



Residents' Perception of Ecotourism in Ratargul Freshwater Swamp Forest of Bangladesh

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Authors' contributions

This work was carried out in collaboration with all authors. Author CLM designed the study, performed data collection and wrote the first draft of the manuscript. Authors SD, TKR and PC managed the data compilation, literature searches, statistical analysis and manuscript writing of the study. Author NS has done the commenting, editing and overall supervision of the study. All authors read and approved the final manuscript.

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ABSTRACT

Aims: The study aims at finding out the perceived economic, environmental and socio-cultural impacts of ecotourism by residents who live near the Ratargul freshwater swamp forest.

Study Design: The study is qualitative and empirical which focuses on the residents' attitudes towards the economic, environmental and socio-cultural changes due to ecotourism.

Place and Duration of Study: The study was conducted in the villages near the Ratargul freshwater swamp forest located in Gowainghat Upazila of Sylhet District of Bangladesh. The study period was from November 2014 to February 2015.

Methodology: A total of 301 respondents were interviewed from the residents using a formulated questionnaire consisting of nine demographic variables and thirty-five impact items classified into economic, environmental and socio-cultural categories. A five-point rating scale was incorporated

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into each impact item for both belief and evaluation components. The sampling method was arbitrary (non-probability sampling) but without preconceived bias.

Results: The study shows the impact items regarding economic and socio-cultural aspects secured higher ranks by possessing higher mean values. Contrarily, items associated with the environmental aspect possessed lower mean values. These findings denote that residents favored both the economic and socio-cultural impacts of tourism as they positively perceived both impacts, whereas the environmental impact was least favored by the residents. Besides, it was also found that resident's attitudes towards ecotourism vary with the variations in income, occupation, and gender.

Conclusion: The study concluded that residents acknowledge economic and socio-cultural benefits conveyed by ecotourism without sacrificing environmental and aesthetic aspects. Further studies are recommended to find out the trends of ecotourism and its impacts on residents and the forest.

Keywords: Demographic variables; ecotourism; perception; residents; socio-cultural.

1. INTRODUCTION

The ecotourism industry is expanding worldwide as the demand for tourism services, experiences a steady rise [1]. Tourism has become an important economic activity, especially in the least-developed areas of the world. It is regarded as one of the fastest expanding industries in the world, generating about two trillion USD annually (about 12% of the world's economy) [2]. Ecotourism is the new face of tourism considered as low-impact nature tourism contributing to the maintenance of species and habitats either directly through conservation or indirectly by providing the local community with sufficient revenue, which prompts them to value and protect the wildlife heritage as a source of income [3]. Within a particular community, ecotourism can provide a framework for stimulating economic development by revenue generation along with the expansion and development of local businesses and industries. Thus, ecotourism is associated largely with the small-scale community-controlled operation and long-term social wellbeing [4].

As ecotourism is primarily concerned with environmental conservation and community development, the inclusion of the local community or residents is one of the fundamental aspects of ecotourism. The participation of the residents should be exercised extensively in planning, decision-making, execution by incorporating their perceptions, values, and interests [5,6]. As ecotourism affects residents considerably, it can be perceived as positive or negative by the residents depending on their involvement with ecotourism [7,5]. Tourism perceptions by residents have gained particular attention recently, and the importance of their

opinions for planning issues, in terms of sustainable management, has been acknowledged [8]. It has been recognized that the evaluation of residents' perceptions could be a valuable component in identifying and measuring the impacts of ecotourism [9,10]. A study [11] sought to analyze the perceived impacts of tourism within a conceptual framework focusing on the amalgamation and interrelations of different types of phenomena. Many scales or frameworks have been developed to assess residents' attitudes on various aspects of tourism impacts.

