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ADB Working Paper Series

**MARINE TOURISM FOR
SUSTAINABLE DEVELOPMENT
IN COX'S BAZAR, BANGLADESH**

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Abstract

Marine tourism can ensure social, environmental, and economic benefits through sustainable use of marine resources. The main challenges for marine tourism are preservation of the sea and marine resources through conserving the marine ecosystems and reducing marine pollution. This tourism segment has great potential in Bangladesh with the existence of the Bay of Bengal in the southern territory of the country. The present study identifies stakeholders' perception of the development of sustainable marine tourism in the Cox's Bazar district of Bangladesh. The study is based on a questionnaire survey using a nonprobability convenience sampling design. A total of 300 respondents were purposively selected from various groups of stakeholders to give their opinions on various aspects of social, economic, and environment dimensions of marine tourism development. Results reveal that marine tourism development can ensure various elements of social well-being, such as improving quality of life, infrastructure development, and enhancing public facilities. It also has some negative impacts, such as increasing the cost of living and intense illegal activities in the study area. The stakeholders' view is that developing marine tourism brings economic benefits, such as providing employment opportunities, developing livelihoods, facilitating fishing activities, and enhancing economic well-being. However, marine tourism activities cause several environmental problems, including overcrowdedness, degradation, waste generation, imposing pressure on natural resources, and negative impacts on marine resources. Several measures, such as an environmental management plan, integrated management decisions for the local ecosystem and culture, the promotion of local goods, WTP mechanism implementation, infrastructure development, and enhanced facilities, can ensure sustainable marine tourism development in the study area.

Keywords: Bangladesh, Cox's Bazar, marine tourism, sustainable development

JEL Classification: L83, Z31, Z32, C38

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1. INTRODUCTION

Marine tourism is one of the growing tourism segments around the world attracting tourists to marine activities. The United Nations World Tourism Organization (UNWTO) addressed marine tourism related to SDG-14, which ensures benefits for host countries from tourism activities through sustainable use of marine resources. This tourism segment represents 5% of world GDP and contributes 6%–7% of global employment (UNWTO 2019). Marine tourism helps local communities to improve their livelihoods. It can create employment opportunities, improve the capacity of local communities, develop local supply chains, and promote local cultural heritages (Papageorgiou 2016). It is one of the key components of the blue economy and is linked to environmental conservation (Voyer et al. 2018). Governments have regarded this tourism segment as alternative livelihoods of people for economic growth and environmental well-being (White and Rosales 2003). Marine tourism services include golf courses, equestrian centers, visitor attractions, car hire, coach hire, cruising, and water-based activity centers in tourism destinations.

Marine tourism can contribute to social, environmental, and economic benefits for local communities. It creates awareness of, and support for, conserving natural resources and coral reefs (Diedrich 2007). Marine tourism is linked with business, hospitality, and catering activities. It creates opportunities for income and collects natural products from marine and protected areas. Local participation is important for conservation activities related to tourism development in an area (Agardy 1993). Communities support conservation activities related to benefits obtained from tourism activities (Lindberg, Enriquez, and Sproule 1996). Again, communities' livelihoods also conflict with tourism activities as both are traditionally substantiated by marine environment (Stem et al. 2003).

Marine tourism activities have negative effects on the environment, such as pollution, anchor damage, and coastal erosion (Diedrich 2007). The main challenges for marine tourism are preserving sea and marine resources through conserving the marine ecosystems, reducing marine pollution, and sustainable use of marine resources. It is necessary to conserve coastal biodiversity, natural resources, and the coastal and marine environment to maintain long-term sustainability. This tourism has negative impacts on the environment due to irresponsible nature-related activities (Gossling 2001).

Marine tourism has great potential in Bangladesh due to the expansion of enjoyable activities in terms of attractions, travel opportunities, accommodation, and amenities that target tourists and tourism philosophy. Bangladesh's territorial sea areas cover 118,813 square kilometers in the Bay of Bengal. The main marine tourism activities in this country occur in the southern territory around these sea areas. There are a number of remarkable tourism spots, including beaches, islands, and forest areas, situated in this ocean and coastal belt. Tourism spots worthy of particular mention are Cox's Bazar, Patenga beach, Parki beach, Kuakata beach, Sundarbans mangrove forests, Saint Martin island, and Bhola and Monpura islands. The most popular tourism activities are surfing, boating, diving, fishing, and tracking (MoFA 2014). There are a good number of people living in the coastal areas of Bangladesh. The livelihoods of people from coastal areas are vulnerable due to population growth, unplanned urbanization, coastal changes, climate change, pressure on marine resources, and increased marine pollution. Moreover, on the Ocean Health Index, the achievement scores for biodiversity, clean water, and fisheries are 91.7, 36.7, and 38.8, respectively (Sachs et al. 2017). This situation can change through proper awareness of involved

stakeholders, technological enhancements, and sustainable use of marine resources in ocean areas.

There are several marine tourism spots situated in the coastal areas of Bangladesh. Among these spots, Cox's Bazar is one of the most famous marine tourism spots in the country due to its natural beauty, unique features, accessibility, and suitable service facilities. Cox's Bazar is recognized as the tourism capital of Bangladesh for its potential tourism activities. This area is popular among tourists from home and abroad for marine tourism activities. About 1.5 million tourists visited this area in 2015 and 95% of them were local tourists. Cox's Bazar was placed 77th out of 440 natural sites in the New Seven Natural Wonders of the World competition in the years 2007 and 2008 (Amin 2016). The world's largest unbroken sea beach (120 kilometers) slopes down into the blue water of the Bay of Bengal. Besides the longest beach area, other attractive tourist places in this district are Innani, Ramu, Himchhari, Sonadia, Moheshkhali, Teknaf, Kutubdia, and Saint Martin. The main marine tourism products and activities of this area are water sports, hiking, trekking, surfing, swimming, festivals, local handicrafts, shopping, and delicious seafood (Mamun, Hassan, and Hossain 2013). A number of hotels, cottages, motels, guest houses, restaurants, tour operators, and tour guiding operations are situated in this district. So Cox's Bazar is considered a more lucrative marine tourism attraction for tourists from home and abroad than other spots in Bangladesh, with their unique features, transport facilities, services, hospitality, and tourism amenities (Bhattacharjee, Polas, and Rahman 2018).

