

Bhuiyan, Md. Anowar Hossain; Darda, Abud

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Socioeconomic impacts of coastal tourism on local communities in Kuakata, Bangladesh

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ADBI Working Paper Series

**SOCIOECONOMIC IMPACTS OF COASTAL
TOURISM ON LOCAL COMMUNITIES
IN KUAKATA, BANGLADESH**

Md. Anowar Hossain Bhuiyan
and Md. Abud Darda

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Md. Anowar Hossain Bhuiyan is a faculty member (Management), Md. Abud Darda is a faculty member (Statistics), both at the National University in Gazipur, Bangladesh.

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Please contact the authors for information about this paper.

Email: anowarlestari@gmail.com

Asian Development Bank Institute
Kasumigaseki Building, 8th Floor
3-2-5 Kasumigaseki, Chiyoda-ku
Tokyo 100-6008, Japan

Tel: +81-3-3593-5500
Fax: +81-3-3593-5571
URL: www.adbi.org
E-mail: info@adbi.org

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Abstract

The socioeconomic impacts of coastal tourism depend on local communities' participation in tourism activities and gathering both positive and negative consequences. However, an understanding of the socioeconomic impacts is essential for making proper strategic efforts for its sustainable existence. The present study identifies the socioeconomic impacts of coastal tourism on local communities in Kuakata, which is one of the natural coastal tourist attractions in Bangladesh. The study is based on quantitative survey data from 350 local tourism stakeholders obtained through a semi-structured questionnaire. Based on a theoretical framework, factor analysis has been conducted to perceive the latent construct of four dimensions of coastal tourism impacts, namely, livelihood, economic, social, and environmental aspects. Later, cluster analysis has been used to observe the overall socioeconomic impact. The study revealed that the overall impacts of coastal tourism have significant consequences among the respondents in different age groups, educational levels, and income categories. Tourism activities are important for sustainable livelihood, increasing adaptive capacity, and reducing vulnerability in coastal areas. It is also observed that there is poor empowerment of locals, lack of regulations, and limited community participation in coastal tourism activities in Kuakata. Policymakers, industry professionals, and academics need to give careful attention to the overall impacts so that sustainable development can be achieved through coastal tourism development in the study area.

Keywords: coastal tourism, socioeconomic impacts, cluster analysis, Bangladesh

JEL Classification: C38, C52, Z30, Z32

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1. INTRODUCTION

Coastal tourism is considered one of the significant activities in the blue economy that can mitigate the impacts of climate change (Leposa 2020). It is also one of the top tourism segments worldwide for its important contribution to the tourism industry (Rangel-Buitrago et al. 2019). Coastal tourism comprises inclusive tourism segments of recreation and vacation activities in both peak and off-peak seasons. It is an important leisure form for tourists as well as creating learning and participation opportunities for the locals (Wang et al. 2022). Coastal tourism facilitates various tourist activities, such as surfing, swimming, sunbathing, and coastal recreation (Lowe and Tejada 2019).

Coastal tourism deals with the conservation of marine resources and ecosystem-based adaptation to ensure sustainable tourism development (Chae, Wattage, and Pascoe 2012). It contributes to improving the financial situation of locals in terms of creating employment and alleviating poverty (Selamat, Chelamuthu, and Suhaili 2016). Woo, Uysal and Sirgy (2018) emphasized the need for the planned development of coastal tourism to ensure positive effects on local communities and tourist attractions. Ho et al. (2017) revealed through a study on Tioman Island in Malaysia that tourism development should emphasize the needs of local communities and that locals' participation is essential in tourism planning and management. Coastal communities supply local products based on coastal resources, such as fishing, local crafts, seafood, and coastal cuisine, for their livelihood (Lacher et al. 2013). The local communities gather benefits from coastal tourism, such as employment, improved living standards, infrastructure development, economic gains, and increased environmental awareness (Nunkoo and Ramkissoon 2016).

About 40 million people in coastal areas in Bangladesh are dependent on natural resources for maintaining their livelihood (Lázár et al. 2015). The livelihood of the local people in coastal areas is vulnerable due to climate change, excessive pressure on natural resources, pollution of the marine ecosystem, population growth, urbanization, and landscape change (Bhuiyan et al. 2020). The proper utilization and adaptation of natural resources are necessary to ensure their socioeconomic well-being and reduce negative climate change impacts in coastal areas. Several studies (Mamun, Hassan, and Hossain 2013; Roy and Hoque 2015; Bhattacharjee, Polas, and Rahman 2018) on tourism in the coastal areas of Bangladesh have focused on the socioeconomic impacts of tourism on local communities concerning long-term benefits. Mamun, Hassan, and Hossain (2013) examined local investment, Roy and Hoque (2015) identified the socioeconomic circumstances of local communities, and Bhattacharjee, Polas, and Rahman (2018) emphasized local employment opportunities in the coastal areas of Bangladesh.

