the level of awareness on climate changes and the adaptation strategy among coastal tourism stakeholders.
2. H_{02}: There is no significant relationship between the barriers and facilitators on the adaptation of climate changes strategy in coastal tourism sectors.

2. Methodology
This descriptive survey research design aims to assess the awareness, adoption, and influencing factors of climate change adaptation strategies among coastal tourism stakeholders within the blue economy. The study focused on collecting quantitative data from various stakeholders which includes tourism operators, community members, and policymakers, to provide insights into current adaptation practices and perceived challenges. The research focused on selected coastal regions involved in the blue economy where tourism significantly contributes to local livelihoods. The selected regions include Niger Delta, Lagos Coastal, Calabar Coastal, Bonny Coastal and Badagry Coastal that adopted climate adaptation strategies (such as marine protected areas, coral reef restoration, and sustainable tourism practices) as well as areas that have not yet implemented these measures. The target population consists of 300 stakeholders in the coastal tourism sector, including 100 tourism operators, 100 community members involved in tourism activities, 50 local government officials, and 50 representatives of environmental or conservation organizations. A stratified random sampling technique was used to for the selection of 300 stakeholders (e.g., business owners,

community members, and policymakers). A structured questionnaire (see appendix I) was developed by the researcher to gather quantitative data on stakeholder awareness, adoption levels, and perceptions of climate adaptation strategies. The questionnaire consists of the closed-ended questions designed to capture: Awareness: where by the items assess stakeholders' knowledge on climate changes impacts and understanding the adaptation strategies using a Likert scale (1 = Not aware at all, 5 = Very aware); Perceived Barriers and Facilitators: where by the items evaluate perceived barriers (e.g., resource limitations, lack of knowledge) and perceived benefits or motivators (e.g., enhanced sustainability, economic benefits) related to the adoption of adaptation strategies. The questionnaire was pilot-tested with a small sample of respondents. Feedback from the pilot test respondents were used to refine the questionnaire before full deployment. Descriptive statistics of mean and standard deviation was used to answer the research questions while the Inferential Statistics of Chi-square and Pearson Product Moment Correlation Coefficient were used to test the hypotheses at 0.05 level of significance.

3. Results and Discussions

Table One: Awareness of climate changes and adaptation strategy among coastal tourism stakeholders

	Mean	Std. Deviation	Decision
I am aware of the impacts of climate changes on marine and coastal environments	3.25	.432	Accepted
I familiar with the concept of climate changes adaptation strategies, such as marine protected areas (MPAs) and coral reef restoration	3.01	.901	Accepted
I am aware of the potential risks posed by climate changes to coastal tourism?	3.18	.385	Accepted
I am aware of any local initiatives to implement climate adaptation strategies?	3.01	.901	Accepted
I am aware of the impacts of climate changes on marine and coastal environments	3.25	.432	Accepted
Weighed Mean	**3.14**	Accepted at 2.50	

Table 1 indicated that weighted mean of the responses of the respondents on the level of awareness of climate changes and adaptation strategy among coastal tourism stakeholders was 3.14 which shows the high level compare with the acceptance rate of 2.50. However, on the criteria for a accepting the response (2.50) all the items accepted by respondents

Table Two: Primary barriers and facilitators that influence the adaptation of climate changes strategies in coastal tourism sectors

	Mean	Std. Deviation	Decision
Lack of information is a major barrier to adopting climate adaptation strategies.	3.41	.493	Accepted
Financial constraints prevent me or my business from investing in adaptation measures.	3.58	.494	Accepted
I am concerned about the potential economic costs of implementing these strategies.	2.74	1.297	Accepted
I feel that climate adaptation strategies are too complex or difficult to implement.	2.78	.730	Accepted
I believe that adopting climate adaptation strategies can improve the sustainability of my community.	3.18	.385	Accepted
Support from local government or organizations would make it easier for me to adopt adaptation strategies.	3.11	.484	Accepted
If I had more knowledge about the benefits of adaptation strategies, I would be more likely to adopt them.	3.22	.875	Accepted

