

THE ECONOMIC VALUE OF TOURISM CENTERS: A TRAVEL COST APPROACH TO PINNAWALA ELEPHANT ORPHANAGE, SRI LANKA

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ABSTRACT

Sri Lanka is a developing country that employs tourism as a development tool. Natural resources in tourism centers are often not priced in the market, and underpricing may underestimate their value. Therefore, value estimation of natural resource-based tourist centers is vital to compare the benefits and costs associated with an ecosystem or natural resource. The main objective of this study is to assess the recreational value of Pinnawala Elephant Orphanage in Sri Lanka. This study used the tourism expenditure method based on data from 40 local tourists who visited the elephant orphanage in 2020. The estimated average consumer surplus was around LKR 33891, and the entertainment value was around LKR 2 billion. Therefore, Pinnawala Elephant Orphanage has a significant recreational value that helps attract more foreign exchange with required improvements in the center.

Keywords: *Pinnawala Elephant Orphanage, Travel Cost Method, Recreational Value, Consumer Surplus, Tourism Centers*

1. INTRODUCTION

Nature-based tourist areas can be identified as non-market goods as it is difficult to estimate the value of those tourist-attracted resources such as forests, national parks, and conservational, archaeological, cultural,¹ and recreational areas². Natural resources in tourism centers are often not priced in the market. However, an assessment of these nature-based tourism centers may help identify the recreational value of these centers. Moreover, the economic assessment of tourism centers can be considered a piece of valuable information for better management of the tourism sector. The economic efficiency of resource management requires knowledge of the flow of benefits and costs in tourism centers. The recreational value assessment of these can compare the various benefits and costs associated with the ecosystem or natural resource. Further, it will reduce the underpricing of these centers and the underestimation of their importance. Failure to recognize the value of these resources can lead to resource degradation and informal management. Therefore, it is vital to identify recreational values when managing tourism centers.

¹ include sports grounds, museums,

² beaches, lakes, and hot springs

Assessment of the economic value of tourism centers in Sri Lanka is also important, where tourism is one of the significant development tools. There is an uneven distribution of the economic value of the tourist centers throughout the island. Many of the tourist attractions in Sri Lanka are based in regional centers located mainly outside Colombo. Examples include Pinnawala, Dambulla, Kandalama, Sigiriya, Kataragama, Anuradhapura, Polonnaruwa, etc.

Pinnawala Elephant Orphanage is one of the main tourist attractions in Sri Lanka. The main objective of this center is to take care of orphaned elephants due to various factors. Elephant orphanages are also a central tourist hub, attracting local and foreign tourists, apart from the service provided to elephants. Pinnawala Elephant Orphanage creates many livelihood opportunities for the residents in this area through tourist hotels, bojun halls, and guest houses. Further, there are also various shops selling artistic items, jewelry, batik products, ready-made garments, etc.

Since Pinnawala Elephant Orphanage is an attractive tourist place, developing this center further to earn more foreign currencies via better management is crucial. It requires more information, including the economic value of the center. This information is necessary for policy development and enhances investments in this center. Thus, the main objective of this study is to assess the recreational value of Pinnawala Elephant Orphanage in Sri Lanka.

2. LITERATURE REVIEW

The literature review section is divided into two main parts: theoretical review and empirical evidence. The theoretical review of an evaluation of a tourism center is described in the first section. The empirical evidence includes detailed information about the previous studies conducted in this field. They mainly focus on the studies conducted in countries around the world, the studies conducted in South Asian countries, and the studies conducted in Sri Lanka.

2.1. Theoretical Background

Total economic value is a financial benefit gained from a natural resource, an artificial resource, or an infrastructure system. According to ecological economics, the economic value of natural resources is the collection of values that a specific ecosystem offers. The economic value of any recreation is calculated based on the financial benefits of a person or group of people who participated (Pearce & Turner, 1990), and it is measured by total economic value (TEV), which considers direct and indirect use of the environment (Raphael & Molina, 2007).