The local community and other stakeholders like tour operators, businessmen, hotel owners, and investors depend on tourism activities in this area. The prospective impacts of tourism such as economic, environmental, and social effects on relevant stakeholders can be positive or negative (Chowdhury and Chowdhury 2014). Again, the socioeconomic conditions of local stakeholders like communities, tour operators, local businessmen, and investors depend on tourism in Cox's Bazar (Roy and Hoque 2015). Kim, Uysal, and Sirgy (2013) revealed the impacts of tourism activities on the local communities in Cox's Bazar and recommended mitigating the negative aspects of mass tourism to ensure sustainable development for the communities. As the most frequently visited tourism attraction, tourism is considered the major source of economic activity in Cox's Bazar. The local communities are directly and indirectly dependent on tourism for their livelihood. So the government and private investors focus on tourism for the sustainable development of this area (Rahman et al. 2010; Mamun, Hassan, and Hossain 2013). Tourism activities have provided employment opportunities for lots of young and unemployed people in Cox's Bazar (Bhattacharjee, Polas, and Rahman 2018).

Several studies have been conducted on tourism in Cox's Bazar regarding different issues such as marketing aspects (Mamun, Hassan, and Hossain 2013; Hasan et al. 2015), hospitality and service (Chowdhury and Chowdhury 2014), socioeconomic aspects (Rahman et al. 2010; Roy and Hoque 2015), tourism impacts (Kim, Uysal, and Sirgy 2013), and environmental aspects (Zahra 2013; Wakil 2014). Previous studies consider the perceptions of different stakeholders, like local communities, tourism officials, tourism businessmen, and domestic tourists, to analyze the impacts or outcomes of tourism. These studies have identified the perception from a limited number of stakeholders' views. But it is necessary to identify the perception of stakeholders at all levels – local communities, local businessmen, and tourists – for measuring the impacts of tourism in an area. The present study identifies stakeholders' perception of sustainable marine tourism development in Cox's Bazar in Bangladesh.

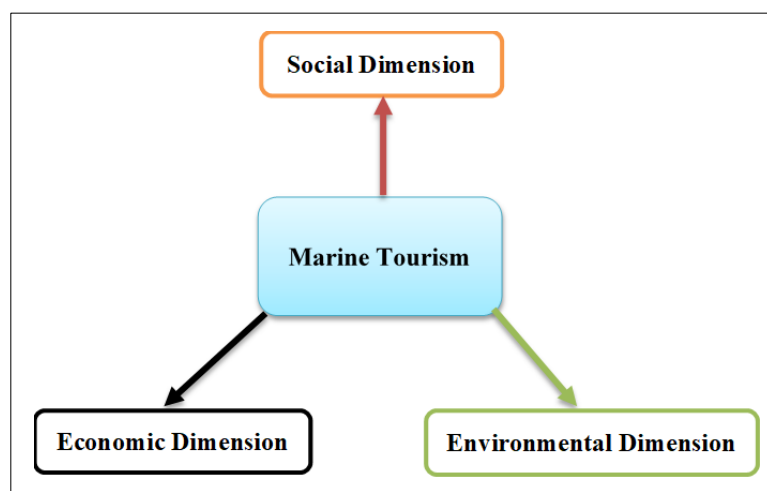
2. THEORETICAL FRAMEWORK

Marine tourism is related to three dimensions of sustainable development, namely social, economic, and environmental aspects, and ensures sustainability through a suitable balance of these three dimensions. Sustainable marine tourism development in an area depends significantly on a balanced combination of these three dimensions of sustainable development. Several factors drive marine tourism to contribute socially, economically, and environmentally.

Marine tourism activities can contribute to social changes among local communities in an area. Investment in marine tourism can ensure the development of infrastructure and public facilities in an area. Again, communities can expect to obtain environmental education and job training opportunities through tourism investors. Gier, Christie, and Amolo (2017) revealed through their study on island tourism in the Philippines that local communities expressed their positive opinions on infrastructure, public facilities development, and educational opportunities aimed at marine tourism development. The communities wanted marine tourism activities to respect local culture and values regarding the local ecosystem (Hicks, Graham, and Cinner 2013; Lachs and Oñate-Casado 2020). Diedrich and Aswani (2016) revealed that marine tourism activities impact social changes by improving quality of life and increasing the cost of living in the Solomon Islands. The local communities showed their dissatisfaction towards illegal activities like crime and drugs due to marine tourism development (Diedrich and Aswani 2016).

Marine tourism can support the livelihood activities of local people through creating multiple types of jobs based on tourism activities (Menon, Sowman, and Bavinck 2018). It also helps other livelihood initiatives of local people in, for example, agriculture, fishing, and farming by creating value chain activities (Papageorgiou 2016). Marine tourism can attract foreign investment in accommodation, food, transport, and other facility sectors (Gier, Christie, and Amolo 2017). The economic benefits for local communities are enhanced through marine tourism activities in an area and can also lead to increased demand for local goods and handicrafts (Truong, Hall, and Garry 2014; Voyer et al. 2018).

Figure 1: Marine Tourism and Three Dimensions of Sustainable Development



Marine tourism can influence the environmental aspects in an area with positive and negative contributions. Community people believe that a proper environment management plan in marine tourism can ensure support for conservation, marine environment, and ecosystem services (Gier, Christie, and Amolo 2017). Bennett et al. (2014) pointed out that excessive marine tourism activities create negative impacts on marine life and put pressure on marine resources in the Solomon Islands. Moreover, previous studies (Redding, Myers-Miller, and Baker 2013; Gier, Christie, and Amolo 2017) revealed that marine tourism development created waste generation and degradation in Guam and overcrowdedness in Bohol Island, Philippines.

