

Determinants Measuring Tourists' Satisfaction towards Cox's Bazar Sea Beach

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Abstract

The study was conducted on Cox's Bazar Beach, the longest beach of the world and tourist capital of Bangladesh. The purpose of the study is to identify the determinants to measure the tourists' satisfaction towards Cox's Bazar beach using expectation and disconfirmation theory. Basically, the study is based on primary as well as secondary data; applied quantitative method and 308 questionnaires were used. The study revealed that perceived performance attributes scores are consistently lower than expectation attributes scores, and a significant gap is found between them. Multiple regression analysis was conducted by Stochastic frontier model and the results revealed that all factors derived from factor analysis have a significant relationship with the overall satisfaction of tourists, and F1 (Emergency and ancillary services), F2 (Accommodation and security), F3 (Destination on the spot facilities) are most important factors that influence overall tourist satisfaction most. The tourism managers and marketers should provide and ensure quality service with derived factors. Moreover, this finding can be useful to the policy makers and marketers of beach tourism in formulating strategies to maintain or enhance their competitiveness.

Keywords: Beach Tourism, Expectancy-Disconfirmation theory, Cox's Bazar Beach, Factor Analysis, Stochastic frontier model

Introduction and Problem Statement

Bangladesh is a country of Asian region holding high potentiality in tourism. Since long past the country was an attractive place to the tourists. She has the world longest beach at Cox's Bazar. It is the tourist capital of Bangladesh having 120 km beach slopping gently down to the blue waters of the Bay of Bengal against the picturesque background of a chain of Hill covered with deep green forests. This type of smooth and straight sea beach is hardly seen in any place of the world. Miles of golden sands, towering cliffs, surfing waves, rare conch shells, and delightful seafood are the specialties of Cox's Bazar beach and everything here touches every tourist's heart and mind (Hasan and Dey, 2013). As the longest sea beach of the world, Cox's Bazar beach is experiencing huge growth in tourism since past. During the peak season millions of tourists come to visit and enjoy the natural beauty of Cox's Bazar from home and abroad and all hotels, motels and guest houses are fully filled up. Even some tourists spend their night inside the vehicle due to the unavailability of the seats in the hotels (Sheikh Saleh Ahammed, 2010).

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From general observation and economic front, it is now the foremost source of earning of the local community and contributes to the nation income generation, employment generation and foreign exchange earnings. Around 10000 people are employed in the Cox's Bazar tourism and each of families consists of 6 members on an average, and then this industry is giving food roughly to the 60,000 people (Ahammed, Sheikh Saleh, 2010). So, the socio-cultural condition, economy, standard of living of local community at Cox's Bazar almost depend on the sustainability and survival of this destination. And, the growth and sustainability of Cox's Bazar tourism also depend on the numbers of tourists visiting the area and their perception towards the destinations (Hasan and Nayeema, 2008). The flow of tourists visiting, moreover, will depend on better understanding of their behavior, available facilities to serve them and sufficiency of existing facilities to satisfy tourists' need. So, to attract more tourists at Cox's Bazar beach we need to know the tourists' need, want, demand and their perceptions towards the existing facilities and services, and how present facilities and services are being evaluated by them. Service providers should need to identify in which area of services tourists are satisfied and dissatisfied, that can create positive attitude in the mind of tourists. If the concerned authority is able to know tourists well through us, they will try to provide goods and services according to tourists' need. As a result, current position of the destination would be developed and sustained for long ever. The lack of proper understanding of tourists' behavior would cause negative economic and social impact on this area. A search knowledge regarding this found that no depth study has been conducted to find out and unravel the mentioned issues. These are the research gaps which need special attention. Therefore, present study is an ample step to discover the problems and make possible solutions for them.