Protected areas, especially those found in the tropics, contain many of the world's greatest ecotourism attractions [1]. In terms of land use, planned ecotourism can be sustainably managed for protecting natural integrity [12]. Ratargul freshwater swamp forest is a unique type of forest within Bangladesh recognized as the only existing freshwater swamp forest of the country [13]. Tourism activities in the area are very recent, with the beginning of the tourist surge in the year 2012 [14]. As of now, few studies have been done on the perceived impacts of ecotourism by the residents of the swamp forest area. One study [15] was found with the objectives of measuring the socio-economic impacts of ecotourism on residents in the area ignoring the environmental impacts. Whereas, another study [16] revealed the impact of ecotourism on the environment, society and culture of the area. None of the studies attempted to adopt a tourism impact scale to figure out the residents' perceptions regarding the impact of ecotourism. Besides, these studies didn't consider the relationship between demographic variables and perceived impacts of ecotourism by residents. So, the study attempts

to find out the perceived economic and socio-cultural impacts of ecotourism considering environmental impacts using the tourism impact scale proposed by Ap and Crompton [17] as well as to correlate perceived impacts of ecotourism with demographic variables.

2. MATERIALS AND METHODS

2.1 Study Area Selection

Ratargul hosts the last existing freshwater swamp forest of substantial size in Bangladesh. The forest is located in Gowainghat Upazila of Sylhet District and is managed by Ratargul Forest Beat of North Sylhet Range-2 (Fig. 1). It is located at latitude 25°00.025'N and longitude 91°58.180'E. The total forest area is about 1,345.83 hectares of which about 118.46 hectares was declared as a reserve forest under the Assam Forest Act in 1932 [13]. Ratargul freshwater swamp forest is surrounded by about 15 villages. Of that number, 9 villages (Ratargul, Choitabari, Aolartuk, North Deoanargaon,

Bagbari, Laxmihaor, Gangpar, Puwainkhata, Chanpur) were selected based on their proximity and thereby ease of access to the forest itself and the extent of involvement in the ecotourism activities.

2.2 Questionnaire Development

A questionnaire was developed according to the impact items scale developed by Ap and Crompton [17]. According to Ap and Crompton [17], 35 impact items were selected from an initial pool of 147 items and were classified into economic, environmental and socio-cultural categories. The items include both positive and negative impacts perceived by residents. The particular scale was chosen because the scale covers every impact item that showed the most statistically reliable results on ecotourism impact perception. The scale incorporates a rating system of specific ecotourism impacts on two aspects of each phenomenon: belief component and evaluation component.