Several indicators are related to these three dimensions. The social dimension is related to quality of life (Diedrich 2007; Shuib, Ali, and Emby 2008), the local ecosystem (Diedrich 2007), environmental education (Diedrich 2007; Gier, Christie, and Amolo 2017), infrastructure and public facilities (Gier, Christie, and Amolo 2017), local cultural heritage (Brown, Turner, and Hameed 1997; Lopes, Pacheco, and Clauzet 2015), increased living costs (Gier, Christie, and Amolo 2017), and intensified illegal activities (Shuib, Ali, and Emby 2008; Hin 2010). The economic indicators are economic benefits (Brander, Van Beukering, and Cesar 2007; Craig 2008; Gier, Christie, and Amolo 2017), fishing activities (Yacob, Shuib, and Manat 2007; Lopes, Pacheco, and Clauzet 2015; Samoily, Osuka, and Maina 2017), employment opportunities (Lopes, Pacheco, and Clauzet 2015; Murray 2007), livelihood (Lopes, Pacheco, and Clauzet 2015; Hunter, Lauer, and Levine 2018), foreign investment (Gier, Christie, and Amolo 2017), and the price of local goods (Shuib, Ali, and Emby 2008).

Moreover, the health of the marine environment (Diedrich 2007; Hunter, Lauer, and Levine 2018), impacts on marine lives (Hawkins and Roberts 1994; Diedrich 2007), support for conservation (Hawkins and Roberts 1994; Redding, Myers-Miller, and Baker 2013; Renfro and Chadwick 2017), ecosystem services (Hicks, Graham, and Cinner 2013; Bozec, O'Farrell, and Bruggemann 2016), waste generation (Hawkins and Roberts 1994; Redding, Myers-Miller, and Baker 2013), overcrowdedness (Gier, Christie, and Amolo 2017), degradation (Hawkins and Roberts 1994; Redding, Myers-Miller, and Baker 2013), and pressure on marine resources (Gier, Christie, and Amolo 2017; Redding, Myers-Miller, and Baker 2013) are included in the environmental dimension.

Previous studies (Mamun, Hassan, and Hossain 2013; Kim, Uysal, and Sirgy 2013; Chowdhury and Chowdhury 2014; Roy and Hoque 2015; Bhattacharjee, Polas, and Rahman 2018) on Cox's Bazar have emphasized the development of sustainable tourism in place of mass tourism. The development of mass tourism creates several social (loss of local culture, social gap, crime), economic (low-paid jobs for locals, increased living cost), and environmental (increased waste and pollution, loss of biodiversity, overcrowdedness) problems in Cox's Bazar (Zahra 2013; Wakil 2014; Chowdhury and Chowdhury 2014; Bhattacharjee, Polas, and Rahman 2018). So sustainable marine tourism development can ensure community well-being and environmental balance in Cox's Bazar.

3. MATERIALS AND METHODS

Study area: Cox's Bazar is situated in the Bay of Bengal and has the longest sea beach in the world. It is a coastal district of Bangladesh, situated in the southeast of the country. The main tourist attractions of this district are golden sands, gentle cliffs, foaming waves, colorful conch shells, coral reefs, pagodas, and other heritage sites. The lifestyles of

indigenous communities also attract tourists. The total land area of this district is about 2260 square kilometers (Bhuiyan, Islam, and Siwar 2010).

Sampling design: The study is based on a questionnaire survey of 300 respondents from Cox's Bazar, Bangladesh who are involved in marine tourism activities in the study area. Samples are selected purposively using a convenience sampling design. Among the respondents, 150 are tourists, 100 are from local communities who are directly affected by tourism, and the rest are engaged with the tourism business. The respondents from the tourism business include hotel owners, tour operators, tour guides, and local businessmen. Sample data were collected at several locations around the beach, resorts, and nearby local communities.

Questionnaire and data collection: A semi-structured questionnaire was administered for data collection. The respondents were asked to express their opinion based on a five-point Likert scale on several statements regarding sustainable development and marine tourism perspectives. The questionnaire has two parts: the first part containing the demographic profile of respondents and the second part including several statements on three aspects of sustainable development – social, economic, and environmental aspects related to marine tourism. A total of 20 statements were used in the study under three dimensions to measure the perception of respondents towards marine tourism development. The responses indicated whether the respondents were satisfied or not, ranging from the lowest to the highest level of the scale. The data collection was conducted during November and December in 2019. A second stage of data collection was carried out in the first week of March 2020.

Research methods: Collected data were gathered together and checked for any misleading information and incompleteness in a systematic manner. Demographic profiles of respondents were evaluated using descriptive statistics. Respondents' agreement scores for various statements were examined and compared with mean agreement scores. Cronbach's alpha values were also computed to evaluate whether the statements contained internal consistency and could be aggregated in order to infer the specific dimension. Cronbach's alpha was developed by Lee Cronbach (Cronbach 1951) to provide a measure of the internal consistency of a test or scale; it is expressed as a number between 0 and 1. A higher value for the reliability coefficient (Cronbach's alpha > 60) implies that the related statements can be considered in a group for computing the underlying or latent factor (Nunnally and Bernstein 1994). Finally, a confirmatory factor analysis was carried out to observe the latent construct of related statements/variables creating together an unobserved theme. Factor analysis is a multivariate data analysis technique that can be used to identify the dimensions of a test (Tate 2003). Data organization, editing, and analysis were performed using SPSS V.23.

4. RESULTS AND DISCUSSION

Table 1 represents the demographic profile of respondents in the study area. The majority of respondents are male (66%) and have an education at college level or above (55.6%). Most of the respondents are middle-aged (42%) and service holders (41.6%). A number of respondents reported that they are self-employed (21.7%) for their livelihood.