According to Perman (1999), equation 01 expresses the overall economic value.

$$\text{Total Economic Value} = \text{Direct use value} + \text{Indirect use value} + \text{Option value} + \text{Bequest value} + \text{Existence value} \rightarrow (1)$$

Direct use values include the economic advantages derived from directly forest wood, fuelwood, edible plants, etc. The benefit that people derive indirectly from protecting natural resources can be considered as indirect use value. The option

value is the value of preserving natural resources for the future—for example, the value of preserving wildlife habitat. The bequest value is the value of the satisfaction derived when natural resources are preserved. The existence value is the maximum willingness to pay to preserve the natural resource even if they are not visiting it.

The best approach to valuing environmental assets is to use eco-economic valuation techniques for non-market products. Standard techniques used by the researchers are the travel cost method, contingent valuation method (CVM), choice modeling (CM), and hedonic environmental valuation. The tourism cost method³ is more appropriate than other methods because the environment is a non-market asset that contributes indirectly to business income, especially in the tourism industry. The travel cost includes the cost borne by visitors, such as fuel charges, parking and entertainment center, accommodations, food, and ticket prices. The travel cost is a measure of consumers' willingness to pay for the cost of visiting the recreational area (incentives), and it can demonstrate the economic value and importance of a tourist destination. Willingness to pay is used to determine the demand for the tourist destination.

2.1.1. Demand for environmental goods and consumer surplus

According to Garrod and Wills (1999), expressed and revealed preferences are the primary categories that categorize the demand curve. An expressed preference is a straightforward technique asking respondents how much they value environmental benefits. There are two methods of expressed preference: Contingent valuation and choice experiments. These two methods of expressed preferences are utilized frequently. On the other hand, revealed preferences are an indirect way to gauge demand. The two most popular revealed preference methods are the travel cost approach and the hedonic price method. Consumer surplus is the discrepancy between what a person is prepared to pay for a resource and what they pay for it (Pearce & Turner, 1990) and measures the economic value

Figure 01 describes a hypothetical market for eco-friendly products.

P^* = Market Price

Q^* = Quantity at the price the market demanded P^*

P_b = Price willing to pay

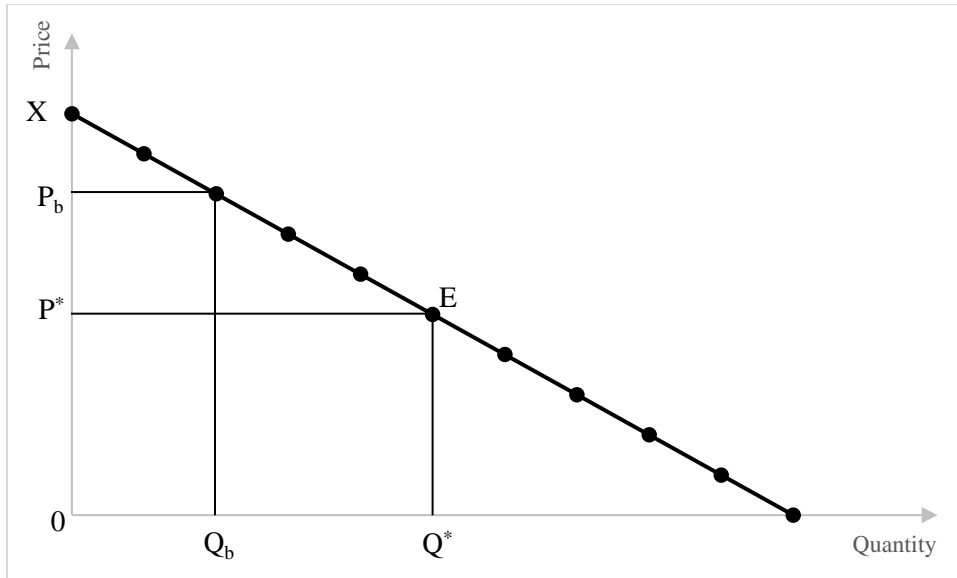
Q_b = Quantity demanded at price P_b

XP^*E = Consumer surplus

P^*EQ^*0 = Total expenditure

$XP^*E + P^*EQ^*0$ = Total benefit

³ More information is provided in the methodology section



Source: Pearce and Turner, (1990)

Figure 1: The demand for environmental goods

It is assumed that the supply curve intersects the demand curve at price P and quantity Q. Let P represent the market price of each individual. P_b represents an individual's willingness to pay above the market price. Thus, the triangle above the market price represents the total consumer surplus.