Literature Review

A study was conducted by Odunga, Pius and Pius Odunga (2005) to identify the determinants of preferences, expenditure and satisfaction and determine their measurement and relationship. Studies have been conducted by Hossain and Firozzaman (2003), Syed Ahsanul Alam and Mohammad Shamsuddoha (2003), Mohammad Shamsuddoha (2005), Md. Jakir Hossain (2006). Dr. Zakria Lincoln(2008) focused the significance of tourism from the view point of many angles like economic, social, cultural, political, etc. Shah Azam et al. conducted a study on factors affecting to choose Bangladesh as a tourist destination. Studies conducted by Mir Abdul Sofique and Jannat Ara Parveen (2009) and Sheikh Saleh Ahammed (2010) are directly related to Cox's Bazar tourism, economic and socio-cultural effect of tourism on Cox's Bazar. Tourist satisfaction is important to successful destination marketing because it influences the choice of destination, the consumption of products and services, and the decision to return (Kozak & Rimmington, 2000). Chon and Olsen (1991) revealed a correlation between tourists' expectations and their satisfaction towards a destination. Then, after tourists have bought the travel service and products, if the evaluation of their experience of the travel product is better than their expectations, they will be satisfied with their travel experience. Zethmal, Berry and Parasuraman (1990) expressed that there is a considerable support for a link between improvement in service quality and increasing of volume of customers. In addition, there are also links among the customers' satisfaction, service quality and retention of customer (Zathmal and Bitner, 2000). Expectancy-disconfirmation theory currently dominates the study of consumer satisfaction and provides a

fundamental framework for many studies. Expectancy-disconfirmation theory refers that consumers first form expectations of products' or services' performance prior to purchase or use. The consumer then compares the perceived performance to prior expectations (Clemons & Woodruff, 1992). Oliver & Beardon, 1985; Patterson, 1993, Pizam, Neumann, and Reichel 1978, confirmed that it is important to measure tourists' satisfaction with each of the destination attributes, because consumer satisfaction or dissatisfaction with the attributes leads to overall satisfaction or dissatisfaction towards the destination. Level of customers' satisfaction with the service was positively related to their willingness to re-use the service and to recommend it to others (Zathmal and Bitner, 2006).

Objectives of the Study

The major objectives of the study are;

- To find out the gap between tourists' expectations and perceived performance with their Cox's Bazar Beach experiences as a tourists destination.
- To measure the tourists' satisfaction with different facilities during their stay at Cox's Bazar beach.

Hypotheses of the Study

H1o, There is no significant difference between tourists' expectations and perceived performance with respect to various services and facilities at Cox's Bazar Sea Beach.

H2o, There is no significant difference found among the destination attributes with respect to overall satisfaction of tourists at Cox's Bazar Beach

Methodology of the Study

The study is descriptive in nature and based on both primary and secondary data. The study area was selected purposively considering the socio-economic contribution the local economy as well as the country, highly visited and major representative beach with easy access to the researchers. The study has been conducted on Cox's Bazar beach area to analyze the attitude of tourist towards that destination. It was mentioned earlier that only Cox's Bazar beach has been included as sample area for this study. The sample population for this research was composed of tourists who visited the Cox's Bazar beach. A simple random sampling technique was used to select the sample and collect primary data by means of a survey using questionnaires distributed to visitors. The questionnaire consists of expectation and performance attributes ranking on different attributes using a scale of 1 to 5 (5 being highly satisfied and 1 being highly dissatisfied) to identify the determinants of tourists satisfaction towards Cox's Bazar beach. Out of 320 questionnaires 308 were useable with a response rate of almost 98%. Appropriate statistics such as frequencies, descriptive, analysis of Variance (ANOVA), factor analysis and regression analysis were used to analyse the data. To measure the tourists' satisfaction, expectation and performance attributes were posted in expectation and performance grid according to expectation

and conformity model. The factor analysis was conducted to create correlated variable composites from the total attributes. The multiple regression analysis was used to find the causal relation between dependent and independent variable. The researchers collected secondary data from relevant research and publications, newspapers, books, website, published materials of BPC, tour operators' publications and others.

Analysis and Findings of the Study

The analysis and findings of the study have been discussed into three points of view;

- To find out the socio-demographic characteristics of the tourists
- Exploring the perceived gap between tourists' expectation and insight experience
- Assessing the tourists' satisfaction during their stay at Cox's Bazar Beach

Respondents' Socio-Demographic Profile

The theory of consumer behavior for a service sector points out that customers' choice behavior, buying behavior and levels of satisfaction are influenced by the customer's background, characteristics and external stimuli (Fornell C, 1992). Due to unique motivations and personalities, past experience, reference groups, and physical conditions, individual may evaluate the same belief differently. It is shown that out of total 310 respondents listed for analysis, 249 (80.3%) were male and 61 (19.7%) were female. Data were collected from different age group. Large group of respondents (58.7%) were from 15-29 age group, followed by (33.9%) from 30-44 age group. Surprisingly, highest 41.9% of the respondents have completed graduation level followed by 27.1% secondary level. In addition, 32.6% respondents were students, whereas 27.7% respondents answered that they are businessmen, followed by 24% is private service and 9% are of government service and other categories include self employed in different profession at the time of the survey. Respondents listed 7.7% of their income more than Taka 71,000, and highest 30 % have income range 10,000-30,000 followed by 15.2% having an income of 31,000-50,000 Taka per month and lowest 23.5% respondents have no income and depend on family income. The sample distribution provides a clear idea that male, young with graduate education and businessmen are the main visitors at Cox's Bazar Beach.