There are notable tourist attractions including islands, beaches, and forests situated in the coastal areas in Bangladesh. Kuakata is one of the major coastal tourism attractions in the country due to its lucrative coastal and marine activities. This area can attract more than 50,000 tourists every year from October to March (*Financial Express*, 2021). This area has been recognized as a potential tourist attraction by the Government of Bangladesh (GoB) due to its attractiveness (Hossain and Islam 2016). Deb, Sarker, and Jannat (2020) revealed that local accommodation and transportation are attracting tourists to Kuakata. Another study by Rahman, Rahman, and Nahar (2015) identified that tourism development at Kuakata is essential for the economic and social well-being of the local inhabitants. The previous studies (Mamun, Hassan, and Hossain 2013; Roy and Hoque 2015; Bhattacharjee, Polas, and Rahman 2018) on tourism in the coastal areas of Bangladesh have identified the socioeconomic impacts

of limited circumstances. Again, the existing studies on Kuakata (Rahman, Rahman, and Nahar 2015; Deb, Sarker, and Jannat 2020) also highlight a few aspects of the socioeconomic impacts. However, it is necessary to identify the socioeconomic impacts of coastal tourism on the communities to take proper action and initiatives for their long-term survival by ensuring locals' well-being.

The perception of local communities has been widely used in tourism studies to identify the possible impacts of tourism. Several studies (Nunkoo and Ramkissoon 2016; Khazaei, Elliot, and Joppe 2017; Ho et al. 2017; Woo, Uysal, and Sirgy 2018) globally have measured tourism impacts through the perception of local tourism stakeholders. So, it is important to identify the socioeconomic impacts of coastal tourism on local communities in the study area from their perception of the long-term survival of the tourism destination as well as the benefits gathered from tourism activities.

The present study investigates the socioeconomic impacts of tourism on coastal communities in Kuakata, Bangladesh. The following research questions are identified to attain the study's objectives:

Q1. What are the observed dimensions of coastal tourism impacts in the study area?

Q2. What is the overall socioeconomic impact in the study area due to coastal tourism?

Q3. Which groups are most vulnerable to coastal tourism development?

The study makes two significant contributions to the existing literature. First, it identifies the important dimensions by which the socioeconomic impact can be studied in terms of coastal tourism development. Second, it focuses on some vulnerable groups in the local community who are negatively affected by coastal tourism development.

The paper is organized into several sections for clarity and to generate simple readability to its general readers. The literature review section includes the several impacts of coastal tourism and highlights the research gaps based on the previous studies. The sampling method and data description section discusses the study site, sample determination, research tools, and data collection procedures. Next, the data analysis tools are presented. Data analysis outputs and the results obtained are highlighted in the results and discussion section. Finally, recommendations and policy guidelines are provided in the conclusion section.

2. LITERATURE REVIEW

The socioeconomic impacts of tourism depend on how local communities can participate in tourism activities based on several factors, including observations, attitudes, cultural integrity, and social perspectives (Kariyawasam et al. 2020). Locals' well-being is dependent on effective communication, suitable strategies, and capacity development for their empowerment and active participation in tourism-related activities (Khazaei, Elliot, and Joppe 2017). Coastal tourism ensures positive socioeconomic impacts for local communities' traditional beliefs, harmony among the ethnic people, traditional festivals, improved living standards, infrastructure development, job creation, income opportunities, and cultural interactions with tourists (Akpabio, Eniang, and Egwali 2008). Again, coastal tourism impacts depend on several attributes, such as the nature of the tourists and means of arrival, the tourist's lifestyle, the carrying capacity of the tourist attraction, local people's awareness, the benefits for local communities, cultural exchange opportunities, and local participation in tourism management and planning activities (Amalu, Ajake, and Obi 2018).

Coastal tourism demand is exceeding other tourism segments for a positive growth rate (Lee, Hampton, and Jeyacheya 2015). This demand is affecting the carrying capacity in coastal areas and contributing to locals' lives in terms of both positive and negative impacts (Xue, Kerstetter, and Hunt 2017). This tourism segment is facing a challenging situation due to the loss of biodiversity, reduction in cleanliness, climate change, and excessive human pressure from tourist activities (Belgrano and Villasante 2021). In this regard, socioeconomic impacts from climate change are fundamental matters for coastal tourism development in an area (Arabadzhyan et al. 2021). Unsustainable coastal tourism development creates negative impacts on the natural environment, tourism infrastructures, tourist activities, and coastal communities (Comerio and Strozzi 2019). The study by Rankin, Ballantyne, and Pickering (2015) revealed that excessive tourist activities in coastal attractions generate threats to biodiversity and marine species. Again, coastal tourism also contributes to several negative impacts, such as coastal pollution, hampering fishing activities, damage to coral reefs, and an increase in social crime (Kinseng et al. 2018).

Both positive and negative contributions are creating concern in local communities towards tourism development in an area (Sharma, Sharma, and Kukreja 2012). Moreover, local well-being is dependent on the socioeconomic characteristics of tourists, such as income, education, spending money for the local economy, staying in local accommodation, willingness to pay (WTP), and revisiting intention toward tourist attractions (Lal et al. 2017). The positive contributions of tourism, such as balanced development, income generation (Lucrezi et al. 2017), benefit gathering, economic development (Weiler et al. 2017), and cultural experiences (Kruger et al. 2019), are necessary for supporting the locals' attitude towards tourism development.