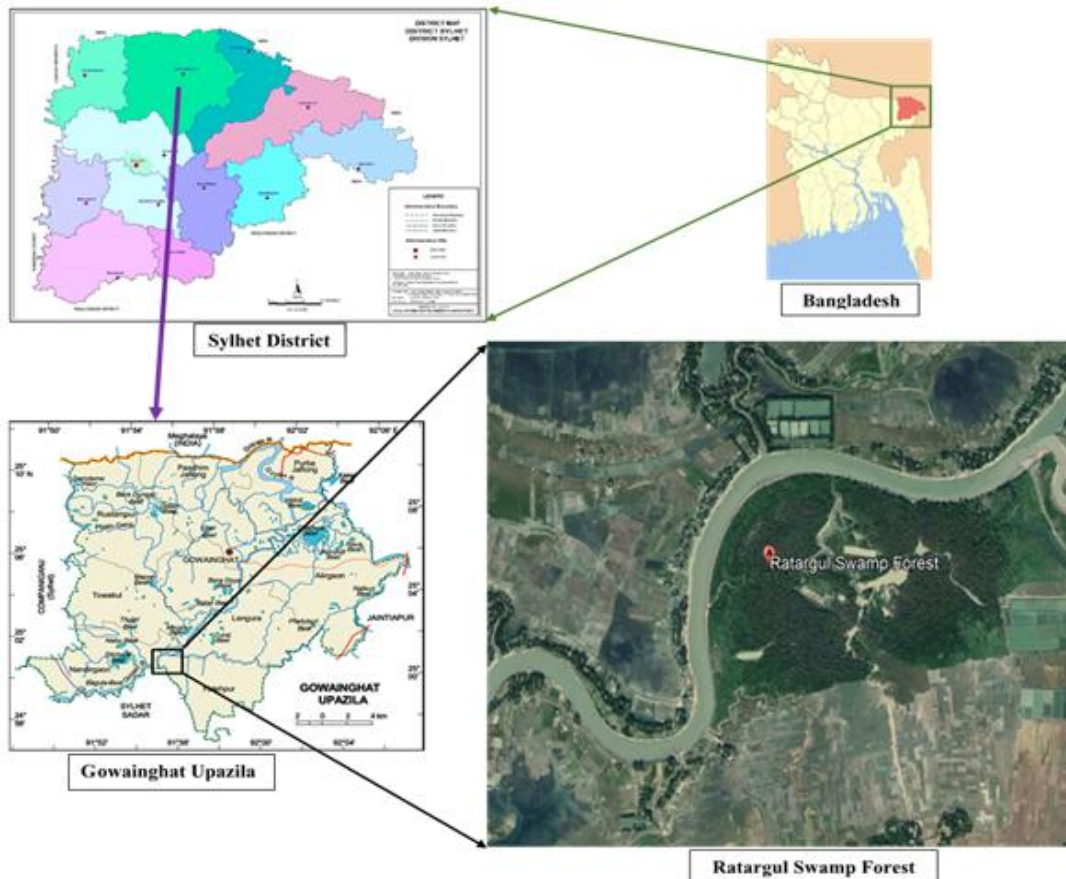


Fig.1. Location map of the study area

The items were ranked according to an index of perceived ecotourism impact. The belief component was measured by asking each respondent to rate the level of change associated with each item. A five-point rating system was used, ranging from 1 to 5. An additional notation 'DK' was used for a "don't know" response. The notation of the values was: 1=Large decrease, 2=Moderate decrease, 3=No change, 4=Moderate increase, 5=Large increase. The evaluation component of the index also followed a similar rating system, measuring the resident's level of like or dislike for each item by five points ranging from 1 to 5. The values with notation were: 1=Dislike, 2=Somewhat dislike, 3=Neither like nor dislike, 4=Somewhat like, 5=Like.

The measurement of the two components was taken simultaneously; for example, when asked about "local economy improvement" if a resident believes that ecotourism has largely improved the local economy, he/she will score a 5 for the item. If the change in the corresponding item was on his/her liking, then a score of 5 would be assigned to the evaluation component. The respondent's multiplied score on this item would be a maximum of 25. The highest score indicates a strong and favorable perception of the local economy improvement created by ecotourism. On the other hand, another respondent may hold the belief that the economy improves (scored 5), which he/she disliked (scored 1). The multiplied score in this instance is 5. This product of belief and evaluation components would signify a weak and unfavorable perception associated with local economy improvement impacts of ecotourism. Thus, according to the ranking system, the minimum score would be 1 (indicating a large decrease and dislike) and a maximum of 25 (indicating a large increase and like).

2.3 Data Collection

Primary data were collected via face-to-face interviews conducted through first-hand visits in the villages from November 2014 to February 2015. The sampling method was arbitrary (non-probability sampling) but without preconceived bias. Interviews of 301 respondents were conducted from the populace. A questionnaire, based upon the scale mentioned in Ap and Crompton [17] was used for collecting data. Along with impact perception data, nine demographic variables were also recorded. Secondary data regarding the forest area and its map were collected from various sources as per convenience. As the area is poorly studied, few data were available from several studies.

2.4 Data Analysis

Nine demographic variables were taken, including gender, age, marital status, education, occupation, length of residency, job type, income and traveling abroad. Percentages were calculated according to the responses to the variables made by respondents. For data analysis, IBM SPSS version 21.0 was used. The resident's responses to the impact items represented in the questionnaire were recorded. For each impact item, the arithmetic mean of the products of belief and evaluation components was calculated. Then the calculated means were used to rank the impact items. The item with the highest mean would be ranked 1, the second-highest 2, and so on. If the response to any component of an item was DK (don't know), then for that specific person and item the value was not counted and presented as a missing value. Standard deviations were also recorded for estimating the extent of variances among the responses.

One-way ANOVA was conducted to determine if there was any significant difference among the demographic variables and residents' attitudes towards ecotourism. As the variable "length of residency" did not produce any variances, the remaining eight demographic variables were tested against the three impact categories, namely economic, environmental and socio-cultural. ANOVA was conducted at a confidence level of 95%.

