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ESTIMATING RECREATIONAL BENEFITS OF COX'S BAZAAR: ZONAL TRAVEL COST METHOD APPROACH

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ABSTRACT: *Estimating recreational value for any place is very important for its decision making purpose. Because it gives the decision maker scientific monetary values which help them to take an appropriate decision at the same time ensuring proper conservation to the recreational site management. In the case of tourism, this value can provide information regarding tourism prospect in the particular recreational site. This type of information can attract the investor to invest more money at the same time to influence new entrepreneurs to make new plan to start business etc. As we know that tourism has both positive as well as negative side. The positive side, it creates more employment, more money injection in the particular place as well as other stakeholder benefits. But its negative site is also very high; it sometimes destroys the social value which can destroy the cultural value of the recreational site. In this work it is a tried to evaluate the positive benefit of a recreational site through the method of zonal travel cost. It is one of the methods of environmental valuation.Cox's bazaar is selected because it is most popular as well as the most visited tourist destination in our country. After applying zonal travel cost method based on the primary information collected on the field survey, it is estimated that net annual recreational benefits of the visitors from the beach is 100.2 million BDT.*

KEYWORDS: Zonal Travel Cost Method, Net Recreational Benefit, Non-Market Valuation, Consumer Surplus, Choke Price.

INTRODUCTION

Now a day's tourism is quite a fundamental need for human beings. The reason may be increasing the disposable income of people as well as various media exposure regarding tourist places. On the other hand, Cox'sBazar is the most visited tourist destination in our country. It fulfills the demand of travel not onlylocal but also international tourists. Cox'sBazar is one of the places of world's natural wonder because of its unique characteristics of unbroken large sea beach, which attract those people who love natural beauty. The recreational value of Cox's bazaar is quite high than that of the other places in Bangladesh so that Cox'sBazar is selected for the purpose of estimating recreational value. The crown bearer of the world's largest unbroken sea beach, Cox's bazaar is a seaside town, as well as district, headquarters for Bangladesh. This beautiful town is quite popular for its tourism business. Every year near about one corer tourist visits Cox'sBazar. But due to political unrest in 2013 only 20 lacs tourist visit there. October to March is considered as a peak season for Cox'sBazar. Inthistimesthis place is crowded with the maximum number of tourists not only local but also foreign.

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Zonal travel cost method is used here to estimate Cox's bazaar recreational value. This method is used here because most of the tourists visit Cox's Bazaar in once a year, but multiple visits are the prerequisite of individual travel cost method. Zonal travel cost method mainly depends on the secondary data but lack of basic information, there is created a need of primary survey. For the purpose of the study, a questionnaire is developed and conduct a field-based survey to gather primary data, which is relevant for the study purpose. Some secondary data is also collected from various sources.A regression model is run for the purpose of drawing out the demand function. From that information, some socio-demographic scenario is also drowned from it. Actually, our main purpose is to estimate the recreational value of Cox'sBazar at the same time find out some influential factor, which motivated people for the repeat visit.

LITERATURE REVIEW

Khan H (2003) conducts a study to estimate the recreational benefit of the Margala Hills National park this study was first valuation study conducted in Pakistan. The author uses ITCM to estimate annual recreational benefit and at the same time examines how much park visitors are willing to pay to visit and enjoy the park. There is a considerable amount of total annual consumer surplus obtain from the park approximately Rs. 23 million (US$ 0.4). Travel cost, household income, and the quality of the park are the influential factor for visitors. The study recommends increasing the entrance fee of Rs20 per person so that management could be utilized that money for park maintenances and if this possible that the park would generate nearly Rs. 11 million in revenue annually which represent 4% of the annual budget allocated to the environmental sector in Pakistan.

Marawila T.D and Thibbotuwawa M (2010) conduct a study on the recreational benefit of DiyawannaOyawetland that situated in Colombo. This wetland is quite popular because of the growing demand for urban recreational amenities. According to the study, this wetland has both use and non-use benefits, including production, hydrological, and ecological values. This study evaluates the recreational related social welfare benefits that visitors drive from the DiyawannaOya wetland using the ITCM model as well as changes in the consumer surplus if the authorities were to convert parts of the wetland to other development uses. The study also evaluates the present value of non-market benefits from the preserving the site and the study findings indicated that the wetland annually generates consumer surplus of LKR 3890 million (or USD 35 million). The study estimates that conversion of the natural wetland area to development project loss of welfare is LKR. 19.45 million (USD173,107) per hector. Another finding of the study is that if entry fee will increase (the equivalent of LKR.50) than the government revenue will also increase by LKR 5.4 million (USD 48,055).