The negative intention and attitudes of locals are not conducive to tourism development (Peng, Chen, X., and Wang 2016). Several improper contributions to tourism development, such as cultural exposure, social value, economic condition, living standard, and purchasing power, are creating social conflict among the local communities (Iwara and Amalu 2017). Moreover, tourism development also incurs some negative sociocultural impacts, such as increased crime, destroying cultural identity, decreasing the traditional structure of society, enhancing foreign lifestyles, and decrease traditional values and beliefs (Amalu, Ajake, and Obi 2015). Furthermore, Bello, Carr, and Lovelock (2016) identified from their study on protected areas that local people are not suffering from shortcomings due to tourism development, such as limited access to financial resources, educational backwardness, a lack of qualified manpower, communication errors, and not sharing the benefits to locals.

Local communities are trying to achieve socioeconomic enhancement through tourism activities in the maximum number of tourist attractions (Badola et al. 2018). Tourism activities in coastal areas are important due to biodiversity conservation, natural resource management, market incentives, and benefits for the local tourism stakeholders. Coastal tourism can contribute to positive socioeconomic impacts in terms of local accommodation, job creation, and the promotion of local services and products. This tourism segment can have both positive and negative impacts on local communities in terms of livelihood, social, economic, and environmental aspects.

Coastal tourism contributes to supporting the sustainable livelihood of local communities through the sustainable use of natural resources and effective management of the marine environment (Mehvar et al. 2019). It enhances the suitable access to livelihood assets like fishing, transportation, agriculture, and livestock for the coastal communities through sustainable tourism development (Hossain et al. 2018). Again, in their studies on coastal areas in Bangladesh, Mehvar et al. (2019) and Hossain et al. (2018a) revealed that tourism activities are creating positive impacts on

the livelihood of coastal communities due to appropriate access to livelihood assets. Moreover, coastal tourism activities increase the adaptive capacity of the local people in coastal areas (Shaffril, Samah, and D'Silva 2017) as well as reduce their vulnerability (World Bank, 2009). Shaffril, Samah, and D'Silva (2017) pointed out that engagement in tourism activities is helpful for the adaptation of coastal fishers during the non-fishing seasons. Furthermore, the study by the World Bank (2009) emphasized tourism activities as an ecosystem-based approach to reduce the vulnerability of coastal people due to climate change impacts such as cyclones, a rise in sea levels, floods, and coastal erosion.

Coastal tourism can enhance economic benefits for local communities through various activities. Mehvar et al. (2018) identified economic well-being through income opportunities, local investment, and infrastructure development in the coastal areas of Indonesia through local engagement in tourism activities. Local communities can engage in coastal tourism activities to improve their living standard and alternative livelihood scopes. The study by van Putten et al. (2013) on the local fishers in South East Australia revealed that coastal tourism activities ensure economic resilience for local communities to enhance alternative livelihood options. The study by Cobbinah (2015) revealed that tourism activities create employment opportunities for locals through natural resources management in rural Ghana. Again, tourism activities also contribute to new business opportunities in the protected areas of Rwanda (Lal et al. 2017) and promote local goods and services of local communities in rural Cambodia (Reimer and Walter 2013).

Local communities experience various social impacts due to coastal tourism activities in their areas. The local communities of Cross River State in Nigeria have gathered social benefits through tourism activities in terms of participation in resource management (Amalu, Ojugbo, and Otop 2018), social well-being (Takon and Amalu 2013), and cultural exchange opportunities (Amalu, Ojugbo, and Otop 2018). Coastal tourism can ensure social well-being for the local communities through effective communication, suitable strategies, capacity development, and engagement in tourism activities (Khazaei, Elliot, and Joppe 2017). Through a study on Tioman Island in Malaysia, Ho et al. (2017) identified that coastal tourism is suitable for local community participation in resource management and tourism planning. Moreover, Khazaei, Elliot, and Joppe (2017) pointed out that local people empowerment is essential for ensuring social benefits from tourism activities. The studies by Salik et al. (2015) on coastal communities in Pakistan and Spalding et al. (2014) on coastal ecosystems revealed that coastal tourism activities integrate the local knowledge for adaptation in the coastal areas due to climate change impacts. Kariyawasam et al. (2020) identified from a study on the National Park in Sri Lanka that coastal tourism is suitable for ensuring cultural exchange opportunities for locals through their observations, attitudes, cultural integrity, and social perspectives. Furthermore, Takon and Amalu (2013) revealed through their study in Nigeria that tourism activities maintain strong social relationships between tourists and locals in terms of the exchange of sociocultural values through relationships, traditions, customs, food habits, festivals, and dressing.

