



## Recreational Value of the Pigeon Island National Park, Sri Lanka

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### Abstract

Coastal resources are crucial and important to support life in the planet. Benefits derived from coastal resources are well known and widely recognized. Pigeon Island National Park is one of the best remaining coral reefs with high live coral cover in Sri Lanka and is an ideal location for scuba diving and snorkelling. The objective of this research was to explore the recreational value of the Pigeon Island. A sample of hundred participants including both foreigners and locals were selected using systematic sampling and every fifth person who passes the entry point was interviewed. Contingent valuation method was used in the analysis in the study. The result revealed that majority (92%) of foreigners who visited the island were non-Asians. Almost all the foreign visitors participated in Scenic visit, diving visit, whale watching and Sunbath. Both locals and foreigners ranked diving as the most preferred activity. Average cost for boating was Rs. 1,300 per hour for foreign visitors, average cost for diving was Rs. 3470 per person per hour which were nearly twice the value that of local visitors. Foreign visitors' mean willingness to pay for diving was Rs.3670 and, for whale watching was Rs.1510. But for local visitor's willingness to pay for diving visit was Rs.1240, for whale watching was Rs.919.00. Average willingness to pay of the foreign visitors for entrance fee was Rs.1560 and the average willingness to pay of the local visitors for the entrance fee was Rs 644.00.

Results of the T test presented that significant difference between foreign visitors and local visitors for total and entrance fee willingness to pay, hours of spending, costs for boating, for diving and for whale watching. Chi square analysis showed that there was a high significant association between the total willingness to pay by the local visitors and the education level of the respondent ( $X^2=76.75$ ,  $p < 0.01$ ). A significant association was observed between the total willingness to pay by the local visitors and the cost for boating in the Pigeon Island ( $X^2=36.52$ ,  $p < 0.01$ ). In addition, total willingness to pay was significantly affected by age, hours of spending, number of the group members and expenses for meals. The study revealed that the current entrance fees do not capture the economic value of the Pigeon Island.

**Keywords:** Pigeon Island, Recreational value, Travel cost method, Willingness to pay

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### INTRODUCTION

Coastal resources are crucial and important to support life in the planet. Benefits obtained from coastal resources are well known and widely recognized. Coastal resources are sources of primary and secondary productions, and biodiversity. The importance of the coast in global material and energy cycles is now beginning to be better appreciated. Recent estimates of the economic value of the marketed and non-marketed ecosystem services of the coastal system indicate a large contribution to human welfare plus raw materials, recreational, and cultural services (Costanza *et al.*, 1997).

Coastal resources refer to the natural resources found in coastal areas, which is useful for human beings, today or in the coming future, including land, forests, coastal waters and wetlands, sand minerals, hydrocarbons, and living coastal organisms (Walters, 1998; Jin *et al.*, 2002). Coastal resources also generally include other important resources such as archaeological, historic, sacred, or gender-specific significance (Walters, 1998). Coastal zones throughout the world are attractive and important areas for socio-economic development. However, increasing number of human activities in coastal zones can have disastrous consequences on coastal resources (Jean, 2002).

Sri Lanka consists of a total land area at about 1,585km of which 300km are

beaches and sand dunes. The coastal areas are generally low-lying, and landscapes exhibit considerable variety characterized by bays, lagoons, headlands, coastal marshes and dunes (United Nations Environment Programme, Annual Evaluation report, 2005). The areal extent of biologically productive mangroves systems, estuaries, coral reefs and sea grasses are decreasing due to natural and man-made causes. The development of the country has been closely related to maritime activities. In coastal region, over 80% of tourist hotels were located and two third of all industrial production of Sri Lanka is taken place (Bandara & Ratnayake, 2015).

Tourism sector is becoming the most powerful growth engine in the millennium. Tourism involves travelling to relatively undisturbed or uncontaminated natural areas with the specific objects of studying, admiring and enjoying the scenery and its wild flora as well as other existing cultural and historical aspects. These include place of archaeological and historical importance, pilgrimage centers, sanctuaries, national parks, hill resorts and sea beaches (Jude *et al.*, 2011).