Adaptation strategies could enhance the attractiveness of our area as a tourism destination.	3.08	.860	Accepted
Weighed mean	3.14	Accepted at 2.5	

The table indicated that weighted Means and Standard Deviations Scores for Primary barriers and facilitators that influence the adaptation of climate changes strategies in coastal tourism sectors was 3.14. However, on the criteria for a accepting the response (2.50) all the items accepted by respondents. This implies that primary barriers that influence the adaptation of climate changes strategy in coastal tourism sectors were: Lack of information, Financial constraints, economic costs of implementing the strategies and climate adaptation strategies are too complex or difficult to implement, while the primary facilitators that influence the adaptation of climate changes strategy in coastal tourism sectors were: adopting climate changes strategy can improve the sustainability of the community, support from local government or organizations which would make it easier to adopt the strategy, more knowledge about the benefits of adaptation strategy strategies could enhance the attractiveness of the areas of tourism destination

Table 3: Level of awareness on climate changes and the adaptation among coastal tourism stakeholders.

		awareness of climate changes impacts and adaptation strategy	adoption of climate changes adaptation strategy
awareness of climate changes impacts and adaptation strategies	Pearson Correlation	1	.530
	Sig. (2-tailed)		.000
	N	300	300
adoption of climate changes adaptation strategy	Pearson Correlation	.530	1
	Sig. (2-tailed)	.000	
	N	**300**	**300**

Table 3 indicated that the Pearson Product Moment Correlation (PPMC) obtained was 0.530 which shows positive and moderate relationship between the level of awareness on climate changes and the adaptation among coastal tourism stakeholders. However, the p-value observed was .000, since the p-value of .000 is less than the alpha value of 0.05, the study rejected the null hypothesis that says there is no significant relationship between the level of awareness on climate changes and the adaptation among coastal tourism stakeholders. The decision implies that there is a significant relationship between the level of awareness on climate changes and the adaptation among coastal tourism stakeholders. This indicated that it was positive, moderate and significant correlation level of awareness on climate changes impacts and the it's adaptation strategy among coastal tourism stakeholders

Table 4: Barriers and facilitators on the adaptation of climate changes strategy in coastal tourism sectors

	Chi-square	df	P- value	Decision
Barriers and facilitators on the adaptation of climate changes strategy in coastal tourism sectors	183.00	13	0.000	Significant

Table 4 revealed that the Chi-Square value of 183.00 was computed and the p-value 0.000 was observed. Hence, the study rejected the hypothesis that say there is no significant barriers and facilitators on the adaptation of climate changes strategy in coastal tourism sectors on efforts in addressing issues like deforestation and wildlife preservation. This implies that there is a significant

relationship between the barriers and facilitators on the adaptation of climate changes strategy in coastal tourism sectors.

3.1 Discussion

The result revealed that there is a significant relationship between level of awareness of climate changes and adaptation strategy among coastal tourism stakeholders. This indicated that there it was positive, moderate and significant correlation level of awareness on awareness of climate changes and adaptation strategy among coastal tourism stakeholders. The result agreed with that of [17] which showed that there is a high level of awareness of climate changes among the citizens of the state. Majority of the respondents (90%) indicated that they are aware of climate changes but only 70% indicated that they know the causes of climate changes. Chi-square test of the respondents revealed that age, occupation, and education influence people's level of awareness and knowledge of the causes of climate changes but gender does not affect these. Respondents' assessment of climatic element in the last 20-30 years agreed with the experts reports.