The environmental impacts are concerning matters for the locals regarding their support for coastal tourism development. Akpabio, Eniang, and Egwali (2008) revealed through their study in Nigeria that coastal tourism preserves the local ecosystem and environment. Xue, Kerstetter, and Hunt (2017) emphasized the importance of the carrying capacity of the tourist attraction and the living standard of locals as a result of the impact of coastal tourism on the local ecosystem and environment. Again, coastal communities are suffering from negative impacts on the local ecosystem and environment due to excessive tourist activities (Rankin, Ballantyne, and Pickering

2015). The study by Belgrano and Villasante (2021) on the ocean ecosystem revealed that coastal tourism needs to ensure a sustainable ecosystem to avoid the loss of biodiversity, the reduction in cleanliness, and excessive tourist activities. Moreover, climate change impacts are important considerations for coastal tourism development in an area (Arabadzhyan et al. 2021). Kinseng et al. (2018) in a study on marine tourism development in the small islands of Indonesia, identified that climate change is accountable for negative impacts on coastal communities, such as coastal pollution, damage to the natural environment, hampering fishing activities, and damage to tourism infrastructures. Again, ensuring a sustainable coastal ecosystem (Mehvar et al. 2018) and mitigating climate change impacts (Leith et al. 2014) are necessary for a positive perception of the local people of coastal tourism development. Table 1 highlights the socioeconomic impacts of coastal tourism on local communities with proper justification from existing literature.

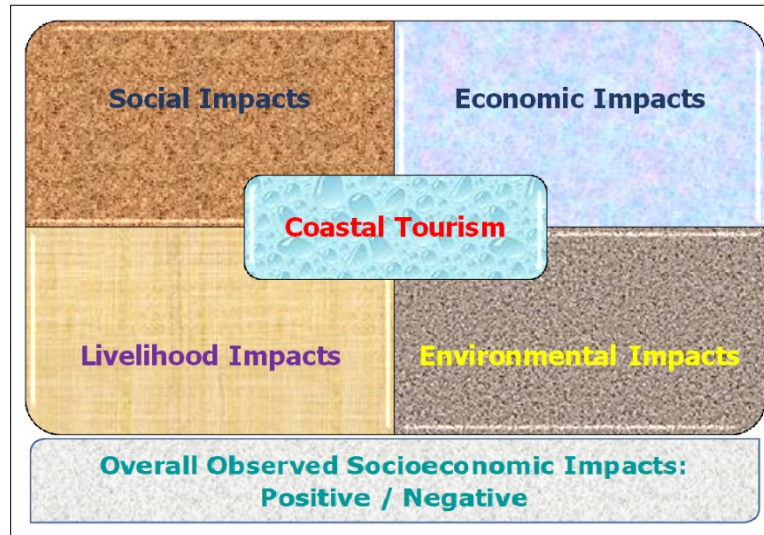
Table 1: Socioeconomic Impacts of Coastal Tourism on Local Communities

Coastal Tourism Effects	References
Livelihood Aspect	
Support for sustainable livelihood	Mehvar et al. 2019
Access to livelihood assets	Hossain et al. 2018
Increase the adaptive capacity of locals	Shaffril, Samah, and D'Silva 2017
Reduce vulnerability for coastal people	World Bank 2009
Economic Aspect	
Provide economic well-being for locals	Mehvar et al. 2018
Ensure economic resilience for locals	van Putten et al. 2013
Create employment opportunities for locals	Cobbinah 2015
Create opportunities for new business	Lal et al. 2017
Increase demand for local transportation and food	Reimer and Walter 2013
Social Aspect	
Ensure empowerment of the locals	Khazaei, Elliot, and Joppe 2017
Integrate the local knowledge	Spalding et al. 2014
Ensure the participation of locals in resource management	Amalu et al., 2018
Enhance social well-being	Takon and Amalu, 2013
Cultural exchange opportunities	Amalu, Ojugbo, and Otop 2018
Maintain strong social relationships	Salik et al. 2015
Environmental Aspect	
Preserve local ecosystems	Akpabio, Eniang, and Egwali 2008
Preserve local environment	Akpabio, Eniang, and Egwali 2008
Ensure a sustainable coastal ecosystem	Belgrano and Villasante 2021
Helpful to mitigate climate change impacts	Leith et al. 2014

Source: Authors' own.

Coastal tourism activities support the local communities to enhance their well-being. They contribute to the socioeconomic conditions of local communities in terms of livelihood, social, economic, and environmental aspects (Table 1). The socioeconomic well-being of local communities is dependent on their support for and positive perception of coastal tourism development.

Based on the existing literature, a theoretical framework has been developed for the present study as portrayed in Figure 1.

Figure 1: Socioeconomic Impacts of Coastal Tourism on Local Communities

3. SAMPLING METHODS AND DATA DESCRIPTION

3.1 Study Site

'Kuakata' is one of the famous coastal tourism attractions situated in the southern part of Bangladesh. This beach offers exceptional experiences of the scenic beauty of the rising and setting of the sun in the water of the Bay of Bengal (Hossain et al. 2018). This area is attractive to tourists due to its places of pilgrimage, sea beaches, lucrative islands, reserve forests, and ethnic lifestyles. The noteworthy tourist activities include recreational fishing, observing the sunrise and sunset, surfing, swimming, boating, and festivals (Horaira 2017).

3.2 Sampling

The study uses a nonprobability convenience sampling design to regulate the sample of the study. Data have been collected from 350 purposively selected respondents from various local tourism stakeholders in Kuakata who depend on tourism activities for their livelihoods as well as interacting with the tourists directly. For this reason, tour operators, tour guides, accommodation owners, transportation providers, shopkeepers, and local product sellers have been interviewed.