Sri Lankan tourism industry is one of the fast emerging industries of the economy with average annual revenue of US \$ 500 million at present. It is the sixth largest foreign exchange earner in Sri Lanka. It has created employment for about 125,000 persons. At present, nearly half a



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million tourists visit the country every year. Sri Lanka has exotic sandy beaches, large greeneries, historical artifacts, and a good climate, spectacular landscape in the highlands, a rich biodiversity and friendly and welcoming people. These distinctive opportunities will be utilized to develop the tourism industry as a major growth sector in the development of the economy. In present Sri Lanka has achieved a high growth in tourism industry with the current political stability as well as the opening of the North and East to tourist. Today Sri Lanka tourism contributes enormously to the Sri Lankan economy. Because after the end of the civil war in 2009, Sri Lanka witnessed a strong upsurge in tourism. Trincomalee is one of major place attracted by both local and foreign visitors, which leads for higher earning to the tourism industry Sri Lanka.

The Eastern Province of Sri Lanka, comprising the three coastal districts of Trincomalee, Batticaloa, and Ampara covers a land area of 9,635 km<sup>2</sup>, has a coastline of approximately 360 km in length, and supports a population of approximately 1.42 million people, 78% of which are rural, and 30% live within the coastal belt. The entire Eastern coast falls within the dry zone of Sri Lanka having a common climate (Kevin, 2007).

Trincomalee district with its natural deep water harbor at the sea port city of great Trincomalee bay, Nilaveli

Beach, Uppuveli Beach, Pigeon Island, off-shore whale watching and Dolphin watching, Kannyai Hot Springs, Colonial Fort Fredrick and Koneshwara Hindu temple provides joy and experience to Sri Lanka holidays tourists. Swimming at Nilaveli and Uppaveli tropical beaches, snorkeling at Pigeon Island, enjoying marine life at offshore Whale watching and Dolphin watching and getting close to the nature with wild elephants at Somawathie Chaitiya Sanctuary was certainly bound to deepen the experiences among tourists.

National parks, wild life reserves and green spaces included in the classification of public recreational resources. Pigeon island national park is one of the marine national parks in Sri Lanka. Pigeon Island National Park consists of two small islands off the East coast, North of Trincomalee. The Island gets its name from Blue Rock Pigeon, a native exotic bird lives within rocks in these islands. In the year 1974, two islands were declared as a sanctuary under Fauna and Flora Protection Ordinance (FFPO) for protecting the nationally endangered wild rock pigeons (*Columba livia*), that colonize the rocky cliffs in large numbers (Perera and Kotagama, 2016). In 2003 this area was upgraded to the status of a National Park and the boundaries were extended to include coral reef around them (IUCN SL/CEA, 2006; IUCN, 2002). This Pigeon Island National Park has one of



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the best remaining coral reefs with high live coral cover in the country and is an ideal location for scuba diving and snorkeling (IUCN SL/CEA, 2006; IUCN, 2002). In addition to that, nature trail in the inland areas for eco-tourism and constructed buildings under the colonial governments also contributes for the increase in the tourism attraction of the Pigeon Island. The hotels at the beaches of Trincomalee make arrangements on boat trips to the Pigeon Island for the tourists to enjoy in swimming and snorkeling in the shallow water. The shallow water around the island delight those who would like spear fishing. Many of the 100 species of corals and 300 coral reef fishes recorded around the Trincomalee area are found in the national park. Juvenile and adult Black-tip reef shark are seen around the shallow coral areas whilst, Hawksbill turtle, Green turtle and Olive Ridley are the visiting sea turtles of the coral reef.

Contingent valuation is widely used in most environmental valuation studies and is depended on every individual's stated willingness-to-pay for the hypothetical changes in environmental amenity (Walsh, 1986). The first contingent valuation survey was done by Davis (1963) to estimate the value to ecologists of a recreational area and compared the results with the travel cost approach and found the results were quite similar. Since then, many researches were done using contingent valuation method.

## Problem Statement

There has been a multiplicity of recent valuation studies on coastal and ocean resources. However, coastal resource valuation is still a new field to Sri Lanka. So far, there were no studies related to the estimation of recreational value of the Pigeon Island, Sri Lanka.

The aim of this study was to estimate the recreation value of the Pigeon Island- Trincomalee, Sri Lanka. Specific Objectives were to identify socio economic status of tourists, to estimate the recreational value of the Pigeon Island and to identify the major limitations for recreation.