Tourists' Expectation-Perception Analysis

Expectancy-disconfirmation theory currently dominates the study of consumer satisfaction and provides a fundamental framework for this study. Expectancy-disconfirmation theory refers that consumers first form expectations of products' or services' performance prior to purchase or use. Subsequently, purchase and use contribute to consumer beliefs about the actual or perceived performance of the product or service. The consumer then compares the perceived performance to prior expectations. Consumer satisfaction is seen as the outcome of this comparison, where $\text{satisfaction} = \text{expectation} + \text{perceived performance}$ (Clemons & Woodruff, 1992). Furthermore, Rust, Zahorik, and Keininghan (1993) explained that the relative importance of each attribute to the overall impression should be investigated because satisfaction or dissatisfaction can be the result of evaluating various positive and negative experiences.

Perceived Gap between Tourists' Expectation and Experience

The table below shows expectation and perceptions of tourists' on different facilities and services related to Cox's Bazar Beach. Among twenty nine attributes twenty three attributes are scored high that means the mean value is more than 4.00 which indicates that tourists' have high expectation towards above variables. On the other hand, out of 29 attributes only one attribute had highest performance mean score (M=4.57) and 16 attributes scored $\cdot 3 < 4$ and 15 attributes had lowest scored $\cdot 3$ respectively. The table revealed that the highest mean score with respect to expectation occurred in the case of item natural attraction (M=4.49). The lowest mean score occurred in the case of item 21 financial institution for withdrawing instant cash (M=3.54). Tourists seemed to have the highest level of satisfaction with regard to natural attraction (M=4.57), and the lowest satisfaction was for emergency service such as lifeboat, ambulance, fast aid (M=2.17).

The difference in the mean scores of expectations and perceived performance are also shown in the Table 1. The results of the t-test performed aim at measuring the significance of the mean score differences. In the current study, satisfying attributes and expectation attributes were defined as those attributes with a t-value significant at the 0.05 level.

Table 1, Results on Paired t-test between tourists' expectations and satisfaction

SR	Attributes	Performance Mean	Expectation Mean	Mean Differences	SD	t-Value	Sig. (2-tailed)
1.	Natural attractions of the beach	4.57	4.49	+0.08	.978	1.723	.086
2	Pollution free nature and environment	3.12	4.34	-1.23	1.403	12.421	.000
3	Financial, physical safety and security	3.31	4.51	-1.19	1.383	12.391	.000
4	Service quality of residential hotels	3.42	4.12	-.71	1.218	8.317	.000
5	Online hotel booking facility	2.98	3.46	-.49	1.530	4.542	.000
6	Price of the residential hotels	3.25	4.27	-1.02	1.293	11.233	.000
7	Service quality of restaurants	3.19	4.31	-1.12	1.228	12.948	.000
8	Food quality at restaurants	3.25	4.18	-.94	1.252	10.674	.000
9	Price of foods at the restaurant	2.98	4.50	-1.51	1.343	15.818	.000
10	Cleanliness of public areas near the beach	2.63	4.54	-1.92	1.226	22.441	.000
11	Public and Private toilet facilities near the beach	2.37	4.44	-2.09	1.495	20.034	.000
12	Service quality of transportations	3.39	4.19	-.79	1.196	9.457	.000
13	Available local transportations	4.15	4.09	+0.06	1.135	10.449	.076
14	Road quality in the spot area	4.12	4.11	+0.01	1.202	9.582	.000
15	Transportation cost	3.97	3.93	+0.04	1.254	13.181	.079