3.3 Questionnaire and Data Collection

The study designed and used a semi-structured questionnaire to collect data from the respondents. The questionnaire was pretested with a small group of respondents before administering the final survey. It has two parts. The first part contains some demographic and socioeconomic information about the respondents. The second part consists of several statements on various aspects of coastal tourism development with its possible socioeconomic impacts. Respondents were asked to provide their opinions on the statements that were organized on a five-point Likert scale. The data collection was conducted by a group of trained enumerators in January 2022. Researchers together supervised the data collection procedure and queries were instantly met during the data collection period. The intention of the study was clearly explained to the

respondents at the very beginning and, after assuring them of their anonymity, their verbal consent was obtained to disclose the research outcomes.

4. METHODS OF ANALYSIS

The collected data were organized and various statistical tools were applied to obtain the study outcomes. Initially, statistical measures are computed to observe the descriptive characteristics. Necessary tables, charts, mean, average, percentage, etc. are used to present the data description and find a way for further analysis approaches. Factor analysis has been carried out to observe the latent construct of related statements/variables creating together an unobserved theme. Further, a cluster analysis of observed factor scores has been used to segment the data to observe the overall socioeconomic impact of coastal tourism development. Finally, projections of the demographic characteristics of respondents have been made to identify the significant vulnerable group observing the segmented socioeconomic impact of coastal tourism development. Data organization and analysis were performed using the SPSS 25.0 computer package.

4.1 Factor Analysis

In the “classical factor analysis” mathematical model, let p denote the number of variables X_1, X_2, \dots, X_p and m denotes the number of underlying factors F_1, F_2, \dots, F_m . If X_j is the variable represented in latent factors, this model assumes that there are m underlying factors whereby each observed variable is a linear function of these factors together with a residual variate. Thus, an expression for the unobserved or latent variable has the notation:

$$X_j = a_{j1}F_1 + a_{j2}F_2 + \dots + a_{jm}F_m + e_j \text{ where } j = 1, 2, \dots, p$$

The factor loadings are $a_{j1}, a_{j2}, \dots, a_{jm}$, which denotes that a_{j1} is the factor loading of the j -th variable on the 1st factor. The specific or unique factor is denoted by e_j . The factor loadings give an idea about how much the variable has contributed to the factor; the larger the factor loading the more the variable has contributed to that factor (Harman 1976). Factor loadings are very similar to weights in multiple regression analysis, and they represent the strength of the correlation between the variable and the factor (Kline 1994).

4.2 Cluster Analysis

Cluster analysis assists in demarcating a population into various groups based on the same feature of a set of data that may reveal causes, effects, and/or the source of any unidentified psycho-social problems. The study applied a two-way clustering approach to classifying the observed factor scores. The two-step cluster analysis is an exploratory tool that reveals the natural groupings (or clusters) within a data set that would otherwise go unnoticed. It can handle both categorical and quantitative data, and clusters are created automatically. To determine the “best” number of clusters, it compares the initial solution of agglomerative clustering considering Schwarz’s Bayesian Criterion (BIC) or the Akaike Information Criterion (AIC) as the clustering criterion. The projected profile of clustered respondents may be explained to imply the specific socioeconomic phenomenon (Everitt, Landau, and Leese 2001).

4.3 Chi-Square Test of Independence

The chi-square test of independence is used to examine if there is some evidence that a significant difference exists between the proportions of categories in two groups of variables.

The chi-square statistics are,

$$\chi^2 = \sum \frac{(\text{observed} - \text{Expected})^2}{\text{Expected}} \sim \chi^2_{(r-1)(c-1)df}$$

where r = number of rows, and c = number of columns of the categorized variables.

Thus, this test can be used to examine whether the respondents with various categories in the demographic profiles have similar perceptions of the socioeconomic impact categories observed in the clustered segments to which they belong.

5. RESULTS AND DISCUSSION

The demographic characteristics show that most of the respondents are less educated, males are greater in proportion, and mostly young. The majority of respondents are tourism service operators, while some others are doing business locally. Tourism service operators provide both wholesale and retail sales of tourism services and products while the businessman has some direct investments in the tourism business (for instance, hotel and restaurant owners, owners of gift shops, and amusement services), and job holders are working in the local tourism industry. Almost 50% of the respondents have a monthly income of at least BDT 25,000.

Table 2: Socio-Demographic Characteristics of the Respondents

Variables		Frequency	%
Sex	Male	247	70%
	Female	103	30%
Age (years)	18–28 years	112	32%
	29–40 years	138	39%
	41 years and above	100	29%
Education	Primary	115	33%
	Secondary	148	42%
	College and above	87	25%
Occupation	Tourism service operator	200	57%
	Business	105	30%
	Job holder	45	13%
Monthly Income (Thousand BDT) *	Less than 15	88	25%
	15–25	90	26%
	25–35	75	22%
	35–50	60	17%
	More than 50	32	10%
Total		350	100.00

*1 USD= 94 BDT (Bangladeshi taka during the survey period).