Table 1: Demographic Profile of the Respondents

Variables		Frequency	Percentage
Sex	Male	198	66.0
	Female	102	34.0
Age (years)	20–30 years	95	31.7
	31–40 years	126	42.0
	Above 40 years	79	26.3
Education	Primary	35	11.7
	Secondary	98	32.7
	College and above	167	55.6
Occupation	Self-employed	65	21.7
	Business	110	36.7
	Service holder	125	41.6
Total		N = 300	100.0

Table 2 shows the respondents' perception towards the statements on social aspects of marine tourism development. The mean and standard deviation of scores show the perception of respondents regarding the respective statements. Higher-level mean scores (mean > 4.00) are identified for the statements on improved quality of life in the community, improved infrastructure and public facilities, increased living cost, and increasing trend of crime, drugs, and illegal activities. This scenario indicates that most of the respondents see both the positive and negative social impacts of marine tourism development in Cox's Bazar. The aggregated mean score (4.10 > 4.00) of this dimension indicates a satisfactory level of respondents regarding the social dimension of this site. The observed Cronbach's alpha value of 0.89 (> 0.60) implies that related attributes are consistent with the level scores for this dimension.

Table 2: Social Aspects of Marine Tourism

Statements	Mean Agreement Score	Standard Deviation	Agreement Level	Cronbach's Alpha
Improves quality of life for locals	4.21	0.971	Agree	
Gives value to local ecosystem	3.92	0.961	Neutral	
Educates the people about the marine environment	3.94	0.821	Neutral	
Facilitates the improvement of infrastructure and public facilities	4.19	0.933	Agree	
Tourism development increases the living cost	4.23	0.967	Agree	
Respects local cultural heritage	3.94	0.921	Neutral	
Increases crime, drugs and illegal activities	4.26	0.986	Agree	
Social Dimension	4.10	0.948	Agree	0.893

Table 3 highlights the respondents' perception of economic aspects of marine tourism related to sustainable development. Higher-level mean scores (mean > 4.00) are identified for the statements on improved economic benefit, increased employment opportunities, being helpful for fishing activities, and the development of livelihoods for the poor. The aggregate mean score (4.11 > 4.00) implied that the respondents show a high level of agreement that marine tourism development in Cox's Bazar provides economic benefits for local communities. However, the Cronbach's alpha value (0.79) shows that the statements are consistent in estimating the related dimension.

Table 3: Economic Aspects of Marine Tourism

Statements	Mean Agreement Score	Standard Deviation	Agreement Level	Cronbach's Alpha
Provides economic benefits to locals	4.11	0.624	Agree	
Marine tourism helpful for fishing activities	4.26	0.874	Agree	
Provides employment opportunities	4.29	0.927	Agree	
Develops livelihood for the poor	4.61	0.867	Agree	
Attracts foreign investment	3.87	0.914	Neutral	
Increases price of local goods	3.68	1.013	Neutral	
Economic Dimension	4.11	0.624	Agree	0.786

Table 4 represents the respondents' perception of environmental aspects of marine tourism related to sustainable development. The respondents provided their perception that marine tourism development in the study area does not contribute positively to the environment. Higher mean scores (mean > 4.00) are noted for the statements on negative impact on marine life, pressure on marine resources, creating additional waste and degradation, overcrowded beach area, and the need support for conservation activities.

Table 4: Environment Aspects of Marine Tourism

Statements	Mean Agreement Score	Standard Deviation	Agreement Level	Cronbach's Alpha
Preserves the health of local marine environment	3.79	0.912	Neutral	
Creates negative impacts on marine lives	4.32	0.931	Agree	
Support is needed for conservation	4.17	0.877	Agree	
Marine tourism supports ecosystem services	3.65	0.997	Neutral	
Tourism activities create overcrowded beach areas	4.16	0.924	Agree	
Creates additional waste and degradation	4.19	0.931	Agree	
Tourism activities create pressure on marine resources	4.24	0.986	Agree	
Environment Dimension	4.07	0.965	Agree	0.879

The aggregated mean score (4.07) of this dimension shows an acceptable level, which implies that the respondents are conscious of, and worried about, marine tourism development and related negative impacts. The observed Cronbach's alpha (0.88) value is at a higher level and implies that related attributes are consistent with the level scores for the environment dimension. Some other studies (Diedrich 2007; Hunter, Lauer, and Levine 2018) prioritize the preservation of the marine environment for tourism development. Again, ecosystem services are also important for developing marine tourism in an area (Hicks, Graham, and Cinner 2013; Bozec, O'Farrell, and Bruggemann 2016).

4.1 Factor Analysis

The first step of factor analysis is to check the sampling adequacy and appropriateness of factor extraction. Table 5 presents the Kaiser-Meyer-Olkin (KMO) index and Bartlett's test results. KMO statistics vary from 0 to 1 and the observed value (0.875) close to 1 indicates that patterns of correlation among the variables are relatively compact and so factor analysis should yield distinct and reliable factors. Moreover, a highly significant Bartlett's test (p -value < 0.001) implies that the correlation matrix is not an identity matrix and therefore factor analysis is appropriate for the data.

Table 5: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.875
Bartlett's Test of Sphericity	Approx. Chi-Square	2,412.873
	df	190
	Sig.	0.000

The results in Table 6 represent the eigenvalues for each of the linear combinations of variables before extraction, after extraction, and after rotation. It should be noted that considering eigenvalues greater than 1, three factors can be extracted from the data. The respective scree plot (Figure 2) further ensures the maximum number of possible factors that could be obtained in factor analysis. However, after extraction, three factors together will explain 54.4% of the total variance (26.4%, 17.5%, and 10.4%, respectively).