SR	Attributes	Performance Mean	Expectation Mean	Mean Differences	SD	t-Value	Sig. (2-tailed)
16	Watch tower facility to enjoy sea view	2.44	4.32	-1.88	1.450	18.639	.000
17	Dress change facility nearest the beach	2.23	4.16	-1.94	1.261	21.927	.000
18	Swimming, surfing, and boating facilities	3.15	4.17	-1.01	1.361	10.574	.000
19	Playing, driving and horse riding facilities	3.10	3.96	-.86	1.159	10.663	.000
20	Local and sea products shopping facilities	3.17	3.82	-.66	1.174	8.053	.091
21	Cost of surfing, boating, driving and horse riding	3.11	4.13	-.98	1.378	8.978	.000
22	Online information about Cox's Bazar	3.08	3.95	-.88	1.350	9.310	.000
23	Local information centre	2.64	3.97	-1.34	1.248	15.221	.000
24	Health and Medical facilities to serve tourists	2.59	4.02	-1.43	1.325	15.443	.000
25	Financial institution for withdrawing instant cash	3.15	3.54	-.38	1.151	4.733	.100
26	Waste disposal facility	2.23	4.15	-1.92	1.390	19.529	.000
27	Local people behavior and hospitality towards tourists	3.36	4.30	-.95	1.376	9.820	.000
28	Tourist caring facility such as personal care, child care	2.38	4.20	-1.81	1.430	17.904	.000
29	Emergency service such as lifeboat, ambulance, fast aid	2.17	4.48	-2.31	1.201	27.040	.000

Source: Field Survey

Table 1 revealed that significant differences are found in all items except five. The natural attraction of the beach, available local transportations, transportation cost, local product and sea products shopping facilities, and financial institution for withdrawing instant cash do not show significant differences at $p < 0.05$ respects of satisfaction and expectation. Differences were significant at $p < 0.05$ in 25 of the 29 cases. Table 2 shows that the largest gap existed in the case of item public and private toilet facilities nearest the beach (gap-2.09) followed by dress change facility (-1.94) and cleanliness of public areas nearest the Beach (-1.92), and the smallest in the case of item transportation cost (gap+0.01).

Comparative Position of Expectation-Performance Attributes

The average level of perceived performance with various attributes of the Cox's Bazar Beach and the average expectation of these attributes are calculated for the overall sample (see Table 1). The placement of each attribute on an expectation-performance grid is accomplished by using the means of expectation and perceived performance as the coordinates. After performing the calculation, they are plotted on a two-dimensional grid.

This expectation-performance grid positioned the grand means for performance ($X=3.08$) and expectation ($X=4.16$), which determined the placement of the axes on the grid. Each attribute on the grid could then be analyzed by locating the appropriate quadrant in which it fell. For example, the top left quadrant contains attributes that are rated very expected but the associated satisfactions with them are rated below average. Attributes in the top right quadrant are rated high performance, and the level of expectation is above the average. Attributes in the bottom left quadrant are considered less performance, and the expectation level is below average. Finally, attributes in the bottom right quadrant are rated above average on satisfaction, but were rated below average on expectation.