According to Garrod and Wills (1999), the average consumer surplus can be expressed in equation 02.

$$Consumer\ Surplus = \frac{-V}{P_{hj}} \rightarrow (2)$$

-V = Frequency of individual visits

P_{hj} = Cost of traveling to the area

This relationship between the cost of travel and the frequency of visits is expected to be negative. When the cost of travel increases, there is a decrease in the number of tourists (Garrod & Wills,1999). The average consumer surplus must be multiplied by the number of tourists visiting the area at a particular time to get the total consumer surplus (Garrod & Wills,1999). Total consumer surplus measures the total recreational value.

2.2. Empirical Evidence

2.2.1. Studies conducted in the world

The economic value of natural resources is mainly assessed while considering environmental values to describe the overall economic value. Studies on estimating the recreational value of tourist centers using the tourism cost method have been

conducted in various countries worldwide. They can be found in Africa, Iran, Taiwan, Vietnam, Australia, and Spain.

Currently, the economic value of natural resources is mainly assessed while considering environmental values to describe the overall economic value. Turpie and Joubert (2001) have evaluated the value of the park's river's effects on the value of the Kruger National Park in South Africa. The primary objective was to determine how much tourism value the park obtains from its waterways. The authors have collected visitor data and income data at park entrances and at rest camps to assess the recreational value of the rivers in the park. Additionally, data regarding earnings for privately owned safari businesses operating in the park, fees for day safaris, etc., has been gathered through discussions with safari businesses. The recreational value of the waterway was estimated using the travel cost methodology. Tourism costs are derived from each region to estimate the visitor demand curve and consumer surplus. The regional travel ratio approach, or calculation based on the total population of each region, was used to determine the demand function. This study discovered that while most South Africans spent more time and money in the tourism sector, foreign visitors to the park tended to spend less time there. According to Turpie and Joubert (2001), the recreational value of rivers in the Kruger National Park was ZAR 136.

Much of the ecological value of parks cannot be exchanged in the market, and market formulas cannot estimate their value. Using the single trip cost method, Pirikiya and Amirjendad (2012) evaluated the recreational value of Shahid Zare Park, a 70-hectare park in Northern Iran. In this case, the regional tourism cost technique has been supplemented by information on the number of tourists traveling from various distances. In addition, the recreational value of various tourist destinations in Iran has been calculated using the tourism cost approach. According to Pirikiya and Amirjendad (2012), the consumer surplus was US\$12.53 per traveler, and the annual visitors' projected enjoyment or entertainment value (around 72,500 visitors per year) was US \$ 52,558. This study further reveals that variables such as travel expenses, tourist distance, household income, and education significantly determine the economic value of Zare Park in Iran.

Forest recreation is one of the most important recreational activities in Taiwan. Chen and Hsieh (2001) measured the recreational value of Huisun National Park in Taiwan using the tourism cost method (single travel cost method) and binary regression model. Additionally, this study determined the socioeconomic characteristics of tourists and examined the variations and connections between demand and travel expenses. Travel expenses such as lodging, transportation, time, consumer charges, etc., have been considered in this study. Further, the socioeconomic characteristics of tourists, such as tourists' age, gender, living area, education level, and monthly income also considered. The authors concluded that the recreational value of the Huisun National Park in Taiwan was US \$ 3,237. Moreover, this study shows that there is a difference in the recreational value between local travelers and foreign tourists. The recreational value for local visitors was estimated at US \$3,201 (annual per capita income). The anticipated total yearly

entertainment value was US \$ 347,270,560. Further, this study shows a significant positive relationship between the length of stay in the park and recreational demand. However, it was discovered that there was a negative relationship between the need for amusement and the monthly income of travelers. This study recommends enhancing the internal services and their qualities to attract more foreign tourists.

Using the regional tourism cost method, Nguyen (2010) evaluated the recreational value of Bawi National Park, one of Vietnam's most popular tourist attractions. Both primary and secondary data have been used in the analysis. Primary data were gathered by randomly interviewing 83 tourists. The least squares (OLS) method was used to estimate the linear regression model. Accordingly, this study estimated the park's annual recreational value at US \$ 20.557 billion. In addition, the consumer surplus per tourist is calculated at US \$ 59,692.