## RESEARCH METHODOLOGY

### Study Area

Trincomalee district is located in the East of Sri Lanka. The present research was conducted in the Pigeon Island in Kuchchaveli Divisional Secretariat Division (DS) of Trincomalee district. Kuchchaveli Divisional Secretary Division is the longest DS Division in Trincomalee District. It is situated in the Eastern costal area and bounded by Mullaitheevu district in North and Bay of Bengal in the East and Trincomalee Town and Gravets DS Division in the South and Morawewa and Gomarankadawala DS Division in the west. Distance between Trincomalee to Pigeon Island National Park was only about 19km. Fringed by a coral reef off Nilaveli in Trincomalee



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is the Pigeon Island, one of the two marine national parks of Sri Lanka, situated 1km off the coast of Nilaveli.

### Selection of sample

The collection of primary data was geared towards visitors' experiences and socioeconomic characteristics. The questionnaire was designed to collect information on: (1) socioeconomic factors (2) on-site and off-site recreational behaviour; and (3) travel experiences and trip costs;

### Sampling

In the survey, systematic sampling was employed. The study was done in 2017. Individual visitors were chosen as respondents for the interviews. Contingent valuation method is an indirect method used to estimate user benefits from visits to recreational sites (such as beaches, parks and heritage site) (Liston-Heyes and Heyes, 1999). Many studies in Asia have valued the recreational benefits of natural resources based on surveys of only domestic tourists. For example, the estimated tourism value of Cuc Phuong National Park (Francisco and Glover 1999) did not include the value from international tourists, even though the authors had interviewed foreigners. A study in Lumpinee Public Park in Thailand (Dixon and Hufschmidt 1986) also omitted foreigners. The reason for this omission in both cases was that the number of foreign tourists was too low to give a significant result – a problem

that often arises in such studies. However, according to statistics from the Tourism Board of Sri Lanka, a considerable income is being earned by foreign tourists to Pigeon Island. Therefore, it would be unacceptable to exclude responses of foreign tourists from the calculation. In this research, values for Sri Lankans and foreign visitors were calculated separately and then added to derive the total recreational value of the Pigeon Island.

### Research questions

The research was conducted in the form of a survey that addressed the following questions:

- a) How factors such as income and visitors' socioeconomic characteristics affect the recreational demand for the Pigeon Island?
- b) What is the composition of the recreational value of the Pigeon Islands, which includes values gleaned from foreign visitors as well as from Sri Lankan visitors?
- c) What is the visitors' total willingness to pay for visiting the Pigeon Island, and what factors affect their willingness to pay?

Tourists perceive the value of parks in different ways due to their personal characteristics, such as age, education, gender, income, experience of using the parks. The data were collected using a survey. A total of 100 samples were collected: 50 from Local visitors and 50 from foreign visitors. Respondents were asked the activities



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done in the Pigeon Island and total Island visit.  
willingness to pay for the Pigeon

**TOURIST ATTRACTION SITES FROM PROPOSED TOURISM PROJECT -**



Figure 1: Tourist attraction sites in Kuchchaveli D. S. division

**Data Analysis**

Questionnaire had two major parts such as personal data and data related to the travel. There were two separate questionnaires used for Local visitor (Sri Lankan) and foreign visitors.

Descriptive statistics were done for questionnaires to explore the socio economic status of the visitors. Multiple regression analysis was done

to explore the factors affecting travels of visitors on their total willingness to pay. Valuation on coastal resource which has characteristics as public goods can be done by non-market valuation technique. Willingness to Pay (WTP) concept was useful to measure the benefits by providing economic valuation of environmental goods.



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### Model Specification

In the model, WTP was endogenously determined and is a function of the following independent variables age, marital status, gender, hours of spending on the Pigeon Island visit, number of group members in the visit group and expenses for the meals.

$$\text{Log } Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6$$

Where,

Y = Total willingness to pay on the Pigeon Island visit (Rs),

X<sub>1</sub> = Age of the household head (Years)

X<sub>2</sub> = Marital status

X<sub>3</sub> = Gender

X<sub>4</sub> = Hours of spending

X<sub>5</sub> = Number of group members in the visit

X<sub>6</sub> = Expenses for the meals (Rs)

T- Test was used to find out the significant difference between foreign visitors and local visitors for their total willingness to pay on visit to the Pigeon Island, hours of spending in Pigeon Island, willingness to pay for entrance fee, cost for boating per hour, cost for diving visit and cost for whale watching.

Chi-square analysis was done to find out the association between different variables.