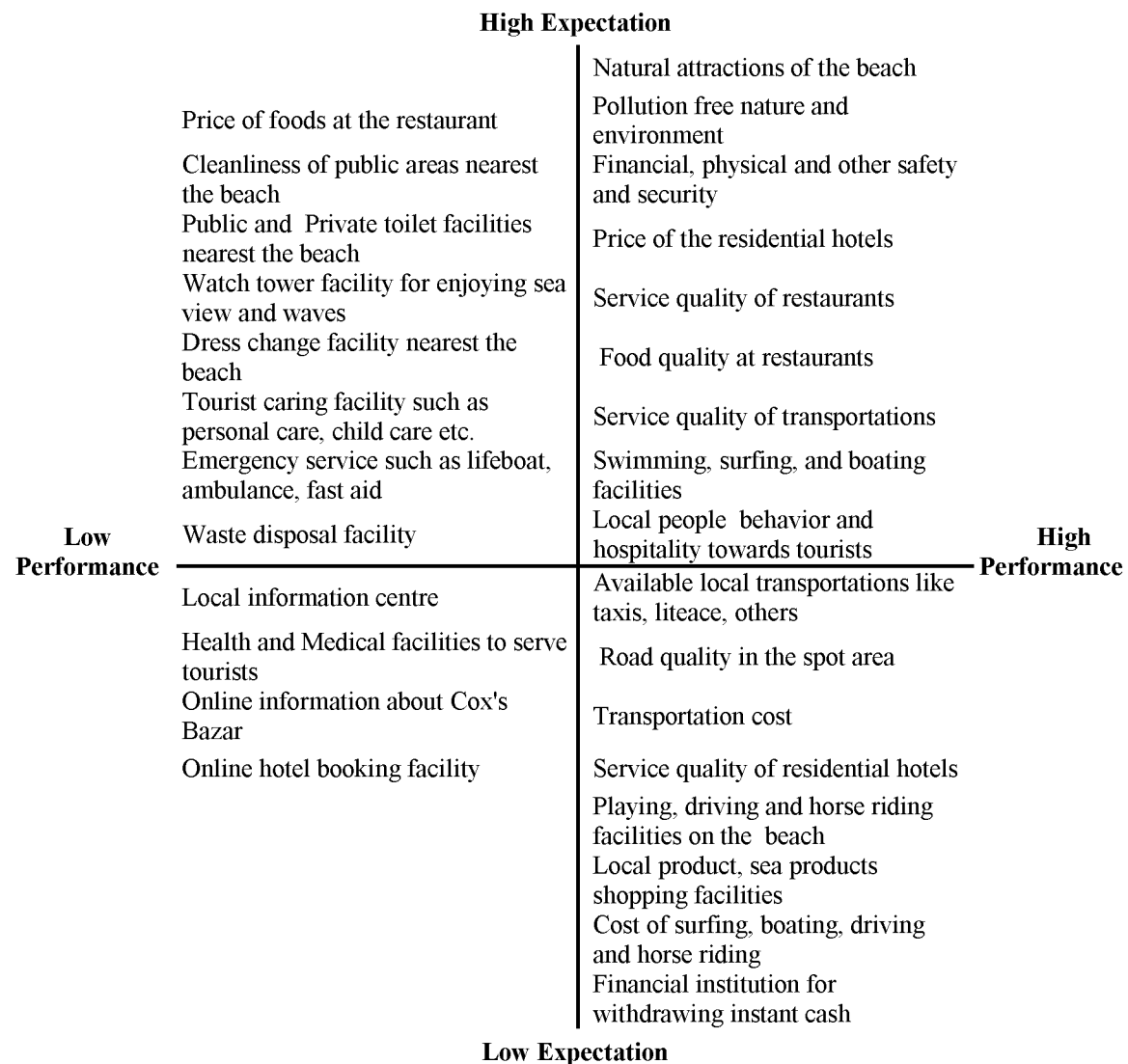


Figure 1: Expectation-Performance Matrix

Figure 1 is an expectation-satisfaction grid showing the overall ratings of tourists' perceptions of the Cox's Bazar Beach. Total 9 attributes from both expectation and perception scored above grand mean ($X=4.16$ and $X=3.08$) are placed in the upper right-hand quadrant (high performance-high expectation) while only 4 attributes from both area scored below grand mean are located in the lower left quadrant (low expectation and low performance). On the other hand 8 attributes scored above expectation grand mean ($X=4.16$) but below the performance grand mean ($X=3.08$) are located in the upper left-hand quadrant (low performance and high expectation). More interesting things have found that rest 8 attributes are rated below average for both performance and expectation (lower left-hand quadrant).



Figure 2: Expectation-Performance Grid

The figure 2 showed the exact position of each attribute on expectation and performance grid. Thus, the relative scores of each attribute to the overall impression have been investigated to measure the sophisticate result, because satisfaction or dissatisfaction can be the result of evaluating various positive and negative experiences.

Hypothesis H1₀, There is no significant difference between tourist's expectations and perceived performance towards Cox's Bazar beach. So, H1 postulated that there is significant differences between tourist's expectations and perceived performance towards Cox's Bazar Beach and the hypothesis has thus been rejected (Table-1).

Assessing the Tourists' Overall Satisfaction during Their Stay at Cox's Bazar Beach

After identifying the attributes and their comparative position, present study attempted to identify the attributes role on tourist's overall satisfaction. Required descriptive analyses have been done to measure the individual attributes participation in the satisfaction measurement process.

Factor Analysis

Factor analysis was conducted to create correlated variable composites from the original 29 attributes and to identify a smaller set of dimensions, or factors, that explain most of the variances between the attributes. The derived factor scores are then applied in subsequent regression analysis. In this study, factors are retained only if they had values greater than or equal to 1.0 of eigenvalue and a factor loading greater than 0.4.

The principal components factor method was used to generate the initial solution. The overall significance of the correlation matrix was 0.000, with a Bartlett test of sphericity value of 1622.069 with degree of freedom 406. The statistical probability and the test indicated that there was a significant correlation between the variables, and the use of factor analysis was appropriate. The Kaiser-Meyer-Olkin overall measure of sampling adequacy was 0.755, which was meritorious (Hair, Anderson, and Black 1999).