Table 6: Eigenvalues

Component	Total Variance Explained								
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.338	26.688	26.688	5.338	26.688	26.688	5.284	26.418	26.418
2	4.199	20.993	47.681	4.199	20.993	47.681	3.503	17.517	43.935
3	1.335	6.677	54.358	1.335	6.677	54.358	2.085	10.423	54.358
4	.993	4.967	59.325						
5	.941	4.707	64.032						
6	.888	4.440	68.472						
7	.719	3.593	72.065						
8	.656	3.279	75.344						
9	.608	3.041	78.384						
10	.576	2.879	81.263						
11	.551	2.755	84.018						
12	.496	2.480	86.499						
13	.475	2.375	88.874						
14	.434	2.169	91.043						
15	.399	1.997	93.039						
16	.353	1.766	94.806						
17	.299	1.494	96.299						
18	.278	1.390	97.689						
19	.256	1.282	98.971						
20	.206	1.029	100.000						

Extraction method: principal component analysis.

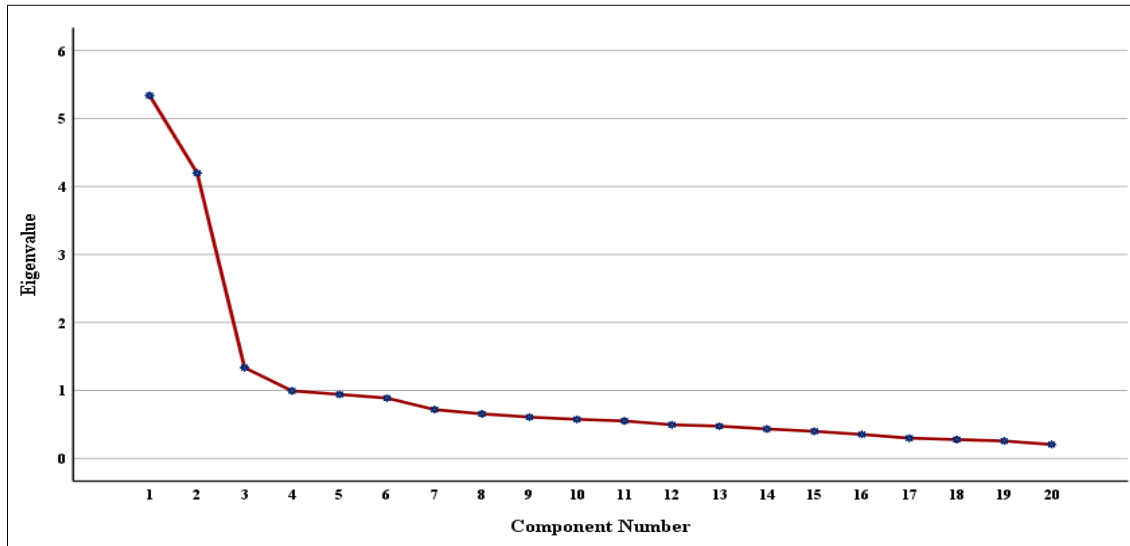
Figure 2: Scree Plot

Table 7 represents the rotated component indices for each of three extracted factors/components. For a better explanation of the obtained results, it was suggested to suppress the factor loading to less than 0.40 and order variables according to the loading size.

Looking at the contents of statements (in Table 7) that load onto the same factor can help one to identify the related theme of the hidden construct of related variables. The mathematical factor produced by the analysis represents some real-world constructs of common things.

It is observed that the statements that load highly to factor 1 all seem related to the social dimension of marine tourism development in Cox's Bazar. The highest factor loading was observed for the statements regarding infrastructure development, improved quality of life, increasing trend of living costs, and illegal activities. Thus respondents feel that marine tourism activities improve the quality of life for local people.

Similar results are also observed in some previous studies in Malaysia (Shuib, Ali, and Emby 2008) and Belize (Diedrich 2007). Respondents also agreed that tourism developments facilitate the infrastructure development and improve public facilities in the study area. Gier, Christie, and Amolo (2017) revealed that the community felt marine tourism development improved public facilities and infrastructure on Bohol Island in the Philippines. According to the respondents, tourism development increased the cost of living for local residents. Moreover, the respondents did not support the negative impacts of tourism development such as crime, drugs, and illegal activities. Previous studies (Shuib, Ali, and Emby 2008; Hin, 2010) addressed the fact that respondents did not agree with the increase in illegal activities due to the development of marine tourism in Malaysia.

Table 7: Rotated Component Matrix

SL.	Statements/Variables	Component/Factor		
		1	2	3
1.	Facilitates the infrastructure and improves public facilities	.824		
2.	Improves quality of life for locals	.812		
3.	Tourism development increases the living cost	.812		
4.	Increases crime, drugs, and illegal activities	.779		
5.	Educates people about the marine environment	.565		
6.	Respects local cultural heritage	.548		
7.	Gives value to local ecosystem	.439		
8.	Provides economic benefits to locals		.729	
9.	Marine tourism helpful for fishing activities		.691	
10.	Provides employment opportunities		.678	
11.	Develops livelihood of the poor		.663	
12.	Attracts foreign investment		.562	
13.	Increases price of local goods		.548	
14.	Tourism activities create pressure on marine resources			.799
15.	Creates negative impacts on marine life			.720
16.	Support for conservation			.674
17.	Creates additional waste and degradation			.665
18.	Tourism activities create overcrowded beach areas			.652
19.	Marine tourism supports ecosystem services			.455
20.	Preserves the health of the local marine environment			.435

Extraction method: Principal component analysis. Rotation method: Varimax with Kaiser normalization.

Furthermore, the respondents do not indicate their positive agreement with marine tourism's contribution to the local ecosystem, education on the marine environment, and local cultural heritage. Previous studies (Brown, Turner, and Hameed 1997; Lopes, Pacheco, and Clauzet 2015) showed that marine tourism does not promote local cultural heritage with due respect. The study of Diedrich (2007) in Belize and that of Gier, Christie, and Amolo (2017) in the Philippines emphasized giving value to the local ecosystem and environmental education for sustainable development through marine tourism.