Furthermore, the study indicates a significant relationship between the level of awareness on climate change impacts and the adaptation of climate changes strategy among coastal tourism stakeholders. This finding underscores the importance of awareness and knowledge as key drivers in the adaptation of practices aimed at mitigating the effects of climate changes in coastal areas. Higher levels of awareness seem to be positively influenced stakeholders' willingness and readiness to implement adaptation strategies, which may include practices such as the use of marine protected areas, coral reef restoration, and sustainable tourism initiatives. The finding agreed with that of [18], the finding indicated that the statistical analysis of the field data supports the assumptions about positive association between climate changes awareness and climate changes adaptations ($R2=44.6$, $B=.875$ and P-value=.000) and negative interaction between climate change awareness and climate change adaptation issues ($R2 =.318$, $B=-.707$ and P-value=.000).

4. Conclusion

Based on the findings of this research, it can be concluded that the study finds a strong correlation between stakeholders in coastal tourism's adaption techniques and their understanding of the effects of climate changes. The results highlight the fact that stakeholders who are more knowledgeable are more inclined to support or put into practice adaptation strategy including coral reef restoration, marine protected areas, and eco-friendly travel. This implies that knowledge is an active factor that promotes climate-resilient practices in the blue economy rather than merely being a passive quality.

Stakeholders in coastal tourism are highly aware of the effects of climate change and adaptation techniques points to a promising basis for resilience and sustainability in the industry. This degree of awareness indicates that interested parties are knowledgeable about and ready to take proactive adaptation steps to meet the challenges presented by climate change. Stakeholders are more likely to take actions that safeguard their operations and support the long-term sustainability of coastal habitats if they are aware of the threats posed by increasing sea levels, extreme weather, and ecosystem degradation.

4.1 Recommendations

The following recommendations are put forth in light of the study's findings:

1. To address the unique climatic issues that coastal regions face, governments, environmental groups, and tourism associations should create and carry out awareness programs. The effects of climate changes, the advantages of the adaption plans, and concrete actions stakeholders may take should all be highlighted in these efforts. Social media, community gatherings, and seminars are all efficient ways to reach a large audience.

2. Coastal tourism operators, local enterprises, and community leaders should have access to training and educational programs that emphasize the practical aspects of climate adaptation methods. It is possible to demystify adaptation tactics and promote their adoption by offering resources including digital content, case studies of successful adaptation, and instructional pamphlets.

3. Programs for climate education that are especially suited to coastal tourism should be supported and expanded by governments and tourism associations. Stakeholders' comprehension of climate risks and adaptation strategies can be strengthened through training sessions, educational seminars, and digital learning materials centered on regional climate challenges.

4. Companies that provide coastal tourism ought to be urged to integrate climate adaption techniques into their everyday operations. This can involve taking steps like prioritizing environmentally friendly infrastructure, embracing sustainable water consumption, and putting energy-efficient techniques into practice. Businesses may be encouraged to make these adjustments by incentives such as tax breaks or subsidies.

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Appendix I
Questionnaire

Question One

What is the level of awareness of climate changes and adaptation strategy among coastal tourism stakeholders?

Item	Not aware at all	Very aware
I am aware of the impacts of climate changes on marine and coastal environments		
I familiar with the concept of climate changes adaptation strategies, such as marine protected areas (MPAs) and coral reef restoration		
I am aware of the potential risks posed by climate changes to coastal tourism		
I am aware of any local initiatives to implement climate adaptation strategies		
I am aware of the impacts of climate changes on marine and coastal environments		

Question Two

What are the Primary barriers and facilitators that influence the adaptation of climate changes strategies in coastal tourism sectors?

Item	Not aware at all	Very aware
Lack of information is a major barrier to adopting climate adaptation strategies.		
Financial constraints prevent me or my business from investing in adaptation measures.		
I am concerned about the potential economic costs of implementing these strategies.		
I feel that climate adaptation strategies are too complex or difficult to implement.		
I believe that adopting climate adaptation strategies can improve the sustainability of my community		
I believe that adopting climate adaptation strategies can improve the sustainability of my community.		
Support from local government or organizations would make it easier for me to adopt adaptation strategies.		
If I had more knowledge about the benefits of adaptation strategies, I would be more likely to adopt them		
Adaptation strategies could enhance the attractiveness of our area as a tourism destination.		