The results in Table 3 portray the present opinions of respondents on some statements that possibly imply various dimensions of socioeconomic impacts. From the observed mean scores, it is evident that the respondents' opinions mostly agree with most of the statements. In the majority of cases, the observed mean score is at a satisfactory level (mean>4.0). However, there are still some issues—for example, local empowerment, integration of local knowledge, and community participation in resource management—that have a marginal level of attention by the respondents.

Table 3: Descriptive Characteristics of Socioeconomic Impacts on Local Communities

Description	Agreement Frequencies (%)		Mean	SD
	Up to Neutral	More than Neutral		
Support for sustainable livelihood	100 (29%)	250 (71%)	3.92	.605
Access to livelihood assets	28 (8%)	322 (92%)	4.14	.434
Increase the adaptive capacity of locals	29 (8%)	321 (92%)	4.24	.523
Reduce vulnerability for coastal people	40 (12%)	310 (88%)	4.25	.513
Provide economic well-being for locals	68 (20%)	282 (80%)	4.27	.575
Ensure economic resilience for locals	73 (21%)	277 (79%)	4.12	.842
Create employment opportunities for locals	83 (24%)	267 (76%)	4.16	.432
Create opportunities for new business	139 (40%)	211 (60%)	4.12	.446
Increase demand for local transportation and food	67 (19%)	283 (81%)	4.15	.493
Ensure empowerment of the locals	105 (30%)	245 (70%)	3.60	.569
Integrate local knowledge	87 (25%)	263 (75%)	3.43	.499
Ensure the participation of locals in resource management	74 (21%)	276 (79%)	3.53	.550
Enhance social well-being	88 (25%)	262 (75%)	4.13	.480
Cultural exchange opportunities	116 (33%)	234 (67%)	4.27	.681
Maintain strong social relationships	80 (23%)	270 (77%)	4.22	.346
Preserve local ecosystems	140 (40%)	210 (60%)	4.12	.778
Preserve local environment	95 (27%)	255 (73%)	3.90	.466
Ensure a sustainable coastal ecosystem	115 (33%)	235 (67%)	4.16	.533
Helps to mitigate climate change impacts	94 (27%)	256 (73%)	3.92	.487

Tourism activities provide support to a sustainable livelihood, access to livelihood assets, maintain strong social relationships and a sustainable coastal ecosystem, increase the adaptive capacity, and reduce the vulnerability of coastal people. The respondents feel that tourism activities provide economic well-being, economic resilience, and occupation opportunities for the local people. However the respondents feel that tourism activities are not so helpful in mitigating climate change impacts, provide less empowerment to the locals, fail to integrate local knowledge, and do not ensure proper participation of locals in effective resource management.

Before applying factor analysis, the sampling adequacy was checked through the Kaiser–Meyer–Olkin (KMO) test (and Bartlett's test of sphericity, and the obtained results are presented in Table 4.

Table 4: KMO and Bartlett's Test

Kaiser–Meyer–Olkin Measure of Sampling Adequacy		0.737
Approx. Chi-Square		716.823
Bartlett's Test of Sphericity	Df	98
	Sig.	.000

It is clear from Table 4 that the observed KMO value (0.737) is close to 1 which implies that the pattern of correlation among the variables is relatively compact and so factor analysis should yield distinct and reliable factors. Moreover, a highly significant Bartlett's test (p-value <0.001) indicates that the correlation matrix is not an identity matrix and, therefore, factor analysis can be carried out with the data.

Four factors can be extracted from the data and, after extraction, the identified factors together will explain 50.28% of the total variance (14.75%, 13.43%, 12.26%, and 9.84%, respectively). The factors were rotated further with a method of orthogonal rotation called Varimax rotation, and, all factor loadings greater than 0.40 (irrespective of sign) were retained (Hair et al. 1998; Stevens 2009). Thus, nineteen variables were loaded on the four latent factors according to the loading size. The results obtained results are presented in Table 5.

Table 5: Factors Derived from the Individual Items Relating to Respondents' Opinions on the Impact of Coastal Tourism Development

Rotated Component Matrix					Identified Factor
Description of the Item	1	2	3	4	
Reduce vulnerability for coastal people	.693				Impact on Livelihood Aspect
Access to livelihood assets	.692				
Increase the adaptive capacity of locals	.634				
Support for sustainable livelihood	.617				
Provide economic well-being for locals		.707			Impact on Economic Aspect
Increase demand for local transportation and food		.646			
Create opportunities for new business		.595			
Ensure economic resilience for local		.577			
Create employment opportunities for locals		.490			
Ensure the participation of locals in resource management			.760		Impact on Social Aspect
Enhance social well-being			.753		
Ensure empowerment of the locals			.752		
Cultural exchange opportunities			.613		
Integrate the local knowledge			.665		
Maintain strong social relationships			.598		
Preserve local ecosystems				.755	Impact on Environmental Aspect
Preserve local environment				.727	
Ensure a sustainable coastal ecosystem				.670	
Helpful to mitigate climate change impacts				.644	

Extraction Method: Principal Component Analysis with Varimax rotation and Kaiser Normalization.