To test the reliability and internal consistency of each factor, the Cronbach's alpha of each was determined. The results showed that the alpha coefficients ranged from 0.5697 to 0.8185 for the eight factors. The results were considered more than reliable, since 0.50 is the minimum value for accepting the reliability test (Nunnally, 1967).

Table 3, Factor Analysis Result

Attributes	Communalities	Factor Loading	Results
Factor 1: Emergency & Ancillary Services			Eigenvalue 6.58
Waste disposal facility	.777	.797	Variance explained 22.72%
Emergency service such as lifeboat, ambulance, fast aid services	.771	.836	Cumulative variance 22.72
Tourist caring facility such as personal care, child care	.750	.909	Coefficient alpha .763
Financial institution for withdrawing instant cash	.575	.889	Number of items 04
Factor 2: Accommodation & Security			Eigenvalue 3.16
Price of the residential hotels	.749	.860	Variance explained 10.91%
Price of foods at the restaurant	.692	.803	Cumulative variance 33.63
Service quality of transportations	.625	.728	Coefficient alpha .763
Food quality at restaurants	.543	.624	Number of items 05
Financial, physical and other safety and security	.540	.867	

Contd. table

Factor 3: Destination Facilities			Eigenvalue 1.87
Service quality of restaurants	.745	.810	Variance explained 6.45%
Watch tower facility for enjoying sea view and waves	.696	.860	Cumulative variance 40.8
Dress change facility nearest the beach	.640	.824	Coefficient alpha .818
Public and Private toilet facilities nearest the beach	.600	.836	Number of items 05
Cleanliness of public areas nearest the beach	.590	.811	
Factor 4: Cost of Activities			Eigenvalue 1.69
Cost of surfing, boating, driving and horse riding	.668	.800	Variance explained 5.85%
Swimming, surfing, and boating facilities	.625	.852	Cumulative variance 45.93
Local people behavior and hospitality towards tourists	.581	.763	Coefficient alpha .638
			Number of items 03
Factor 5: Activities & Shopping			Eigenvalue 1.54
Playing, driving and horse riding facilities on the beach	.826	.885	Variance explained 5.33%
Local product, sea products shopping facilities	.737	.899	Cumulative variance 51.26
			Coefficient alpha .770
			Number of items 04
Factor 6: Transportation facility			Eigenvalue 1.37
Road quality in the spot area	.896	.905	Variance explained 4.73%
Available local transportations like taxis, liteace ,	.862	.910	Cumulative variance 55.99
Transportation cost	.428	.849	Coefficient alpha .644
			Number of items 03
Factor 7: Information & Medical Services			Eigenvalue 1.29
Local information centre	.784	.852	Variance explained 4.46%
Health and Medical facilities to serve tourists	.753	.878	Cumulative variance 60.45
Online information about Cox's Bazar	.521	.808	Coefficient alpha .648
			Number of items 03
Factor 8: Attraction & Service Quality			Eigenvalue 1.06
Natural attractions of the beach	.714	.776	Variance explained 3.65%
Service quality of residential hotels	.710	.666	Cumulative variance 64.13
Pollution free nature and environment	.569	.898	Coefficient alpha .790
Online hotel booking facility	.515	.802	Number of items 04

Note: Extraction Method – Principal Component Analysis, Rotation Method – Varimax with Kaiser Normalization

KMO = 0.882, Bartlett's Test of Sphericity: $p = 0.000$ ($x^2 = 1541.422$, $df = 276$)

Factor 1 was labeled as '*Emergency & Ancillary Services*' which consisted of four items. This factor explains 22.720 percent of the variance in the data with an eigenvalue of 6.58; the items associated with this factor deal with the emergency and ancillary services which tourists like ($\alpha = 0.763$).

Factor 2 was termed as '*Accommodation and Security*' accounting for 10.91percent of the variance with an eigenvalue of 3.16; this factor is loaded with five items with relation to Accommodation and security ($\alpha = 0.763$).

Factor 3 ($\alpha = 0.818$) was named as '*Destination on the Spot Facilities*' consisting of five items. This factor accounts for 6.45 percent of the variance with an eigenvalue of 1.87.

Factor 4 with an eigenvalue of 1.69 and 5.85 percent of the variance is called '*Cost of Activities*' ($\alpha = 0.538$).

Factor 5 was labeled as '*Activities and Shopping*' which accounted for 5.33 percent of the variance and 1.54 eigenvalue ($\alpha = 0.777$).