3. RESULTS

3.1 Demographic Profile of the Respondents

Responses were taken from the above-mentioned villages surrounding the Ratargul freshwater swamp forest. A total of 301 respondents was interviewed using the formulated questionnaire based on Ap and Crompton [17]. The demographic profile of the respondents is shown in Table 1. Of the 301 respondents constituting the sample, about 88% were male, while the remaining 12% were female. The respondent's age classes were also varied, with about 30% being between 31-40 years, and another 24% between 21-30 years. People aging between 41 and 50 years of age constituted about 21% of the respondents, and people above the age of 50 years made a percentage of about 20%. About 75% of the respondents were married while the remaining

25% were unmarried. All respondents were living in the vicinity of the forest for more than 15 years. About 50% of the participants were illiterate, and another 32% finished primary education. About 15% continued up to secondary education while only about 2% completed higher secondary education.

Out of 301 respondents, about 36% had annual incomes (i.e. Dollars or Euros) below 60,000 BDT while another 34% earned between 60,000 BDT and 120,000 BDT annually. Remaining 30% of the respondents possessed annual income above 120,000 BDT. The most prominent occupations of the respondents were tourism (23.7%), labor work (23.7%), trade (20.3%) and agriculture (18.7%). Another substantial number of respondents (10%) were found working in foreign countries and generating remittances.

3.2 Residents' Attitude Towards Perceived Impacts of Ecotourism

Table 2. illustrates the residents' perceived attitudes towards the impacts exerted by ecotourism activities. Thirty-five impact items were divided into three categories (economic, environmental and socio-cultural impacts or factors) and each item was given a rank based on its respective mean value. The standard

deviation of each item was also calculated and tabulated.

Among the three categories, the items associated with economic impacts secured higher ranks. Economic factor items, namely "Local economy improvement", "Contribution to income and standard of living", and "Increases employment opportunity" ranked 1st, 2nd, and 3rd respectively by possessing higher mean values (16.23, 13.98, and 13.03 respectively) as these three items were mostly favored by the residents. The least favored item in this category was "Improves public utility infrastructure" which ranked 33rd. Besides socio-cultural factor items were more favored by residents, with items "Improves the quality of life" and "Improves quality of police protection". These two items ranked 4th and 7th with mean values of 11.66 and 11.46 respectively. The items concerning the overall scenario of the community also ranked high in the ranking system namely "Positive attitude of residents towards tourists" (6th, 11.47), "Pride of residents" (8th, 10.74), and "Community spirit among residents" (11th, 10.03). Contrarily, items measuring environmental impacts were least favored by the respondents; with items "Preservation of the natural environment", "Overcrowding", "Improvement of the area's appearance", and "Increased noise pollution and waste", which ranked 30th, 31st, 34th, and 35th

Table 1. Demographic profile of respondents

Gender	Male				Female		
	264				37		
Age (Year)	11-20	21-30	31-40	41-50	>50		
	19	72	88	62	59		
Marital Status	Married				Unmarried		
	226				74		
Residency	<5 Years	5-10 Years		11-15 Years	>15 Years		
	0	0		0	301		
Education	Illiterate	Primary	Secondary	Higher Secondary	Graduate	Others	
	152	95	44	7	1	1	
Job type	Non-tourism based				Tourism based		
	230				71		
Occupation	Agriculture	Civil Servant	Remittance	Student	Tourism	Trade	Worker
	56	9	30	2	71	61	71
Income	<60,000 BDT		60,000-120,000 BDT		>120,000 BDT		
	108		101		92		
Travel abroad	Yes				No		
	266				35		

respectively by possessing lower mean values (8.47, 8.35, 8.09, and 7.59 respectively). These observations show that the respondents were positive about the economic benefits conveyed

by ecotourism activities, but they were also concerned about the environmental and aesthetic aspects. This reflects the findings of Tatoglu et al. [18].