A study by Shammin, MR (1999) used zonal travel cost method (ZTCM) to estimate willingness to pay (WTP) of visitors for the better environmental services of the Dhaka zoological garden. His study findings give the result that yearly consumer willingness to pay was near about 13 corers (12.88) BDT. The author's another observation is that the entry fee of the zoo is too low and does not generate any surplus for financing the development plans for the zoo. So his suggestion is to increase the entry fee for the better management and conservation of the zoo.

A study conducted by Fleming C.M. and Cook A. (2007) using this ZTCM to estimate the recreational value of Lake McKenzie. This paper was also presented at the 51st annual

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conference of Australian agricultural and resource Economics society. Lake Mckenzie was a popular place of visit in peak season attracting near about 2000 visitors a day. So that many people believed that this place was used in an unsustainable manner and the authority should consider some management option for its further sustainable use. For this reason, the recreational value of this lake was estimated and the end of the paper they find out that the lake ranging from $31.7M to $31.8 M per annum or from 4104.30 to $242.84 per person per visit.

In a study conducted by Bhatt and Islam (2009) estimated the economic valuation of biodiversity through conducting the Zonal Travel Cost Method (ZTCM). They focused on a comparative study of the selected wetlands of India and Bangladesh from which they try to understand the economic importance of the wetlands at the same time creating social awareness for better policy and management.

Objectives of the Study:

There are mainly two objectives. The first objective is to estimate the recreational benefits of Cox'sBazar Sea Beach. Actually, our main objective is to calculate a recreational value in monetary term.

Our second objective is to understand some background information of tourists like their socio-economic and demographic factors such as age, sex, marital status, income level, mode of transport, etc. which influence them to visit Cox'sBazar.

Source of data:

ZTCM mainly depends on secondary data but it is very unfortunate those travel related data are not updated as well as good enough to fulfill the study required. Therefore, there is an emergency to conduct a primary survey. For the purpose of the study, we use two type data.

Primary data: This study mainly depends on the primary data. For primary data collection, there is an emergency to conduct a field-based survey.100 randomly selected tourists are interviewed in the beach area in the month of September 2014. A questionnaire is developed to conduct a field survey. And the tourists are requested to fill up the questionnaire, which contains some basic information regarding their tour as well as some other personal and socio-demographics of tourist's information such as age, sex, income, origin, educational background etc.

Secondary data: Some secondary data is also used from different sources, includingGovernment offices/departments, reports and publications by the Government, journals and books and from available and reliable websites.

Methodology of the Study:

Product life cycle stage of Cox'sBazar:

Like a product, tourism place also passes through a life cycle stages. This model is known as the tourism product life cycle model. In this model, the author stated that in the entire life tourist place go through a round cycle of those stages. The life cycle of a tourism product started with the discovery that means a new place is added to the existing tourism business. At this time very few tourists visit the place and those who visit the place most of them are adventurer tourists because there is a lack of tourism-related facilities. Then it moves forward to another stage, which is called launch. In this stage, the involvement of local people is increased with

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the increasing number of tourists and gradual development is going on. Investor started to invest money, so that a large number of hotels, resorts as well as other tourist facilities is established. In this stage, the number of tourists is also increased. In this stage of the life cycle, conversion of employment is very common that means people leave their traditional employment and take tourism related career.The local economy is dominated by tourism and local people will take full opportunity to make money through tourism. On the other hand, there will be continued building and expansion of the resort. Actually, in this stage tourism business is drowning the maximum amount of tourism-related profit. In the stagnation stage, the number of tourists is maximization but the amount of revenue is lower than that of the launch stage. In this time the place loss its original features that means the beach is crowded as well as full of rubbish. At the same time number of resort and other hotel is to stop growing. After this stage, there is two possible way may be observed-decline or rejuvenation. The place may be gone to the decline if necessary measures are not taken. On the other hand, new adjustments can make apple of the place such as some preventive measure or establishing some new attraction within the original place to boost its popularity.

After considering the life cycle stage of Cox'sBazar we can see that Cox'sBazar has already entered into the stagnation stage.