The statements that load highly on factor 2 all seem related to various aspects of the economic dimension. Therefore, this factor can be called the "economic dimension of marine tourism development." Several studies (Brander, Van Beukering, and Cesar 2007; Craig 2008; Gier, Christie, and Amolo 2017) also revealed that marine tourism ensures economic benefits for the locals. The respondents felt that marine tourism does not hamper the fishing activities in the ocean. The conservation activities for tourism development are helpful for fishing activities. The studies of Yacob, Shuib, and Manat (2007) in Malaysia, Lopes, Pacheco, and Clauzet (2015) in Marine Protected Areas, and Samoilys, Osuka, and Maina (2017) in Kenya also came to similar conclusions. The high agreement mean scores indicate that respondents had a positive perception of the statements "provides employment opportunities" and "develops livelihood for the poor." Previous studies (Lopes, Pacheco, and Clauzet 2015; Murray 2007; Hunter, Lauer, and Levine 2018) identified that marine tourism provides job opportunities and livelihood security for the local people. Moreover, the respondents showed a neutral level of agreement with the statements "attracts foreign investment" and "increases the price of local goods." Gier, Christie, and Amolo (2017) found that marine tourism attracted foreign

investment in the Philippines and Shuib, Ali, and Emby (2008) revealed that marine tourism increased the price of local goods and led to supply shortages.

Finally, the statements that load highly on factor 3 all seem to have some components of the environmental dimension. Therefore, this factor or component may be labeled the “environment dimension of marine tourism development” in Cox’s Bazar. The respondents agree that marine tourism creates negative impacts and imposes pressure on marine resources. Some previous studies (Hawkins and Roberts 1994; Diedrich 2007; Redding, Myers-Miller, and Baker 2013; Gier, Christie, and Amolo 2017) also support the above findings. According to the respondents, marine tourism activities create overcrowded beach areas, and generate additional waste and degradation. The study findings of Hawkins and Roberts (1994) in the Red Sea, Redding, Myers-Miller, and Baker (2013) in Guam, and Gier, Christie, and Amolo (2017) in the Philippines also revealed the same research outputs. Moreover, the respondents were of the opinion that marine tourism gives support for conservation. Several studies (Hawkins and Roberts 1994; Redding, Myers-Miller, and Baker 2013; Renfro and Chadwick 2017) recognized that marine tourism supports conservation activities in marine areas.

5. CONCLUSION AND RECOMMENDATIONS

Stakeholders’ perceptions are important for the development of tourism in an area. They give positive responses and support for tourism development in an area if they get benefits from it. The study has revealed stakeholders’ perception of marine tourism development in Cox’s Bazar in contributing to sustainable development. Marine tourism development ensures aspects of social well-being such as improved quality of life, infrastructure development, and enhanced public facilities. The study shows that marine tourism development creates negative impacts like increased cost of living and illegal activities in the study area. The stakeholders’ view is that marine tourism development brings economic benefits in the study area in terms of creating employment opportunities, developing livelihoods, helping with fishing activities, and providing economic well-being. Although marine tourism development brings social and economic benefits, it also has some environmental disadvantages in the study area.

The stakeholders’ perception revealed that marine tourism development is damaging the environment due to negative outcomes. According to them, marine tourism activities cause several problems, including overcrowdedness, degradation, waste generation, and increased pressure on natural resources, and thus has negative impacts on marine resources. Sustainable marine tourism development depends on an ecological balance, a pollution-free marine ecosystem, the conservation and protection of natural resources, proper utilization of marine resources, and a reduction of the conflict with local stakeholders in order to share economic and social benefits (Fabinyi 2008).

The following approaches are necessary to progress sustainable marine tourism:

- A management plan is needed to preserve the health of the local marine environment and support ecosystem services. In this plan, priority should be given to stakeholders’ opinion regarding the marine environment and ecosystem (Lachs and Oñate-Casado 2020).
- Proposal of a willingness-to-pay (WTP) mechanism for tourists to collect revenue and utilize this for conserving marine tourism resources. In Malaysia, the WTP mechanism has been used for environmental protection and resource

management in marine tourism locations (Mamat, Yacob, and Radam 2013; Faizan, Sasekumar, and Chenayah 2016).

- Facilitation of an integrated management decision to represent the opinion of local stakeholders. This approach can facilitate the decision-making of stakeholders on the local ecosystem, local culture, and environmental education opportunities (Hicks, Graham, and Cinner 2013; Lachs and Oñate-Casado 2020).
- Foreign investment needs to be attracted to increase the development of infrastructure and public facilities. Local goods and handicrafts should be promoted to tourists to increase the demand. Infrastructure development and increased demand for local goods can ensure economic benefits for the local communities (Gier, Christie, and Amolo 2017; Voyer et al. 2018).