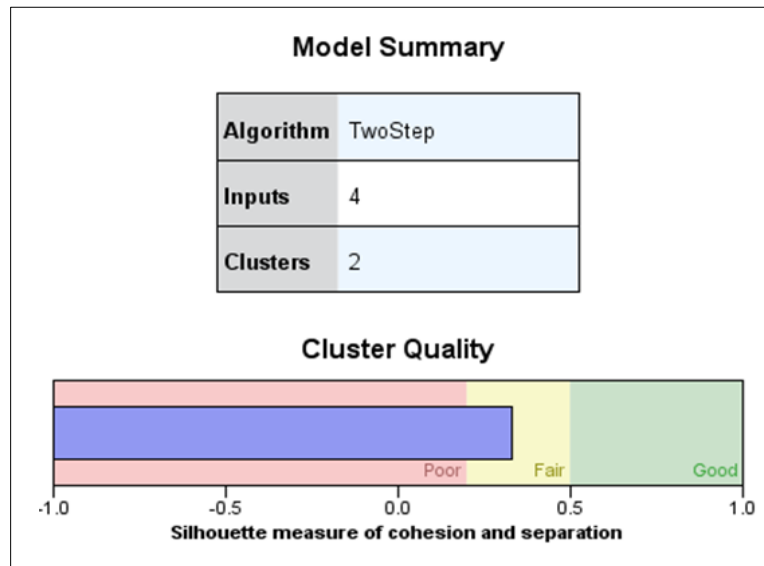
Looking at the factor loading (contents in Table 5) of items that load onto the same factor one can easily identify the related theme of the hidden construct of related variables. A higher level of factor loadings (factor loading greater than 0.6) can explain the significant contribution to the identified factor.

From the factor analysis, the study measured four dimensions of impacts of coastal tourism development—livelihood, economic, social, and environmental—on the local communities in the study area. Based on the respondents' opinion, coastal tourism development ensures positive impacts among the local communities on the four measured dimensions. The study outcomes support the findings of previous research. The local communities perceived that coastal tourism is helpful in having positive impacts on livelihood in terms of reducing vulnerability (World Bank 2009), access to livelihood assets (Hossain et al. 2018), local adaptive capacity (Shaffril, Samah, and D'Silva. 2017), and support for sustainable livelihood (Mehvar et al. 2019).

According to the study findings, coastal tourism had positive economic impacts, including economic well-being (Mehvar et al. 2018), the demand for local goods (Reimer and Walter 2013), and business opportunities (Lal et al. 2017). However, the respondents perceived that coastal tourism was not able to ensure economic resilience and employment opportunities. Previous research pointed out that economic resilience (Cobbinah 2015) and employment opportunities (van Putten et al. 2013) are necessary for locals to benefit from economic advantages through coastal tourism. The findings under the social dimension also concurred with previous studies. The respondents perceived that coastal tourism ensures local participation (Amalu, Ojugbo, and Otop 2018), social well-being (Takou and Amalu 2013), local empowerment (Khazaei, Elliot, and Joppe 2017), cultural exchange (Kariyawasam et al. 2020), integration of local knowledge (Spalding et al. 2014), and the maintenance of social relationships (Takou and Amalu 2013). The outcomes of the environmental dimension also supported the previous studies. The respondents feel that coastal tourism is helpful for environmental aspects in terms of preserving the local ecosystem (Xue, Kerstetter, and Hunt 2017) and environment (Rankin, Ballantyne, and Pickering 2015), ensuring a sustainable coastal ecosystem ((Mehvar et al. 2018), and mitigating climate change impacts (Leith et al. 2014).

The study implements cluster analysis (CA) to segment the respondents based on the differences in their perception of the effect of coastal tourism. For this purpose, factor scores of the four impact dimensions for each of the 350 respondents have been calculated, which provides a basis for cluster analysis. To obtain the individual factor score, the regression method has been applied. Afterward, a two-step cluster analysis algorithm has been applied to the standardized scores that confirm the existence of two separate clusters. The model summary and respective silhouette plots are shown in Figure 2.

Figure 2 depicts that the two-step clustering algorithm suggests two clusters of data. The respective Silhouette plot further confirms that making two clusters of data can gain a fair quality of clustering. The final cluster centroids derived from the data considering loglikelihood distance measures under Schwarz's Bayesian Criterion (BIC) clustering are presented in Table 6.

Figure 2: Two-Step Clustering Algorithm Model and Cluster Quality**Table 6: Cluster Centroids**

Factors	Cluster 1	Cluster 2	Combined
Factor 1: Impact on Livelihood Aspect	−0.178	+0.109	0.000
Factor 2: Impact on Economic Aspect	−0.642	+0.394	0.000
Factor 3: Impact on Social Aspect	−0.609	+0.374	0.000
Factor 3: Impact on Environmental Aspect	−0.389	+0.239	0.000

It is evident from the results in Table 6 that the two clusters are completely separate in terms of their distance measurements from the centers for the observed factors. This provides an intuition for the existence of two separate groups in the data. The first group in cluster 1 shows a negative perception towards the consequence of the aspects of coastal tourism development impacts. Thus, they somehow acknowledge the overall negative impact of coastal tourism. Respondents in the other group belonging to cluster 2, on the other hand, are much more aware of the positive consequences of the aspects of coastal tourism development impacts. They prove themselves to have been influenced by the positive impacts of coastal tourism. Table 7 represents the identification of the clusters with the corresponding number of respondents belonging to each cluster.