Wessler and Cook (2006) determined the recreational value of Fraser Island, one of Australia's unique natural attractions. The travel cost approach was used to conduct this study. This study differs from the other existing studies in the field as it used primary data collected from two-time spots: first, in April 2006, with 800 tourists, and the second, in August of the same year, with another 560 tourists. However, out of 1360 interviews, only 430 (around 37 percent) were obtained in both periods for the study. Further, only Australian residents have been selected for the sample in this study. This study revealed that the island has a high value and should be protected as it already has a high and crucial natural value. The annual recreational value of this island was estimated at US \$ 31.8 billion, and the recreational value of one person was US \$ 104.30 in this study.

2.2.2. Studies conducted in South Asian countries

This section describes how the tourism cost approach was used to calculate the recreational value of tourist destinations in South Asian nations like Bangladesh, Nepal, India, Pakistan, and Sri Lanka.

The tourism sector can be promoted as a long-term engine of economic growth. Haider, Hossain, and Isham (2018) conducted a study to gauge the recreational value of tourist destinations in the Southwest region of Bangladesh. Shat Gumbuj Mosque, Mozzaffer Garden, Niribili Tourist Point, and Chandramahal Eco-Park were the selected tourist destinations for the study. That used the tourism cost approach from 2000; additionally, this study aimed to raise awareness of the economic benefits of these tourist areas and the economic value of tourists among policymakers and related authorities to improve the quality of tourist centers and develop tourist areas. Data were collected from 200 randomly selected tourists and analyzed using the tourist cost approach. The estimated results of this study show that Niribili tourist destinations and Mozzaffer Park had similar and the highest consumer surplus (US \$ 3.64) and provided the highest recreational value among the selected four destinations. All four tourist centers' annual per capita consumer surplus ranges from US \$ 1.24 to US \$ 3.64. The study also found that tourists in this region are willing to pay an average of \$0.06-0.10 million to improve the

quality of recreational services. Also, this study recommends that measures be taken to enhance the services offered in the region's tourist hubs.

Thapa (2014) attempted to assess the Langtang National Park in Nepal, which has a high demand from local and foreign tourists. This evaluation was conducted by using the travel cost method. Moreover, only foreign tourists have been used as the sample for the study. The park's total recreational value was estimated to be US \$ 660,389. Accordingly, this study has revealed that the park is worth more to visitors than just the entrance fee. Chowdhury (year) conducted a study to estimate the recreational use value of the Rock Garden tourist spot in Chandigarh in India, during 2001–2004 using Indian tourism data and tourism expenditure methodology. The regional travel cost method under the tourism cost method has been used for the study. This study method has been adopted as tourists from different states of India visit the city. Travel charges are calculated for each zone. (Visit rate = the number of visits per year from the region to the tourism area/total population.) The tourism rate measures the average number of times each region's resident visits the tourism area in a year. Accordingly, the relationship between travel fares and travel expenses has been worked out using regression analysis based on the data collected from tourists in the survey. It has been found that the net benefit to each person from the entertainment experience through the tourist center is 308 Indian Rupees. Also, the annual recreational value of the urban park is Indian Rs. 92.40 million (as per 2002–2003 prices). The study also found that the park's actual annual value would increase if expats' data were also considered.

Himayatullah (2003) has researched to determine the recreational value of Margalla Hills National Park in Islamabad, Pakistan. The tourism cost method was employed to analyze the data collected from randomly selected 1,000 visitors during 2002–2003. It was found that their average annual expenditure for the park is 5000–5500 Pakistani Rupees. The estimated consumer surplus per tourist was 231 Pakistani Rupees, and the annual consumer surplus was 23.93 billion. The value of entertainment is calculated to be 200.1 million Pakistani Rupees annually. This study also found that travel expenses and household income positively affect recreational demand.

Sri Lanka is a country rich in biodiversity, and its beauty can be seen in many tourist areas. Tourism is a primary foreign exchange source in Sri Lanka. However, studies on estimating the recreational value of tourism centers in Sri Lanka are limited. Fernando (2015) conducted a study to calculate the recreational value of the Muthurajawela ecosystem, one of the natural coastal wetland ecosystems in Sri Lanka. The single trip costing method has been used to analyze the data collected from 100 randomly selected foreign tourists during March- April 2014. The number of tourists who visit the area, the wage ratio of the individual's income, working hours, travel costs, time spent in the tourist area, etc., have been used as variables in the factor model. The country has been divided into regions, and the rate of tourism in each region has been calculated. The estimated demand function is used in calculating consumer surplus. Accordingly, the estimated total recreational value was US \$1.051 million annually. Studies have shown that the overall economic

value can be many times higher. Considering this finding, this study recommends charging a reasonable entrance fee, as currently, Muthurajawela does not charge an entrance fee.