## RESULTS AND DISCUSSION

### Socio demographic and economic profile of the visitors

Table 1: Individual level information of local visitors

Individual information	level	Percentage %
<b>Gender</b>		
Male		52
Female		48
<b>Employment status</b>		
Government employee		36
Private employee		48
Self-employee		10
Student		2
Unemployed		4
<b>Marital status</b>		
Single		30
Married		68
Divorced		2
<b>Education level</b>		
Secondary(Grade6-A/L)		28
Tertiary (diploma/degree etc.)		68
Others(vocational training)		2
No schooling		
<b>Monthly income level(Rs)</b>		
0-15000		2
15000-30000		10
30000-45000		50
45000-60000		34
60000-75000		4

Most (48%) of the local visitors came to the Pigeon Island were employed in private companies. Very few of them were students (2%).

50% of the local visitors in the sample population were receiving a monthly income within the range of Rs.30000-40000.

Table 2: Districts from which the visitors came to the Pigeon Island



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District	Percentage %
Kandy	12
Matale	8
Nuwaraeliya	4
Anuradhapura	4
Polonnaruwa	8
Vavunia	4
Ampara	2
Batticaloa	2
Trincomalee	8
Kurunegala	10
Galle	4
Hambantota	2
Matara	2
Badulla	6
Monaragala	2
Kegalle	4
Ratnapura	2
Colombo	2
Gampaha	10
Kalutara	4

There were 12% of visitors from Kandy followed by 10% from Gampaha and Kurunegala.

### Individual level information of foreign visitors

42% of the foreign visitors were educated up to Bachelor's or equivalent level and 38% up to Master's or equivalent level. 74% of the foreign visitors were receiving monthly income in the range between US\$ 17500-20000 per month.

Table 3: Individual level information of foreign visitors

Individual information	level	Percentage %
<b>Gender</b>		
Male		62
Female		38

Marital status	
Single	12
Married	88
Education level	
Bachelor's or equivalent level	42
Master's or equivalent level	38
Doctoral or equivalent level	20
Monthly income level(US\$)	
17500-20000	74
>20000	26

Table 4: Native Countries of foreign visitors

Country	Percentage %
Australia	8
Argentina	6
Ireland	2
Netherland	4
Czech republic	2
Norway	8
Sweden	4
Spain	4
France	4
Finland	4
German	10
Chile	2
Belarus	6
Italy	4
Russia	8
Ukraine	4
Rumania	4
Belgium	2
Poland	2
Canada	4
New Zealand	8

10% of foreign visitors were from German followed by 8% were



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Australians, Norwegians, Russians and New Zealand.

Table 5: Information source about the Pigeon Island

Information source	Local visitors (%)	Foreign visitors (%)
Magazine	00	00
News paper	00	00
TV/Radio	4	00
Web site	78	96
Research Article/ Journal	00	00
Friends	98	98
Other way	00	2

(Multiple response)

98% of local visitors and foreign visitors were informed about the Pigeon Island through friends and 78% of local visitors and 96% of foreign visitors obtained information in web sites.

### Travel history of the visitors on the Pigeon Island

Among the sampled population, none of the foreign visitors visited the Pigeon Island before their first visit. But 34 % of local visitors had an experience of previous visits to the Pigeon Island.

Table 6: Level of participation of the visitors for different activities in previous visits

Activities	Level of participation (%)
Boating	34

Table 8: Level of participation in the activities in Pigeon Island

Swimming	32
Scenic visit	32
Diving visit	18
Whale watching	12
Sun bath	14

(Multiple response)

17% of the visitors from the sample mentioned that they have participated in boating in the Pigeon Island before this visit. 16% of them have participated in both swimming and scenic visit. 9% of the visitors have participated for diving visit. 6% of them have participated for whale watching and 7% of them have participated for sun bathing before.

### Purpose of the visits to the Pigeon Island

Almost all the visitors used the Pigeon Island for enjoying their vacation.

Table 7: Single or Group visitors

Percentage (%)	Local visitors		Foreign visitors	
	Sole visitor	Group visit	Sole visitor	Group visit
	2	98	4	96

98% of the local visitors visited the Pigeon Island as a group and the rest as a sole visitor. 96% of the foreign visitors visited the Pigeon Island as a group. 56% of the visitors had the group size of 2-5.