Study Area:

Cox's Bazar is the largest unbroken sea beach in the world and it is one of the most visited destinations in Bangladesh. Cox'sBazar is a seaside town, a fishing port and district headquarters in Bangladesh. It is known for its wide and long sandy beach, which is considered by many as the world's longest natural sandy sea beach. The beach in Cox's Bazar is an unbroken 120 kilometers (75 miles) sandy sea beach with a gentle slope. It is located 152 kilometers (94 miles) south of the industrial port of Chittagong. This area is not only attracting the local tourists but also the foreign tourists. In Bangladesh, Cox's Bazar is considered as the most profitable tourism business sector around the country. Actually, Cox's Bazar is a very popular place for the visit with all recreational facilities so its recreational value is quite high than that of other tourist places of Bangladesh for this reason Cox's bazaar is selected for the study purpose.

Selection of the model

Various models are available to estimate recreational value of the natural resource. In case of service related industry, it is quite difficult to estimate its value that the tourists get after the visit. Tourism is totally a service based industry so that it is difficult to estimate tourist's proper utility value; they are getting from the tour. In the case of economics, there is an assumption that every product or service has certain utility so that people are getting interested to consume it. In this perspective, it is assumed that they get at least the amount of utility they are paid for the product.

TCM is a very popular model to estimate the non-market value of a place so that for the purpose of study TCM model is used to estimate the recreational value of the site. The Travel Cost Method (TCM) was first suggested by Harold Hotelling in the 1940s for quantifying the value of US National Park Service (Kolastad, 2000). There are two kinds of TCM, ZTCM, and ITCM. In this study purpose, ZTCM is used as the main model. ZTCM is used because most of the tourists are first time visit Cox'sBazar or they visit Cox'sBazarone or two times in their

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lifetime. On the other hand, individual Travel cost method can be applied when tourists visit a site more than one in a year.

RESULT AND DISCUSSIONS OF THE STUDY

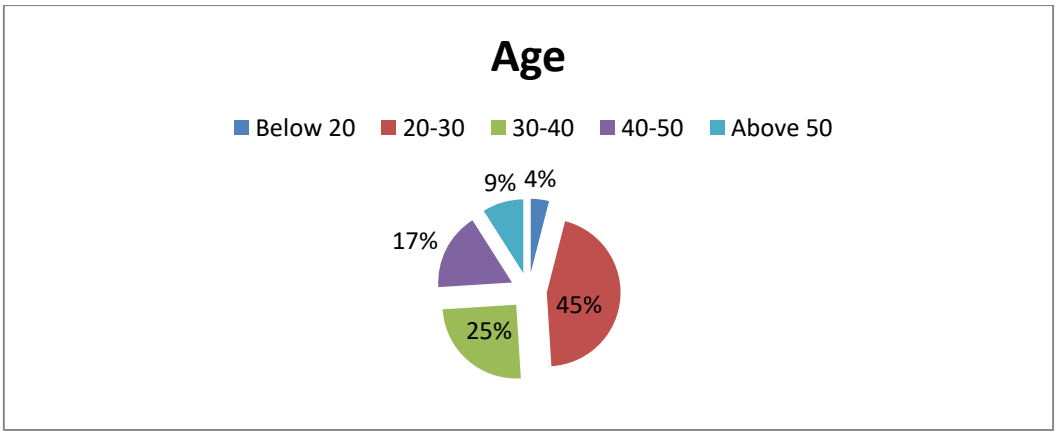
Basic Descriptive statistics on the study population

This part is mainly arranged with the primary data which is collected from the field based survey. Some important findings are arranged with the both graphically as well as some short explanation of those graphs. In this study, age is a most important factor. The following graph provides information regarding the tourist's age range based on collected information. As mention earlier, we collected information from 100 respondents who come from the different location in the country and we eliminate foreign tourists from our consideration because of the distance factor. This study mainly focuses on the recreational value of local tourists.

Age:

Age is the most important factor for travel decision making. The following graph is proven it again. Around 45% tourist's age range is between 20-30 years. In the following graph, we can see that with the increase in age there is a decreasing pattern of percentage for travel.

Figure 1: Age pattern of tourists



Source: Based on the field survey 2014

Current job status:

In the ZTCM model, we have calculated the time cost of tourists. In this purpose, current job status of tourists is another important factor for the study. We collected data in the working day in a particular of September so that we can count their time cost. For the study purpose, we assume that student is unemployed so that we are not considering their time cost. 36% of the tourists are the businessperson; on the other hand, 31% are service holder. Percentage of Student is also providing a remarkable amount.