This literature review highlights that studies have yet to be conducted to evaluate the economic value of Pinnawala Elephant Orphanage, and the current study will fill this gap in the literature. The current study's findings may help attract more tourists and earn foreign earnings.

METHODOLOGY

2.3. Research Area

Pinnawala Elephant Orphanage, located in the Rambukkana Divisional Secretariat of Kegalle District, was selected for the study. The elephant orphanage can be found when traveling by train from Rambukkana railway station to Kegalle, about 4 kilometers away (Weerasinghe, 2003). Pinnawala is vital as home to the largest herd of elephants in the world, as an elephant orphanage and a showcase, and is unique as the only place where large numbers of elephants of different ages can be seen at once (Sugathadasa, 2011). Pinnawala Elephant Orphanage is also important as a tourist center that provides foreign exchange to Sri Lanka (Weerasinghe, 2003). The Pinnawala Elephant Orphanage also contributes to Sri Lanka's income from the tourism industry.

2.4. Data Collection

There is only one main entrance to Pinnawala Elephant Orphanage, and only 40 local tourists who entered through the main gate were selected and interviewed using a questionnaire. The questionnaire is prepared so that it is possible to collect the required information for the variables used in the model to achieve the desired objectives of the study.

2.5. Data Analysis Methodology

2.5.1. Economic value

The main objective of this study is to assess the recreational value of Pinnawala Elephant Orphanage. Considering the importance of using the travel cost method, explained in the theoretical review, the current study used the travel cost method to calculate the recreational value of the Pinnawala Elephant Orphanage. After calculating the recreational value of the Pinnawala Elephant Orphanage, the authors estimated the demand for this park and the consumer surplus to understand the entertainment value of the center.

2.5.2. Travel Cost Method

The tourism cost approach estimates a tourist destination's recreational value. The travel cost technique can be applied in two ways: the regional and individual approaches to tourism expenditure. The individual tourism expenditure approach is chosen for this study as it is more statistically efficient than the regional approach. This methodology has been used for the study to assess whether this provides

entertainment value equal to the cost incurred by tourists to access tourist centers. Though the hedonic price method and the travel cost method can be used to estimate the economic value of environmental goods, the current study employed the travel cost method. This method is based on actual behavior, allowing conclusions to be derived from a small sample (Garrod & Wills, 1999).

Furthermore, the Individual Travel Cost technique can calculate the Trip Generating Function with only a few data. (Garrod & Wills,1999). The Trip Generating Function under the individual travel cost method can be expressed as follows.

$$V_{ij} = f(P_{ij}, Q_i, S_j, Y_i) \rightarrow (3)$$

V_{ij} = Number of visits to area j by an individual

P_{ij} = An individual's travel expenses when visiting area j

Q_i = Importance of Pinnawala

S_j = Substitute areas available

Y_i = Income of the individual's household

The study used respondents' travel costs as a measure of their willingness to pay to visit the Elephant Orphanage. Willingness to pay is used to determine the demand for the tourist destination. The demand curve can be expressed as an equation (Garrod & Wills, 1999).

$$V = (p, s) \rightarrow (4)$$

V= Travel rate

P= Cost of traveling to the area

S= Travel expenses to available substitute areas

2.5.3. *Econometric specification*

The trip generation function is transformed into a multiple regression model to obtain a better estimate of the recreational value of the elephant orphanage.

$$\ln V_{ij} = \beta_0 + \beta_1 \text{Income} + \beta_2 \text{Importance} + \beta_3 \text{travel cost} + \beta_4 \text{Substitute areas} \rightarrow (5)$$