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Activity		Boating	Swimming	Scenic visit	Diving visit	Whale watching	Sun bath
	Local visitors	100	98	100	98	44	8
Percentage (%)	Foreign visitors	98	90	100	100	100	100

Almost all the local visitors came to the Pigeon Island participated in boating and scenic visit. 98% of them participated in swimming and diving visit. However, almost all the foreign visitors participated in Scenic visit, diving visit, whale watching and

Sunbath. This indicated that the all most all visitors in the temperate countries were interested in doing all the activities in Pigeon Island. Local visitors who participated in whale watching were lower than 50%.

Table 9: Ranking of the preferred activities in the Pigeon Island visit

Activity	Boating	Swimming	Scenic visit	Diving visit	Whale watching	Sun bath
Percentage of local visitors who ranked different activities as most preferred %	12	10	6	74	2	2
Percentage of foreign visitors who ranked different activities as most preferred %	54	38	2	98	14	2

(Multiple responses)

According to results, the use of Pigeon Island for diving purpose was ranked by 74% of local visitors as the most preferred activity and 98% of the foreign visitors preferred the same activity very much when compared to others.

**Most preferred month for the visit**

Table 10: Most preferred month for the visit

Month	Most preferable month		Most non-preferable month	
	Local visitors %	Foreign visitors %	Local visitors %	Foreign visitors %
January			66	80
February	14	14		
March	4			
April	20			



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May	22	48	
June		2	
July			
August	16		
September	22	36	
October			
November		8	
December		26	20

Majority of the visitors like to visit the Pigeon Island in the months of May and September and they don't like to visit Pigeon Island in the months of January, November and December.

### Costs encountered in the Pigeon Island visit

Table 11: Average costs for the activities done in the Pigeon Island

Activity	Foreign visitors		Local visitors	
	Mean cost per hour (Rs)	Standard deviation	Mean cost per hour (Rs)	Standard deviation
Boating	1300.00	247.00	717.00	23.93
Swimming	0.00	0.00	0.00	0.00
Scenic visit	0.00	0.00	0.00	0.00
Diving visit	3470.00	255.00	1145.83	290.97
Whale watching	1493.00	106.00	889.89	144.34
Sun bath	0.00	0.00	0.00	0.00

Traditionally, coastal resources are open to everyone (Costanza *et al.*, 1999). Many countries' coastal waters and their resources are considered 'commons', i.e. they are not owned by any person or agency but are common property available equally to all citizens (Clark, 1998). Their common property nature makes it impossible to exclude those who do not pay for

enjoying or using them. But in contrast to this, in Pigeon Island every single visitor has to pay for their visit and certain activities. Average cost for boating was Rs.1300 per hour for foreign visitors, average cost for diving was Rs.3470 per person per hour which were nearly twice the value that of local visitors.

Table 12: Willingness to pay for the activities done in the Pigeon Island

Activity	Foreign visitors		Local visitors	
	Mean willingness to pay for the activity (Rs)	Standard deviation	Mean willingness to pay for the activity (Rs)	Standard deviation
Boating	1454	302.51	784	95.53



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Swimming	375	144.72	70.60	26.37
Scenic visit	365	144.36	69.60	24.15
Diving visit	3670	435.77	1240	252.33
Whale watching	1510	123.30	919	230.54
Sun bath	365	144.36	64.60	24.59

Willingness-to-pay is the maximum amount an individual is willing to give off in exchange on changes in the provision of resources (Anderson, 2004). According to the result, foreign visitors' mean willingness to pay for diving was Rs.3670 and for local visitors it was Rs.1240. It was interesting to note that although currently there were no any charges claimed for some activities, but visitors were willing to pay those activities such as swimming, scenic visit and sunbath. This clearly shows that

pricing system should be restructured for different activities.

### Entrance fee and willingness to pay for the entrance fees

Entrance fee for the foreign visitors was Rs.1000 and for the local visitors was Rs.500. Average willingness to pay of the foreign visitors for entrance fee was Rs.1560 and the average willingness to pay of the local visitors for the entrance fee was Rs.644 which indicates visitors were willing to pay an increased entrance fee toward the improvement of facilities.