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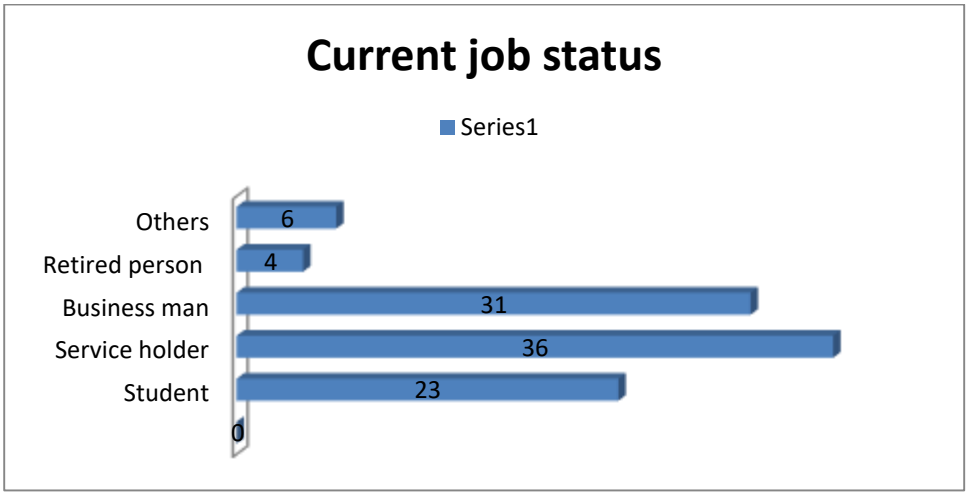
Figure 2: current job status

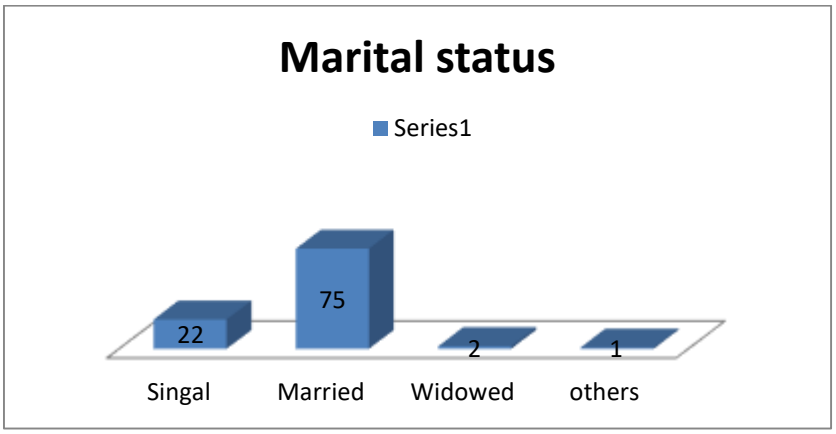


Source: Based on the field survey 2014

Marital status:

In the case of marital status, we can find that about 22% of the visitor is single, 75% is married, 2% is widowed and finally, 1% is other. During the time of data collection, we observed that most of the visitor was the newly married couple that means visit Cox's Bazaar for the purpose of their honeymoon. On the other hand, we can find that some couple came here to spend their annual vacation with their children. Maximum Group tour contain single person those who come from nearby town especially Chittagong. Those people are the student in the profession.

Figure 3: marital status of tourist



Source: Based on the field survey 2014

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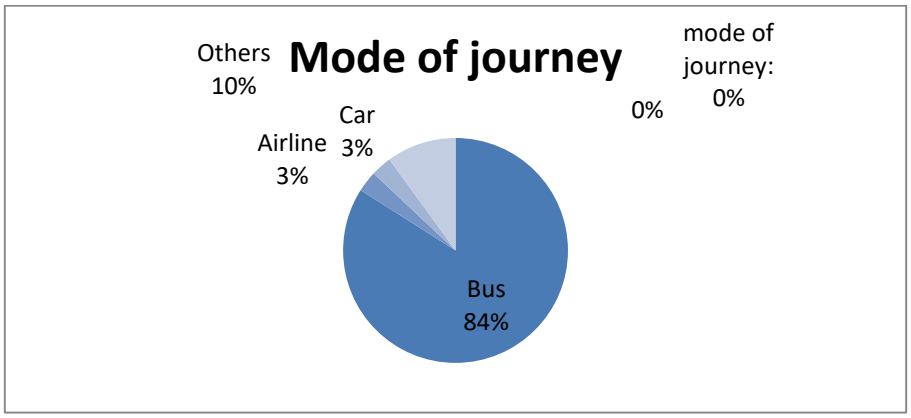
Mode of transportation:

About 84% visitors use bus as their mode of transportation.3% use the airline,3% use their own vehicle such as a car to visit the site and finally, 10% use other transport such as auto bike, speedboat, troller, motorcycle etc. Actually, the visitor those who come from a nearby area is used those vehicles.