Table 7: Cluster Labeling According to the Overall Impact of Coastal Tourism

Clusters: Impacts of Coastal Tourism	Number of Respondents	%
Cluster 1: Negative Impact	133	38.0%
Cluster 2: Positive Impact	217	62.0%
Total	350	100.0

The results in Table 7 reveal that almost 38% of the respondents experienced the negative effect of coastal tourism. The other group (62%) is not aware of the negative socioeconomic impact and, therefore, may be categorized as experiencing positive impacts. The demographic profile and user characteristics of these two distinct groups are presented in Table 8.

The results in Table 8 provide a picture of a diversified group of respondents experiencing the negative and positive impacts of coastal tourism development. The impact of coastal tourism has significant consequences among respondents in different age groups, educational levels, and income categories. Older people, belonging to the age group 41 years and above (45%) have experienced negative impacts of coastal tourism more than others. However, the younger group, belonging to the age category 18 to 28 years, have significant intuition regarding the positive impacts (75%), A greater proportion (55.7%) of respondents with primary educational levels observed the negative impacts,

Table 8: Coastal Tourism Impact and Respondents' Profile

Variables		Impact of Coastal Tourism		Total n=350 (100.0%)	Test for Independence
		Negative (n ₁ =133)	Positive (n ₂ =217)		
Sex	Male	87 (35.2%)	160 (64.8%)	247	Pearson chi-square =2.748
	Female	46 (47.7%)	57 (55.3%)	103	
Age (years)	18–28 years	28 (25.0%)	84 (75.0%)	112	Pearson Chi-square =11.872**
	29–40 years	60 (43.5%)	78 (56.5%)	138	
	41 years and above	45 (45.0%)	55 (55.0%)	100	
Education	Primary	64 (55.7%)	51 (44.3%)	115	Pearson Chi-square =34.843***
	Secondary	56 (37.8%)	92 (62.2%)	148	
	College and above	13 (14.9%)	74 (85.1%)	87	
Occupation	Tourism service operator	76 (38.0%)	124 (62.0%)	200	Pearson Chi-square =0.486
	Business	38 (36.1%)	67 (63.9%)	105	
	Service/job holder	19 (42.2%)	26 (57.8%)	45	
Monthly Income (Thousand BDT)*	Less than 15	12 (13.6%)	76 (86.4%)	88	Pearson Chi-square =54.855***
	15–25	32 (35.6%)	58 (64.6%)	90	
	25–35	43 (57.3%)	32 (42.7%)	75	
	35–50	38 (63.3%)	22 (36.7%)	60	
	More than 50	8 (27.6%)	29 (78.4%)	37	

*** p-value ≤ 0.001; ** p-value ≤ 0.001.

whereas, the greater proportion (85%) of respondents with a college level or above education experienced positive impacts of coastal tourism development in the study area. The results in Table 8 also revealed that respondents in the middle-income levels have experienced the negative impacts more than others. Interestingly, the majority (86.4%) of respondents with a monthly income of less than BDT 15,000 perceived the positive impacts of coastal tourism development in the study area (as in Table 8).

6. CONCLUSION AND POLICY IMPLICATION

The study makes two significant contributions to the existing literature. First, it identifies the important dimensions by which the socioeconomic impact can be studied concerning coastal tourism development. Second, it focuses on some vulnerable groups in the local community who were negatively affected by coastal tourism development. The study measures the socioeconomic impacts of coastal tourism in Bangladesh from the perception of local communities and identifies the positive contribution made to occupation, income generation, and economic well-being for the locals. Tourism activities are important for a sustainable livelihood, increasing adaptive capacity, and reducing vulnerability in coastal areas. Moreover, the study revealed that there was poor/little empowerment of locals, a lack of regulations, and limited participation of local people in tourism activities. The study revealed that middle-aged,

primarily educated, and middle-income people demonstrate their negative perception of the socioeconomic impacts of coastal tourism in the study area.

The above findings can attract the interest of academics, policymakers, and industry professionals. The academicians can give attention to the possible dimensions of impacts on local tourism communities. Future research should focus on how middle-aged and middle-income people could gain more benefits from coastal tourism activities.

The policymakers can formulate proper strategies to recover the negative socioeconomic impacts on the local communities in the short and long term. They can facilitate some mechanisms such as allocating easy loans, training, promotional campaigns, and ensuring the participation of local people in tourism resources management and planning for effective benefits gained from tourism activities.

Moreover, industry professionals can concentrate on the study findings to recap their business activities and enhance coastal tourism development. They can promote local goods and services to tourists to gain benefits for local communities. They can offer tourism packages through the involvement of local less-educated and middle-income people to enhance the positive socioeconomic impacts of coastal tourism activities.

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