Table 13: Entrance fee and Willingness to pay for the Entrance fees to Pigeon Island

	Foreign visitors		Local visitors	
	Mean	Standard deviation	Mean	Standard deviation
Entrance fee (Rs)	1000	0.00	500	0.00
Willingness to pay for the entrance fee (Rs)	1560	239.89	644	88.43

Table 14: Total cost for the Pigeon Island visit

	Foreign visitors		Local visitors	
	Mean	Standard deviation	Mean	Standard deviation
Total cost (including transportation, lodging, meals) Rs	16272	924.23	5320.60	310.04



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Foreign visitors who visited the Pigeon Island had spent averagely Rs.16272 as onsite expenditures in Pigeon Island visit.

### Regression analysis

Table below shows results of multiple regression analysis for the total willingness to pay of the visitors. The  $R^2$  was 0.762 which implied that about 76.2% of the variation in the total willingness to pay was explained by different regressors. Total willingness to pay of the visitors was significantly affected by age of the respondent, hours of spending, number of the

group members and expenses for meals.

Therefore, estimated model can be written as follows,

Total willingness to pay =  $-1339.60 + 50.25\text{Age} + 743.70 \text{ gender} - 376.15 \text{ marital status} + 3751.38\text{hours of spending} - 49.97 \text{ number of group members} + 0.11 \text{ expenses for meals}$ .

The results revealed that an increase in hours of spending on the Pigeon Island visit by one unit the total willingness to pay of the visitors will be increased by Rs. 3751.38 ( $p < 0.01$ ).

Table 15: Results of Multiple Regression Analysis of Total willingness to pay

Variable	Unstandardized Coefficients	
	B	Std. Error
(Constant)	-1339.60	1079.98
Age (Years)	50.25**	18.99
Marital status of the respondent (Single/married)	376.15**	365.58
Gender of the respondent (Male/ female)	743.71	311.06
Hours of spending (Hours)	3751.38**	356.47
Number of group members (Numbers)	-49.98**	18.64
Expenses for the meals (Rs)	0.12**	0.07

Dependent variable: Willingness to pay of the visitors (Rs)

\*Significant at 10% level

\*\*Significant at 5% level

\*\*\*Significant at 1% level

### T-test result

Result showed that there was a significant difference ( $p < 0.01$ ) between the Foreign visitors and local visitors

for their total willingness to pay on Pigeon Island visit.

Table 16: Independent samples T-test between foreign visitors and local visitors for total willingness to pay on Pigeon Island visit


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		Local or foreign	Number	Mean	Std. Deviation	
Total willingness to pay		Foreign	50	9292.00	921.36	
		Local	50	3791.60	398.23	
t-test for Equality of Means						
		Mean Difference	Std. Error Difference	T	df	Sig.
Total willingness to pay	Equal variances assumed	0.15	141.95	38.75	98	0.00
	Equal variances not assumed	0.15	141.95	38.75	66.69	0.00

Table 17: Independent samples T-test between foreign visitors and local visitors for total hours of spending on the Pigeon Island visit

		Local or foreign	Number	Mean	Std. Deviation	
Total hours of spending on the Pigeon Island visit		Foreign	50	2.02	0.247	
		Local	50	1.12	0.328	
t-test for Equality of Means						
		Mean Difference	Std. Error Difference	t	df	Sig.
Total hours of spending on the Pigeon Island visit	Equal variances assumed	0.90	.058	15.50	98	0.00
	Equal variances not assumed	0.90	.058	15.50	90.95	0.00

Result revealed that there was a significant difference ( $p < 0.01$ ) between the Foreign visitors and local visitors

in hours of spending on Pigeon Island visit.

Table 18: Independent samples T-test between foreign visitors and local visitors for Willingness to pay for entrance fee


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		Local or foreign	Number	Mean	Std. Deviation	
Willingness to pay for entrance fee		Foreign	50	1560.00	239.89	
		Local	50	644.00	88.43	
t-test for Equality of Means						
		Mean Difference	Std. Error Difference	t	df	Sig.
Willingness to pay for entrance fee	Equal variances assumed	916.00	36.16	25.33	98	0.00
	Equal variances not assumed	916.00	36.16	25.33	62.07	0.00

A significant difference ( $p < 0.01$ ) was observed between the foreign visitors and local visitors for willingness to

pay their entrance fee and foreign visitors were willing to pay Rs. 916.00 higher than the local visitors.