Table 2. Residents' attitudes towards perceived impacts of ecotourism

Factors/Impacts	N	Mean	Std. Deviation	Rank
Economic				
Contribution to income and standard of living	301	13.98	4.316	2
Local economy improvement	301	16.23	4.612	1
Increases employment opportunity	301	13.03	4.471	3
Improves investment, development and infrastructure spending in the economy	301	9.55	2.427	14
Increases tax revenue	294	9.07	0.778	18
Improves public utility infrastructure	301	8.10	3.697	33
Improves transport infrastructure	301	10.59	4.120	9
Increases opportunities for shopping	301	8.96	1.252	25
Increased price and shortage of goods & services	300	9.69	1.497	13
Increased price of land & housing	300	9.09	0.811	17
Increased cost of living/ property taxes	297	9.02	0.398	22
Environmental				
Preservation of the natural environment/ does not cause ecological decline	301	8.47	3.316	30
Preservation of historic buildings and monuments	300	8.80	0.886	29
Improvement of the area's appearance	301	8.09	2.546	34
Increased traffic congestion	301	9.34	1.795	15
Overcrowding	301	8.35	1.767	31
Increased noise pollution and waste	301	7.59	2.153	35
Socio-cultural				
Improves the quality of life	301	11.66	4.023	4
Increases availability of recreation facilities/ opportunities	301	9.06	0.721	20
Improves quality of fire protection	301	9.05	0.657	21
Improves the quality of police protection	301	11.46	3.973	7
Improves understanding and image of different communities or cultures	301	10.35	2.808	10
Promotes cultural exchange	301	10.01	2.372	12
Facilitates meeting visitors	301	9.07	0.698	19
Preserves cultural identity of the host population	300	9.12	1.232	16
Increased demand for historical and cultural exhibits	299	8.97	0.409	24
Increased prostitution	298	8.91	0.670	27
Increased alcoholism	299	8.11	1.832	32
Heightened tension	301	9.01	0.174	23
Increased smuggling	298	8.87	0.760	28
Increasingly hectic community and personal life	301	8.95	0.467	26
Creation of a phony folk culture	301	11.66	4.023	5
The positive attitude of residents towards tourists	301	11.47	3.942	6
Community spirit among residents	301	10.03	3.159	11
Pride of residents	301	10.74	3.469	8

Here, N= Total number of respondents

3.3 Demographic Differences in Residents' Perception of the Impacts of Ecotourism

For determining if there were significant differences among the demographic variables and residents' attitudes towards ecotourism, the 35 impact items were tested by analysis of variance (one-way ANOVA). The variable "length of residency" did not vary within the sample respondents (100% of residents residing for more than 15 years), so the variable did not produce any variance. The remaining eight demographic variables were used in ANOVA.

The one-way ANOVA result shows the 280 F-values tabulated for the three categories of the impact items (Table 3). Out of the total 280 F-values, 81 values (about 29% of total F-values) were significant at less than 5% significant level ($p < 0.05$). The economic, environmental and socio-cultural factors comprised 88, 48 and 144 F-values respectively. The items comprising the economic impact category showed 31 significant F-values (about 35%) from 88 values. The environmental impact items, out of 48 calculated F-values, produced 17 significant ones (about 35%). For 144 F-values of the socio-cultural impact category, about 23% of the values were significant. The result indicates that the items comprising economic impact factors present a relatively larger percentage of significant differences than the socio-cultural factors. Considering demographic subgroups, income (24 items), occupation (21 items), gender (11 items), and education (9 items) showed the most significant differences ($p < 0.05$) with the impact categories comprising about 30%, 26%, 14%, and 11% of total significant F-values respectively. The remaining demographic subgroups (age, marital status, job type, and travel abroad) showed fewer percentages of significant F-values at a 95% confidence level.

4. DISCUSSION

The residents living in the villages surrounding the swamp forest were found as permanent residents as they are residing here for several generations (more than 15 years). This indicates that the population of the area is more or less homogenous within the time frame. Some residents of the village Choiltabari were settlers, coming mainly from Brahmanbaria District many

years prior and now are considered as permanent residents.