REFERENCES

- Agardy, T. 1993. Accommodating ecotourism in multiple use planning of coastal and marine protected areas. *Ocean Coast Manage*, 20:219–293.
- Amin, M.R. 2016. Domestic tourists' mind-set towards responsible tourism management: a case study on Cox's Bazar, Bangladesh. *Asia Tourism Forum 2016 – The 12th Biennial Conference of Hospitality and Tourism Industry in Asia (ATF-16)*, Atlantis Press, Bandung, 7–9 May, pp. 1–9.
- Bennett, G., Cohen, P., Schwarz, A., Albert, M., Lawless, J S., Paul, C. and Hilly, Z. 2014. Solomon Islands: Western Province situation analysis. CGIAR Research Program on Aquatic Agricultural Systems, Penang, Malaysia. Project report: AAS-2014-15.
- Bhattacharjee, A., Polas, M. R. H. and Rahman, M. L. 2018. Challenges and prospects of tourism in Cox's bazar: An empirical study. *Journal of Business and Technology (Dhaka)*, 13: 63–82.
- Bhuiyan, M. A. H., Islam, R. and Siwar, C. 2010. Potentials of ecotourism development in Bangladesh: A case study of Cox's Bazar. *Asia-Euro Conference*, Subang Jaya, Malaysia.
- Bozec, Y. M., O'Farrell, S. and Bruggemann, J. H. 2016. Tradeoffs between fisheries harvest and the resilience of coral reefs. *Proceedings of the National Academy of Science of the United States*, 113:4536–4541.
- Brander, L. M., Van Beukering, P. J. H. and Cesar, H. S. J. 2007. The recreational value of coral reefs: a meta-analysis. *Ecological Economics*, 63:209–218.
- Brown, K., Turner, R. K. and Hameed, H. 1997. Environmental carrying capacity and tourism development in the Maldives and Nepal. *Environmental Conservation*, 24:316–325.
- Chowdhury, T. N. and Chowdhury, M. M. 2014. An analysis of guest occupancy and profit of private and public hotels in Cox's Bazar. *Asian Business Review*, 4(3): 50–59.
- Craig, R. K. 2008. Coral reefs, fishing, and tourism: Tensions in U.S. ocean law and policy reform. *Stanford Environmental Law Journal*, 27:3–41.
- Cronbach, L. 1951. Coefficient alpha and the internal structure of tests. *Psychometrika*, 16:297–334.
- Diedrich, A. 2007. The impacts of tourism on coral reef conservation awareness and support in coastal communities in Belize. *Coral Reefs*, 26:985–996.
- Diedrich, A. and Aswani, S. 2016. Exploring the potential impacts of tourism development on social and ecological change in the Solomon Islands. *Ambio*, 45:808–818.
- Fabinyi, M. 2008. Drive tourism, fishing and marine protected areas in the Calamianes Islands, Philippines. *Marine Policy*, 32:898–904.
- Faizan, M, Sasekumar, A. and Chenayah, S. 2016. Estimation of local tourists' willingness to pay. *Regional Studies in Marine Science*, 7:142–149.
- Gier, L., Christie, P. and Amolo, R. 2017. Community perceptions of scuba drive tourism development in Bien Unido, Bohol Island, Philippines. *Journal of Coastal Conservation*, 21:153–166.

- Gossling, S. 2001. Tourism, economic transition and ecosystem degradation: Interacting processes in a Tanzanian Coastal Community. *Tourism Geographies*, 3:430–453.
- Hasan, M. K., Mamun, M. A. A. and Islam, M. R. 2015. Market segmentation and targeting strategy for promoting Cox's Bazar Beach in Bangladesh as a tourists' destination. *British Journal of Marketing Studies*, 3(4):59–72.
- Hawkins, J. P. and Roberts, C.M. 1994. The growth of coastal tourism in the Red Sea: Present and future effects on coral reefs. *Ambio*, 23:503–508.
- Hicks, C. C, Graham, N. A. J. and Cinner, J. E. 2013. Synergies and tradeoffs in how managers, scientists, and fishers value coral reef ecosystem services. *Global Environmental Change*, 23:1444–1453.
- Hin, T.W. 2010. Issues and challenges in island tourism development: The case of Pangkor Island. In Kadir Din and Jabil Mapjabil (Eds.). *Tourism research in Malaysia: What, which way and so what?* University Utara Malaysia (UUM), Sintok, Kedah, Malaysia.
- Hunter, C. E., Lauer, M. and Levine, A. 2018. Maneuvering towards adaptive co-management in a coral reef fishery. *Marine Policy*, 98:7–84.
- Kim, K. Uysal, M. and Sirgy, M. J. 2013. How does tourism in a community impact the quality of life of community residents? *Tourism Management*, 36:527–540.
- Lachs, L. and Oñate-Casado, J. 2020. Fisheries and tourism: Social, economic, and ecological trade-offs in coral reef systems. In S. Jungblut et al. (Eds.). *YOUMARES 9 – The oceans: Our research, our future: Proceedings of the 2018 conference for Young Marine Researcher in Oldenburg, Germany*, Springer International Publishing, 243–260.
- Lindberg, K., Enriquez, J. and Sproule, S. 1996. Ecotourism questioned: Case studies from Belize. *Annals of Tourism Research*, 23:543–562.
- Lopes, P. F. M., Pacheco, S. and Clauzet, M. 2015. Fisheries, tourism, and marine protected areas: Conflicting or synergistic interactions? *Ecosystem Services*, 16:333–340.
- Mamat M. P., Yacob M. R. and Radam A. 2013. Willingness to pay for protecting natural environments in Pulau Redang Marine Park, Malaysia. *African Journal of Business Management*, 1:2420–2426
- Mamun, A. A. L., Hassan, K. and Hossain, S. A. K. M. 2013. Image of Cox's Bazar Beach as a tourist destination: An investigation. *International Review of Business Research Papers*, 9(5):122–138.
- Menon, A., Sowman, M. and Bavinck, M. 2018. Rethinking capitalist transformation of fisheries in South Africa and India. *Ecology and Society*, 23(4):27.
- MoFA, 2014. Press Release: Press statement of the Hon'ble Foreign Minister on the verdict of the Arbitral Tribunal/PCA. Dhaka, 08 July, 2014. Ministry of Foreign Affairs, Bangladesh. <http://www.mofa.gov.bd/PressRelease/PRDetails.php?txtUserId=&PRid=854>
- Murray, G. 2007. Constructing paradise: The impacts of big tourism in the Mexican coastal one. *Coastal Management*, 35:339–355.
- Nunnally, J. C. and Bernstein, I. H. 1994. The assessment of reliability. *Psychometric Theory*, 3:248–292.