Factor 6 named as '*Transportation facility*' accounted for 4.73 percent of the variance with 1.37 eigenvalue ($\alpha = 0.644$).

Factor 7 with an eigenvalue of 1.294, explains 4.46 percent of the variance ($\alpha = 0.648$).

Factor 8 was labeled as '*Attraction & Service Quality*' which accounted for 4.46 percent of the variance with an eigenvalue of 1.29.

Stochastic Frontier Analysis

In order to further support for hypotheses 2, regression analyses were used in the current study to test and explain the casual relationship between variables.

In order to examine the overall satisfaction of tourist in Cox Bazar, here we will investigate whether factors suggested by factors analysis are significant to influence their overall satisfaction or not.

Overall satisfaction model can be defined as

$$Y_i = f(X_i, \beta) + e_i \quad (1)$$

Y_i is a vector of overall satisfaction level, $f(X_i, \beta)$ is deterministic part of the observed variables;

X_i is a vector of N inputs of attributes related to an individual tourist's satisfaction, e_i is a residual component.

Applying factor analysis to model (1), overall satisfaction model can be reduced as follows:

$$Y_i = f(X_i, \beta) + \varepsilon_i = f(X_i, \beta) + V_i - U_i \quad i = 1, 2, \dots, N \quad (2)$$

where, V_i s are distributed as $NID(0, \sigma^2)$ and independent of U_i s. The U_i s are non-negative random variables assumed to be distributed as $NID(0, \sigma^2)$ with truncation at zero. The relationship between U_i and the observed satisfaction frontier (OSF) of an individual tourist is

$$OSF = \exp(-U_i) \dots \dots \dots (3)$$

Thereafter, observed satisfaction model can be expressed according to the functional form of Translog stochastic frontier

$$\ln(Y_i) = \beta_0 + \sum_{j=1}^N \beta_j \ln X_{j_i} + \frac{1}{2} \left(\sum_{j=1}^N \beta_{jj} \ln X_{j_i}^2 \right) + \sum_{j=1}^N \sum_{j < k} \beta_{jk} \ln X_{j_i} * \ln X_{k_i} + V_i - U_i \dots \dots (4),$$

‘ln’ refers to the natural logarithm.

Table: 4. 1

Model	Result	β ₁	β ₂	β ₃	β ₄	β ₅	β ₆	β ₇	β ₈	Akaike criterion	Hannan-Quinn
Model I	coefficient	0.11	0.45	0.33	0.10	0.12	0.06	-0.07	0.07	416.05	430
	t	0.70	2.48	2.12	0.84	0.95	0.36	-0.59	0.46		
	p	0.48	0.004	0.03							
Model II	coefficient	0.07	0.33	0.18						300.49	293.74
	t	4.98	24.1	0.18							
	p	0.001	0.001	0.008							
Model III	coefficient	0.02	0.08	0.04						589	583
	t	3.14	13.06	6.02							
	p	.002	00.0001	0.007							

Table: 4. 2

Source	Sum of Square	df	Mean Square	
Regression	116.95	4	29.23	R ² = 0.97713
Residual	2.73	203	0.013	F(4, 203) =
Total	119.68	307	0.57	2168.46
				P= 0.00014

Table 4.1 and 4.2 showed the estimated result for three different models. In model I, we employed ordered probit estimation including eight relevant variables. If we invoke the assumption that $U_i \sim (0, \sigma^2)$, then we can use t test to test a hypothesis about any individual partial regression coefficient. In this regard, we can consider the estimated result of model where we regress observed satisfaction on eight variables. If we postulate that $H_0 : \beta_i = 0$ and $H_a : \beta_i \neq 0$. The null hypothesis states that, with some X_i held constant, any X (X_2) has no influence on Y . To test the hypothesis, we use t test where computed t value exceeds the critical t value at the chosen level of significance for X_2 and X_3 , but we can not reject null hypothesis for all other variables. Notice that we have 308 observations and we have used an ordered probit estimation in model I, where result shows that X_2 and X_3 has significant effect on tourist satisfaction. In model II, we exclude few less significant variables and we decompose the stochastic error term. As we have estimated U^{\wedge} , so unobserved random influences related with tourist satisfaction were cancel out in model II, here we have found all three variables X_1 (Emergency & Ancillary Services), X_2 (Accommodation and Security), X_3 (Destination on the Spot Facilities) are enough significant to explain observed satisfaction frontier (OSF) of an individual tourist satisfaction.