Though the forest was unfamiliar to the public for a long period, it has become a popular tourist spot with an ever-increasing number of tourists visiting each year due to media coverage. Since the start of tourism activities, the Forest Department has not been involved in any way, which paved the way for unplanned development of the private or community-based tourism industry. The study reveals about 24% of the total respondents were involved in ecotourism activities. Their opinions tended to highlight the economic and socio-cultural benefits that came with ecotourism activities. Residents, who were not involved in ecotourism tended to focus on the deteriorating impacts of ecotourism on the environment. A study [16] also found both positive and negative impacts of ecotourism in the forest area. The residents generally perceived the lack of public utility provision and infrastructure development in a negative sense, implying they were not satisfied with the level of public facilities provided by the government.

The study reveals items of the economic impact category secured the first three ranks with the socio-cultural impact category item "Improvement of the quality of life" which ranked fourth. These findings also support the study conducted by Debashish et al. [15] which revealed a positive attitude of residents regarding tourism in the swamp forest area. According to Crouch and Ritchie [19], tourism activity acted as an important factor in determining the quality of life of the host community. Williams and Lawson [20] claimed that the quality of life of the host community affects the perceived impact and attitude of the residents, which was also supported by another study [21]. Though the present study elicits an inclined attitude of residents towards the positive impacts of ecotourism in the case of economic and socio-cultural factors, residents were also found concerned about the negative impacts of ecotourism on the surrounding environment. It means residents were aware of environmental degradation caused by ecotourism activities in the area which supports the finding of another study [16]. Knowledge sharing regarding environmental conservation as well as active participation in conservation activities resulted in the development of environmental-friendly attitudes among the residents [16].

The ANOVA result indicates that variations in income, occupation, and gender affected the

Table 3. Demographic differences in residents' perception of the impacts of ecotourism

Factors/Impacts	Mean rank	Analysis of Variance [Level of Significance (p<0.05)]							
		Gender	Age	Marital status	Education	Occupation	Income	Job type	Travel Abroad
Economic									
Contribution to income and standard of living	2	0.984	1.581	1.560	3.754**	300.881***	84.162***	0.018	9.623**
Local economy improvement	1	4.859*	0.853	0.962	2.003	356.783***	125.333***	0.248	2.104
Increases employment opportunity	3	0.981	1.453	2.682	1.023	365.882***	120.289***	2.412	1.894
Improves investment, development and infrastructure spending in the economy	14	4.540*	4.088**	0.548	3.723**	91.687***	25.380***	5.851**	2.028
Increases tax revenue	18	0.334	1.305	0.832	0.322	5.661*	1.329	0.200	0.334
Improves public utility infrastructure	32	29.800***	5.047**	1.376	1.510	17.419***	4.892***	0.992	1.105
Improves transport infrastructure	9	67.056***	3.641**	10.019**	2.897*	7.997**	5.304***	2.850	2.319
Increases opportunities for shopping	25	42.086***	1.256	0.000	2.630*	0.295	1.915	1.329	0.415
Increased price and shortage of goods & services	13	16.253***	2.090	1.558	1.589	1.418	1.858	1.373	1.489
Increased price of land & housing	17	0.130	0.727	0.365	1.423	10.643**	3.715**	0.160	0.847
Increased cost of living/ property taxes	22	0.148	0.342	0.179	0.035	3.542	0.559	0.036	0.139
Environmental									
Preservation of the natural environment/ does not cause ecological decline	30	0.829	1.516	0.093	0.487	59.171***	17.829***	0.529	12.213**
Preservation of historic buildings and monuments	29	47.951***	0.944	0.095	1.876	0.421	6.186***	0.916	0.146
Improvement of the area's appearance	34	0.013	1.848	0.079	0.913	39.182***	16.390***	0.545	37.778***
Increased traffic congestion	15	2.281	2.417*	0.915	0.675	1.670	1.403	2.039	0.106
Overcrowding	31	5.823*	0.400	1.827	0.159	7.302**	5.964***	2.173	31.064***