Figure 4: mode of the journey



Source: Based on the field survey 2014

Some other socio-demographic information about tourists:

Table 6: some socio-demographic information on tourists

Variable	Minimum	Maximum	Percentage
Gender Male Female			 71 29
Household type Joint Nuclear			 24 76
Location Urban dweller Living in rural areas			 88 12
Income	15000	2,50,000	
Number of days staying in the beach	1	7	

Source: Based on the field survey 2014

Application of Zonal Travel Cost Method:

The zonal travel cost method is applied by collecting information on the number of visits to the Cox'sBazar sea beach from the different distance. The travel time and costs will increase with the increasing distance and this information ultimately will allow calculating the number of

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visits as well as "purchased one product at different prices".This information is used to construct the demand function for the site, and estimate the consumer surplus, or recreational benefits of the site. In the study purpose six steps of ZTCM model is used to estimate the recreational benefits of the beach, which are as follows:

Step-01: in this step, the author defined five zones based on distance named as A, B, C, D and E. The zones had the distances of below 300,300-400, 400-500, 500-600, and above 600.

Table 1: Selection of the zones

Zone	Distance from the beach	Administrative District
A	0-300	All the districts of Chittagong division
B	300-400	All districts of Dhaka division
C	400-500	All districts of Barisal division
D	500-600	All districts of Khulna and Sylhet division
E	Above 600	All districts of Rajshahi and Rangpur division

Step-02: in the second step, there is collected some information regarding the number of visitors from each zone as well as the total population of each zone and finally it is possible to estimate the number of the visit made in the last year. The number of visits made in the last year is 20 lacs. According to sources, about one-corer tourists visited Cox's Bazaar in 2012, but its number came down to 20 lacs in 2013 due to political insecurity in the country. In the model, last year is always the base year, so that we selected the amount of tourist's arrivalin 2013.

Table 2: Number of sample tourist, zone population and expected number of visits

Zone	Distance	The sample number of visits	Percentage	Zone population	Expected number of visits
A	0-300	17	17	28,423,019	340,000
B	300-400	46	46	47,424,418	920,000
C	400-500	6	6	8,325,666	120,000
D	500-600	11	11	16,678,788	220,000
E	Above 600	20	20	34,272,616	400,000
		Total	100		2,000,000

Source: Based on the field survey 2014

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Step 3: In the third step, it is calculated the visitations per 1000 population in each zone and this is calculated by dividing expected visitors per year from the zone by the zone's population in thousands, that means

$$VR = \frac{Expectedvisitperyear}{zonepopulation} * 1000$$

Where *VR= visitation rate (visits/1000/year)*

Table 3: Visitation rate/1000 people

Zone	Distance	Zone population	Expected number of visits	Visitation rate /1000 people
A	0-300	28,423,019	340,000	11.96
B	300-400	47,424,418	920,000	19.39
C	400-500	8,325,666	120,000	14.41
D	500-600	16,678,788	220,000	13.19
E	Above 600	34,272,616	400,000	11.67
Total			2,000,000	

Source: Based on the field survey 2014

Step 4: The fourth step, it is the time to calculate the total cost. For the purpose of calculation here is considered the average round-trip travel distance, average travel cost, and average travel time cost. The cost of time is more complicated to count, because tourists come here in the different profession as well as they have different income level. Finally, the study calculated the travel time cost using the following method, assuming that about 2/3rd of the days in a week are working days. As weekly two days are weekends, plus there are also designated government and other official holidays including which it comes about 2/3rd of the days as working days. For all income-earning people, including the businesspersons, the same formula is applied.

$$C = \frac{2}{3} * (Visitorsperdaywage) * (Numberofstayingdaystothesite)$$

Where*C = Travel time cost*

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Table 4: Average round-trip travel cost, average round travel time cost, and total cost

Zone	Zone distance (in km)	Sample number of visits	Average round trip Travel cost	Average round trip travel time cost (in TK.)	Total cost (in Tk.)
A	0-300	17	776	2342	3118
B	300-400	46	3539	3926	7465
C	400-500	6	3333	3014	6347
D	500-600	11	3527	3806	7333
E	More than 600	20	4750	2884	7634