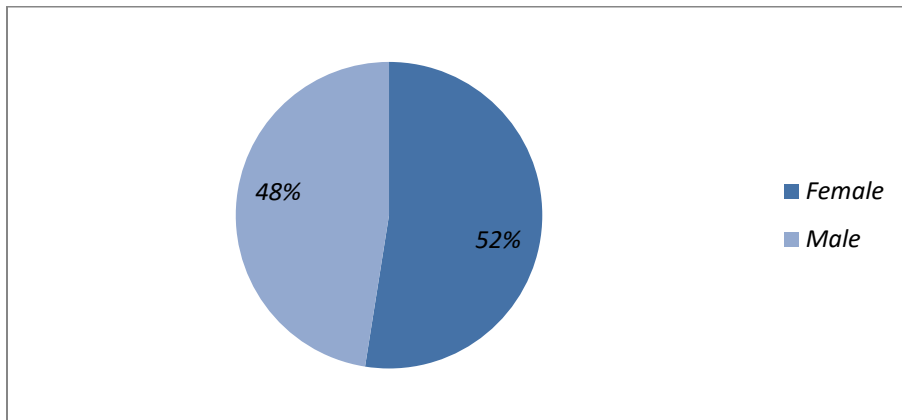
Estimating the constructed model is considered a technical step. Accordingly, after collecting the sample observations related to the variables included in this model, the model is estimated using the ordinary least squares (OLS) approach.

3. RESULTS AND DISCUSSION

This section details the tourist's profile, performance analysis, and consumer surplus calculation.

3.1. Domestic Tourist’s Profile

3.1.1. Gender



Source: Sampling Survey Data, 2020

Figure 2: Domestic tourists visiting the study area by gender

Figure 2 shows the gender breakdown of the visitors who participated in this survey. The majority of the participants are female. Of the 40 participants, 19 (47.5%) were men, and 21 (52.5%) were women.

3.1.2. Monthly income level, transportation expenses, and transportation expenses for visiting other substitute places.

Table 1: Monthly income level, transportation expenses, and transportation expenses incurred for visiting other substitute places

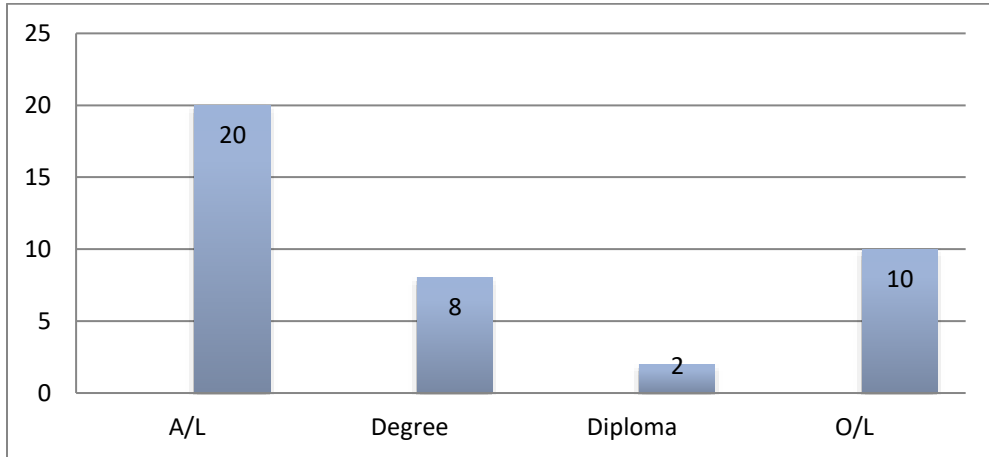
Variable	Minimum value	Maximum value	Mean value	Standard deviation
Monthly income (LKR)	10,000	125,000	48,475	23,647
Transportation cost (LKR)	200	12,500	3,012	2,985
Transportation expenses for visiting alternate locations (LKR)	150	15,000	4,473	3,780

Source: Survey Data, 2020

Table 1 shows the monthly income of the participants in this survey and their transportation costs for visiting Pinnawala and other substitute places. The average monthly income of participants is LKR 48,475, the minimum is LKR 10,000, and the maximum is LKR 125,000. They have to spend an average of LKR 3,012 on transportation to visit Pinnawala and LKR 4,473 to visit other substitute areas.

Figure 3 shows the level of education of those who participated in the survey. The majority of the participants in the survey are educated. Out of these 40 people, most of them (50%) have studied only up to the G.E.C. advanced level, and 20 percent of the participants hold a degree. Around 25 percent of the participants have completed their O/L.