Table 19: Independent samples T-test between foreign visitors and local visitors for Cost of boating per hour

		Local or foreign	Number	Mean	Std. Deviation	
Cost for boating per hour		Foreign	50	1300.00	247.44	
		Local	50	717.00	23.93	
t-test for Equality of Means						
		Mean Difference	Std. Error Difference	T	df	Sig.
Cost for boating per hour	Equal variances assumed	583.00	36.16	16.58	98	0.00
	Equal variances not assumed	583.00	36.16	16.58	49.92	0.00

Results showed that a significant difference ( $p < 0.01$ ) between the Foreign visitors and local visitors for

cost for boating per hour and foreign visitors pay Rs. 583.00 than local visitors for boating.



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Table 20: Independent samples T-test between foreign visitors and local visitors for Cost for diving visit

		Local or foreign	Number	Mean	Std. Deviation	
Cost for diving visit		Foreign	50	3470.00	255.75	
		Local	48	1145.83	290.97	
t-test for Equality of Means						
		Mean Difference	Std. Error Difference	t	df	Sig.
Cost for diving visit	Equal variances assumed	2324.17	55.28	42.04	96	0.00
	Equal variances not assumed	2324.17	55.43	41.93	93.33	0.00

Table 21: Chi square analysis between total willingness to pay of the local visitors and selected independent variables

Independent variable	X <sup>2</sup>	df	P value	Decision
Education level of the respondent	76.76	46	0.00	Highly significant
Cost for boating in the Pigeon Island	36.53	23	0.04	Significant
Marital status	71.22	46	0.01	High significant

There was a high significant association observed between the total willingness to pay and the education level of the respondent ( $X^2=76.756$ ,  $p < 0.01$ ).

Table 22: Chi square analysis between total willingness to pay of the foreign visitors and selected independent variables

Independent variable	X <sup>2</sup>	df	P value	Decision
Education level of the respondent	49.62	34	0.04	Significant
Duration of staying	51.11	34	0.03	Significant
Cost for diving in the Pigeon Island	48.56	34	0.05	Significant



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Cost for whale watching	102.08	68	0.005	Highly significant
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There was a highly significant association observed between the total willingness to pay and the cost for whale watching in the Pigeon Island ( $X^2=102.083$ ,  $p < 0.01$ ).

### CONCLUSIONS AND RECOMMENDATIONS

This study employed the Contingent valuation Method to determine the relationship among travel and socio demographic information and activities in the Pigeon Island. The objective of this research was to explore the recreational value of the Pigeon Island. Descriptive statistics was done for questionnaires to explore the socio economic status of the visitors. T test and chi square test were also employed. Multiple regression analysis was done to explore the factors affecting travels of visitors on their total willingness to pay. The result indicated 50% of the local visitors in the sample population were receiving a monthly income within the range of Rs.30000-40000. 38% of the foreigners were educated up to Master's or equivalent level and 20% up to Doctoral or equivalent level. The results also revealed that, the use of Pigeon Island for diving was ranked by 74% of local visitors as the most preferred activity. Foreign visitors' mean willingness to pay for boating was Rs.1454, for swimming was Rs.375, for scenic visit was Rs. 365, for diving visit was Rs.3670, for whale watching was Rs.1510 and for sun bath

was Rs.365. Mean willingness to pay of local visitors' for boating was Rs.784, for swimming was Rs.70.60, for scenic visit was Rs.69.60, for diving visit was Rs.1240, for whale watching was Rs.919.00 and for sun bath was Rs.64.60. Average willingness to pay of the foreign visitors for entrance fee was Rs.1560 and the average willingness to pay of the local visitors for the entrance fee was Rs 644.00.

Results of the T test showed that significant difference between foreign visitors and local visitors in total willingness to pay on the Pigeon Island visit, hours of spending on the Pigeon Island, willingness to pay for the entrance fee, cost for boating, cost for diving visit and cost for whale watching. Chi square analysis showed that there was a high significant association between the total willingness to pay of the local visitors and the education level of the respondent. Multiple regression analysis showed that total willingness to pay of the visitors was significantly affected by age of the respondent, hours of spending, number of the group members and expenses for meals. The analysis showed that the recreational benefits received by the visitors are much higher than the amount they pay at present. The current entrance fees do not capture the economic value of the Pigeon Island. Therefore, it is recommended to increase the entrance fees and fees for different activities.



## Original Article

It was found that a suitable management plan should be formulated in maintaining quality of Pigeon Island service in association with the preference of the community that can result in increased revenue generation.

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