Factors/Impacts	Mean rank	Analysis of Variance [Level of Significance (p<0.05)]							
		Gender	Age	Marital status	Education	Occupation	Income	Job type	Travel Abroad
Increased noise pollution and waste	35	6.995**	0.419	0.029	0.657	7.302**	6.262***	2.206	18.214***
Socio-cultural									
Improves the quality of life	7	2.078	1.662	0.160	2.876*	449.434***	195.987***	0.042	3.589
Increases availability of recreation facilities/ opportunities	4	1.347	1.145	0.313	0.980	280.823***	64.956***	1.715	3.772
Improves quality of fire protection	20	0.258	1.916	0.601	0.798	0.170	0.997	0.660	0.242
Improves quality of police protection	21	0.117	1.029	0.008	0.657	2.722	2.198*	1.724	0.198
Improves understanding and image of different communities or cultures	5	0.931	1.267	1.50	1.637	428.037***	94.546***	0.885	3.127
Promotes cultural exchange	10	0.454	0.962	0.350	2.384	172.615***	41..760***	0.354	5.118*
Facilitates meeting visitors	11	1.828	1.196	0.020	2.689	176.321***	37.553***	0.107	3.691
Preserves cultural identity of host population	19	0.424	0.364	0.122	0.372	10.636**	1.645	0.869	0.398
Increases demand for historical and cultural exhibits	16	2.283	2.216	0.787	1.096	7.750**	4.651***	0.392	0.399
Increased prostitution	24	0.266	2.154	0.662	58.850***	0.841	16.342***	0.506	0.266
Increased alcoholism	27	0.667	0.805	1.661	13.204***	4.364*	5.806***	1.270	0.667
Heightened tension	33	0.224	0.961	1.183	1.470	0.071	5.155***	5.151**	37.372***
Increased smuggling	23	0.137	1.058	0.330	0.192	3.477	0.538	0.905	7.946**
Increasingly hectic community and personal life	28	1.165	1.144	2.168	9.831	6.974	5.261***	0.716	0.019
Creation of a phony folk culture	26	0.418	0.282	0.199	0.331	0.294	0.784	0.994	0.393
Positive attitude of residents towards tourists	6	0.079	2.068	0.701	2.457*	8.035**	3.702**	4.701*	2.085
Community spirit among residents	12	7.892**	1.589	0.215	1.993	0.028	1.473	2.366	3.573
Pride of residents	8	7.463**	1.820	0.917	2.842*	0.881	1.328	2.053	1.975

Significance code: 0 '****' 0.001 '***' 0.01 '**' 0.05

perceived impacts of ecotourism by the residents. Contrarily other demographic variables produced smaller variations among the impact items. Though the study shows that respondents who were involved in ecotourism supported the expansion of ecotourism further, numerous NGOs have organized protests for halting unplanned tourism activities recognizing the detrimental environmental impact of tourism on the forest and its adjacent area. The Forest Department needs to take initiatives of hosting dialogues between conflicting parties to resolve the issue.

5. CONCLUSION

The study employs a solid and reasonably sound ecotourism impact scale to determine the residents' perception regarding the impacts of ecotourism in the Ratargul freshwater swamp forest as the scale covers most of the aspects by measuring impact items within three broad categories (economic, environmental, and socio-cultural). The study indicates that the economic aspects of ecotourism were favored by the residents. Besides, they also positively perceived socio-cultural aspects. The effects of the cultural mixing caused by ecotourism were also seen somewhat in a positive sense. However, an environmental factor i.e. "The impacts of ecotourism on the area's environment" was negatively favored by the residents. Moreover, ecotourism activities of the area are criticized by various NGOs. Many residents also view ecotourism in a negative sense because they perceived uneven distribution of the economic and social benefits of ecotourism activities within the society instead of facilitating the total societal uplifting. The findings of the study will assist the government or forest department to adopt eco-friendly policies to mitigate the negative impacts of ecotourism. Proper implementation of the policies needs to be ensured by the active participation of the residents considering their opinions or perceptions regarding ecotourism activities of the area. Further studies are recommended for a more precise analysis of the trends of the ecotourism activities and their impacts on the residents residing near Ratargul freshwater swamp forest, as well as on the forest itself.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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