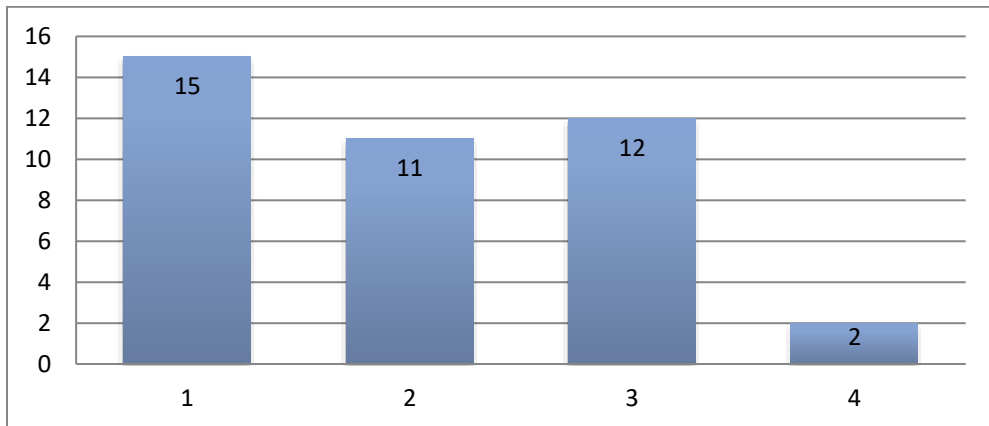
3.1.3. *Level of education*



Source: Sampling Survey Data, 2020

Figure 3: Education level of domestic tourists visiting the study area

3.1.4. *Frequency of visits*

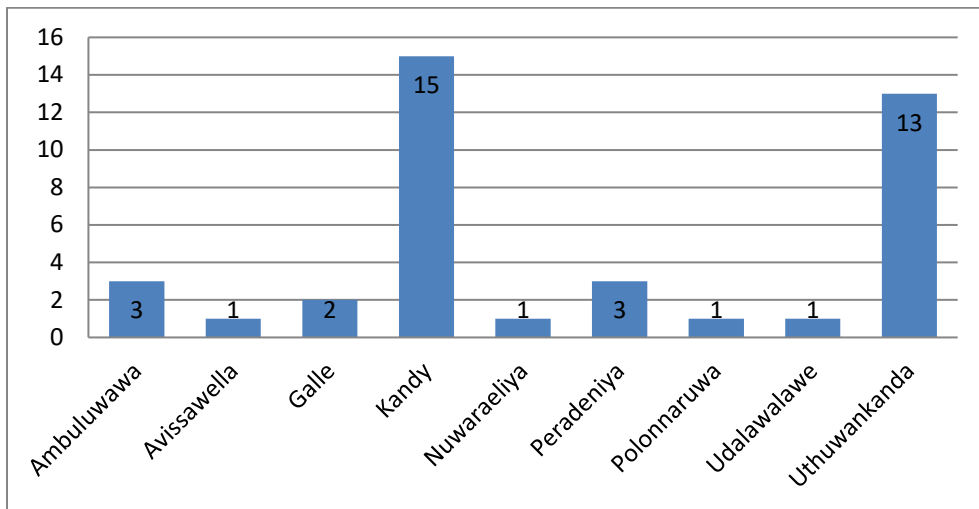


Source: Sampling Survey Data, 2020

Figure 4: Frequency of domestic tourist visits to the study area

Figure 4 indicates how many times these participants have visited Pinnawala. For most visitors, this is the first time they have come to Pinnawala (around 38 percent). However, a significant percentage of participants mentioned that they had visited Pinnawala twice or thrice. For example, 28 percent indicated that this is their second visit, and another 30 percent mentioned that this is their third time. For a small percentage of visitors, this is the fourth time they have been to Pinnawala. These findings prove that Pinnawala Elephant Orphanage is a tourist-attractive place.

3.1.5. Available replacement places for Pinnawala Elephant Orphanage



Source: Sampling Survey Data, 2020

Figure 5: Substitute locations available for the study area

Figure 5 gives an idea of the possible substitution places for these visitors if they do not visit Pinnawala. Many participants mentioned going to Kandy and Utuvankanda (38 percent and 32 percent, respectively). Other significant substitute places are Peradeniya and Ambuluawa. All of these substitutes are located a short distance from Pinnawala.