Source: Based on the field survey 2014

Step 5:Now this is the time to select an appropriate model to estimate the demand function that mainly relates to visiting per capita of travel cost of tourists. To estimate the demand function, the zonal visitation rate was regressed against the zonal travel cost with other socio-demographic variables. However, socio-demographic variable was not so significant that is why those variables were not using in the purpose of the model. In this study purpose, here we try to follow for the different regression model.Bateman (1993), has defined visitation rate is a function of Visit costs from each zone and each zone's socio-economic explanatory variables i.e.

$$\frac{V_{hj}}{N_h} = f(C_{hj}, X_h) \dots\dots\dots\dots\dots\dots\dots\dots (i)$$

Where; $\frac{V_{hj}}{N_h}$ is visitation rate; V_{hj} = Visits from zone h to site j; N_h = Population of zone h

C_{hj} = Visit/ Round –trip travel costs from zone h to site j; X_h = Socioeconomic explanatory variables such as income, age, education etc in zone 'h'.

Four regression models are:

$$Linear\ Model, \quad VR = \beta_0 + \beta_1 TC \dots\dots\dots\dots\dots\dots (ii)$$

$$Linear\ Log\ Model, \quad VR = \beta_0 + \beta_1 logTC \dots\dots\dots\dots\dots\dots\dots (iii)$$

$$Log - linear\ Model, \quad logVR = \beta_0 + \beta_1 TC \dots\dots\dots\dots\dots\dots\dots\dots (iv)$$

$$Double - log\ log\ model, \quad logVR = \beta_0 + (log\beta_1) TC \dots\dots\dots\dots\dots\dots\dots (v)$$

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Four regression models are tested differently but we take one model, which gives us value that is more reliable. The log-linear regression modelis chosen because it gives a reliable value to estimating recreational benefit.

Step 6: log-linear regression model gives us the following demand function,

VR=1-.0001302*TC

Now it is the time to estimate the choke price (CP) from the following demand function. In this stage, we assume that VR=0 and TC remaining constant. The calculation is given below:

1-.00013TC=0, =>TC=1/.0001302, => TC=7680= CP

For estimating consumer surplus we follow the theory of Hong, A& Sharma, V. (2006) who defined the annual consumer surplus of each zone is the chock price minus the actual price paid, divided by two. Thus, given the above demand equation, the annual consumer surplus/recreational benefits for each zone of this study is

$$CS = 0.5 * (\text{Choke price} - \text{total cost from each zone}) * (\text{number of expected visit per year from each zone})$$

The following table is representing the aftermath story of the calculation as well as is to fulfill our main purpose to estimate the recreational value of Cox'sBazar.

Table 6: Consumer surplus for Cox's bazaar visits

Zone	Total cost	Choke price (Taka)	Number of expected visits	Consumer surplus (in million BDT)
A	3118	7680	340,000	777.54
B	7465	7680	920,000	98.90
C	6365	7680	120,000	78.90
D	7333	7680	220,000	38.17
E	7637	7680	400,000	8.60
Total	31918		20,00,000	Total CS=1002.11

Source: Based on the field survey 2014

Estimating of net recreational benefits of Cox'sBazar sea beach,

NRB= TB-TC*1000000(in million BDT)

=1002.11-.0319*0.1

=100.2 taka

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Where'

TB=total Benefits, TC=Total cost, 0.1=total number of expected visits to the recreational site (in millions)

CONCLUSION

Cox's Bazaar Sea Beach is the most recreational and super priority tourism destination in Bangladesh for holidays and leisure times for tourists. Every year the huge number of tourist visit Cox's Bazaar but it is quite impossible to identify their real benefit from the visit. It is a small endeavor to find out the net recreational benefit of Cox's Bazaar. The focus of this study is to calculate the recreational value of the Cox's Bazaar Sea Beach for generating information on its economic importance. The total gross recreational benefit is found to be in the tune of Tk. 1000.2 million, while the net benefit is estimated to be Tk. 100.2 million. Besides these, if the beach is fully developed, it may also make a great contribution to the livelihood and socio-economic development of the local communities. The government can also earn a lot of foreign currency as more and more foreign tourists come to visit in Cox'sBazar. Indirect costs are difficult to estimate but there is a small effort to identify this type of cost. During the interview process, we find various difficulties but the effort is successful because of those respondents. We tried our best to find out the recreational benefit of Cox's Bazaar. Actually, Cox's Bazaar contributes enough on GDP. However, it is seen as a negligible amount but if we emphasize more on its development then the amount may be large. Moreover, its multiplier effect may be large enough to be seen in big amount.

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