- Papageorgiou, M. 2016. Coastal and marine tourism: A challenging factor in marine spatial planning. *Ocean and Coast Manage*, 129: 44–48.
- Rahman, M. L., Hossain, S. M. N., Miti, S. S. and Kalam, A. K. M. A. 2010. An overview of present status and future prospects of the tourism sector in Bangladesh. *Journal of Bangladesh Institute of Planners*, 3:65–75.
- Redding, J. E., Myers-Miller, R. L. and Baker, D. M. 2013. Link between sewage-derived nitrogen pollution and coral disease severity in Guam. *Marine Pollution Bulletin*, 73:57–63.
- Renfro, B. and Chadwick, N. E. 2017. Benthic community structure on coral reefs exposed to intensive recreational snorkeling. *PLoS One*, 12:e0184175.
- Roy, B. and Hoque, R. 2015. Building a strong brand image of Cox's Bazar as a tourist destination: An empirical analysis on Cox's Bazar. *American Journal of Tourism Management*, 4(2):27–34.
- Sachs, J., Schmidt-Traub, G., Kroll, C., Durand-Delacre, D. and Teksoz, K. 2017. *SDG Index and Dashboards Report 2017*. New York: Bertelsmann Stiftung and Sustainable Development Solutions Network (SDSN).
- Samoilys, M. A, Osuka, K. and Maina, G. W. 2017. Artisanal fisheries on Kenya's coral reefs: Decadal trends reveal management needs. *Fisheries Research*, 186:177–191.
- Shuib, A., Ali, A. and Emby, Z. 2008. Attitude of residents of Pulau Tioman towards the impacts of tourism development. *FEB Working Paper Series No. 0804*. Universiti Malaysia Sarawak (UNIMAS).
- Stem, C. J., Lassoie, J. P., Lee, D. R. and Deshler, D. J. 2003. How 'eco' is ecotourism? A comparative case study of ecotourism in Costa Rica. *Journal of Sustainable Tourism*, 11:322–347.
- Tate R. 2003. A comparison of selected empirical methods for assessing the structure of responses to test items. *Applied Psychological Measurement*, 27:159–203.
- Truong, V. D., Hall, C. M. and Garry, T. 2014. Tourism and poverty alleviation: Perceptions and experiences of poor people in Sapa, Vietnam. *Journal of Sustainable Tourism*, 22:1071–1089.
- UNWTO. 2019. International tourist arrivals reach 1.4 billion two years ahead of forecasts. *United World Tourism Organization (UNWTO)*. <http://www2.unwto.org/press-release/2019-01-21/internationaltourist-arrivals-reach-14-billion-two-years-ahead-forecasts>.
- Voyer, M., Quirk, G., McIlgorm, A. and Azmi, K. 2018. Shades blue: What do competing interpretations of the Blue Economy mean for ocean governance? *Journal of Environmental Policy and Planning*, 20 (5):595–616.
- Wakil, M. A. 2014. Role of tourism to achieve environmental sustainability in coastal areas: A case of Cox's Bazar, Bangladesh. M. Sc. Thesis, Department of Urban Planning and Design, The University of Hong Kong, Hong Kong, China.
- White, A. T. and Rosales, R. 2003. Community-oriented marine tourism in the Philippines: Role in economic development and conservation. In S. Gossling (Ed.), *Tourism and development in tropical islands: Political ecology perspectives*. Cheltenham Edward Elgar Publishing Ltd, pp. 237–262.

- Yacob, M. R., Shuib, A. and Manat, M. F. 2007. Local economic benefits of ecotourism development in Malaysia: the case of Redang Island Marine Park. *Int. Journal of Economics and Management*, 1:365–386.
- Zahra, I. 2013. Tourism and its impact on Cox's Bazar, Bangladesh, *Revista de Turism: Studii si Cercetari in Turism (Jour of Tourism – Studies and Research in Tourism)* 15:12–18.

APPENDIX

Dimensions and Related Indicators of Sustainable Development

Dimensions	Indicators	References
Social	Improves quality of life for locals	Diedrich 2007; Shuib, Ali, and Emby 2008
	Gives value to local ecosystem	Diedrich 2007
	Educates people about the marine environment	Diedrich 2007; Gier, Christie, and Amolo 2017
	Facilitates the development of infrastructure and improves public facilities	Gier, Christie, and Amolo 2017
	Tourism development increases the cost of living	Gier, Christie, and Amolo 2017
	Respects local cultural heritage	Brown, Turner, and Hameed 1997; Lopes, Pacheco, and Clauzet 2015
	Increases crime, drugs, and illegal activities	Shuib, Ali, and Emby; Hin 2010
Economic	Provides economic benefits to locals	Brander, Van Beukering, and Cesar 2007; Craig 2008; Gier, Christie, and Amolo 2017
	Marine tourism helpful for fishing activities	Yacob, Shuib, and Manat 2007; Lopes, Pacheco, and Clauzet 2015; Samoily, Osuka, and Maina 2017
	Provides employment opportunities	Lopes, Pacheco, and Clauzet 2015; Murray 2007
	Develops livelihood for the poor	Lopes, Pacheco, and Clauzet 2015; Hunter, Lauer, and Levine 2018
	Attracts foreign investment	Gier, Christie, and Amolo 2017
	Increases the price of local goods	Shuib, Ali, and Emby 2008
Environment	Preserves the health of the local marine environment	Diedrich 2007; Hunter, Lauer, and Levine 2018
	Creates negative impacts on marine life	Hawkins and Roberts 1994; Diedrich 2007
	Support for conservation	Hawkins and Roberts 1994; Redding, Myers-Miller, and Baker 2013; Renfro and Chadwick 2017
	Marine tourism supports ecosystem services	Hicks, Graham, and Cinner 2013; Bozec, O'Farrell, and Bruggemann 2016
	Tourism activities create overcrowded beach areas	Gier, Christie, and Amolo 2017
	Creates additional waste and degradation	Hawkins and Roberts 1994; Redding, Myers-Miller, and Baker 2013
	Tourism activities create pressure on marine resources	Gier, Christie, and Amolo 2017; Redding, Myers-Miller, and Baker 2013