In model III, observed satisfaction model is expressed according to the functional form of Translog stochastic frontier, where estimated t value for X1, X2 and X3 shows strong effect on tourist satisfaction. For model III we also have estimated ANOVA table. For the overall significance of model III, analysis of variance technique is very convenient here. Under the assumption that $U_i \sim (0, \sigma^2)$,

$$E \frac{\sum \hat{u}_i^2}{n-3} = E(\hat{\sigma}^2) = \sigma^2$$

with additional assumption that $H_0 : \beta_1 = \beta_2 = \beta_3 = 0$ and $H_a : H_0 : \beta_1 \neq \beta_2 \neq \beta_3 \neq 0$, where

$$\frac{E(\beta^{\wedge}_2 \sum y_i x_{2i} + \beta^{\wedge}_3 \sum y_i x_{3i})}{2} = \sigma^2$$

Therefore, if the null hypothesis is worth to reject, both above equation may not give identical estimate of true σ^2 . In this context as we have significant relationship between tourist satisfaction and X1, X2 and X3, the sole source of variation in Y is due to explained variation (regression in table II) by both variables, as it is 116.95, whereas variation in Y is due to the observed random forces represented by residual is 2.73, very trivial. So explained sum of squares is relatively larger than the residual sum of squares, taking due account of their respective degrees of freedom (df). Therefore, the F value provides a test of the null hypothesis that the true slope coefficients are simultaneously zero. Here we have found that computed F value exceeds the critical F value from F table at 5 % level of significance, we can reject null hypothesis. Alternatively p value of the observed F is sufficiently low (0.00014) and F value is sufficiently large $F(4, 203) = 2168.46$, leading to rejection of the null hypothesis that together X1, X2 and X3 have significant effect on tourist satisfaction.

H2o, There is no significant difference found among the destination attributes with respect to overall satisfaction of tourists at Cox's Bazar Beach. The study postulated that all underlying dimensions are not equally significant. Thus, the results of regression analysis reject hypothesis 1, that there is significant difference between the beach attributes regarding the overall satisfaction of tourists.

Managerial Implications of the Study

From the theoretical point of view, the findings of the study have several implications which can be added to the growing body of literature on tourism satisfaction research. The study revealed that significant differences are found between tourists' expectations and perceptions in all items except four. Moreover, to measure individuals attribute wise satisfaction current study posted all attributes on expectation-satisfaction matrix and grid. Based on these findings current study throws some bold suggestions;

First, the current study suggests that authority concerned should maintain high-satisfaction and high-expectation attributes with a view to remaining existing position. As natural attraction is a major factor, in planning facilities, identity and biodiversity of the area must be considered since tourists pay great attention to feel the nature of sea areas. Then, attention needs to be paid on toilet facilities, food price and quality services to touch the tourist perception and attitude. Next, the management responsible for this destination needs to allocate a suitable budget to be used to improve the sea beach activities such as surfing, boating, biking and various types of riding, especially during the peak seasons, because of the bigger number of tourists visiting this place at that time. Finally, security position and emergency services must be enhanced for avoiding any risky situation.

Secondly, the authority should focus more on low-satisfaction and high expectation attributes, the reason why tourist might have chance to become more disappointed in these points. Thus, attention needs to be paid on cleanliness of public areas near the beach, toilet facilities, and tourist caring services to touch the tourist perception and to meet tourists' expectations.

Thirdly, the study recommends that marketers should improve low-expectation attributes (weaknesses) associated with high dissatisfaction, like some ancillary services, to ensure more satisfaction, if possible, subject to meet up others.

Finally, the factor analysis and regression results of the study revealed that even if eight factors have a significant relationship with the overall satisfaction, F1 (emergency and ancillary services), F2 (accommodation and security), F3 (destination on the spot facilities) are the most important factors that influenced overall tourist satisfaction more than other factors. Tourism managers and marketers should be more careful of ensuring the quality service with facilities relating to these factors.

Conclusion

Cox's Bazar beach is the most attractive and highly visited tourist destination in Bangladesh and it has significant economic contribution to the local economy as well as the country. The overall perception of tourists' towards the facilities and services are not quite satisfied. The policy makers should provide and ensure up to mark services to critical areas as per above recommendations. Finally, an important limitation needs to be considered in this study. The survey carried out in this study over a period of fifteen days during the months of May (i.e. decline of peak season) which could not be used to represent a year round's tourism. Hence, it is recommended that future research incorporate a survey which will also include the peak season (October-March) because seasonality may influence tourists' responses.

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