3.1.6. Cost of traveling to alternative locations

Table 2: Costs to travel to alternative locations available in the study area

Substitute location	The average cost to travel to alternate locations (LKR)
Ambuluwawa	4,166
Kandy	3,960
Peradeniya	3,116
Uthuwankanda	4,053

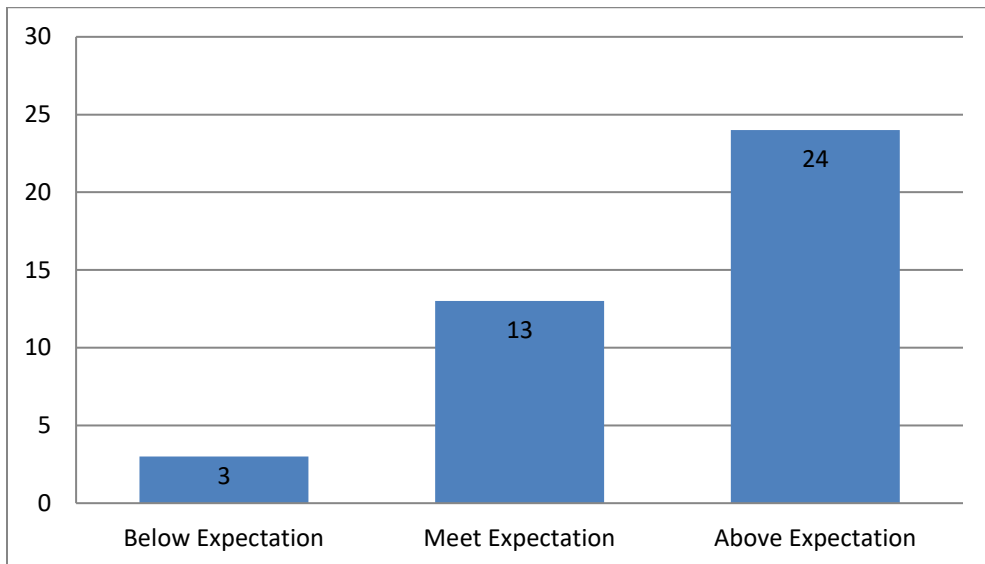
Source: Sampling Survey Data, 2020

Table 2 shows the average cost to travel to each alternate location. The cost of traveling to the most common alternative areas does not vary much. The highest cost to visit Amubuluwawa is LKR 4,166, while the lowest cost to visit Peradeniya is LKR 3,116. This is mainly because these alternatives are located in close-by areas.

3.1.7. Local Tourists' Experiences with Pinnawala Elephant Orphanage

In presenting the questionnaire to local tourists, the question was presented in three ways to describe their experience of the elephant orphanage: better than expected, expected, and worse than expected. Figure 6 shows how far the expectations of the people visiting the Pinnawala Elephant Orphanage were fulfilled. More than 90

percent of the participants (93 percent) highlighted that they had a good experience at Pinnawala, as they expected or above their expectations. Only around 7 percent of the participants experienced less than they expected.



Source: Sampling Survey Data, 2020

Figure 6: Experiences of local tourists in the study area

3.2. Results of Regression Analysis

Results of the econometric model specified in Equation 4 are presented in Table 3.

Table 3 Results of regression analysis

Variable	Coefficient	P value
Intercept	0.68	0.309
Monthly income	3.785×10^{-5}	0.000
Importance of Pinnawala	0.004	0.615
Transportation cost	5.975×10^{-5}	0.164
Transportation costs to alternative locations	-7.669×10^{-5}	0.023

Table 3 shows a statistically significant positive relationship between the number of times a person visits Pinnawala Elephant Orphanage and his monthly income. That means their frequency of visiting Pinnawala is high when personal income increases.

The recreational value of Pinnawala Elephant Orphanage in a year can be obtained by adding the recreational value of each person in a year.

3.3. Calculation of the Consumer Surplus

As described in the methodology section, according to Garrod and Wills (1999), the individual average consumer surplus is calculated by using equation 2. The average number of visits by the person is 2.025, and the cost of traveling to the area is LKR 5.975×10^{-5} . The average consumer surplus is LKR 33,891.2. Therefore, the

aggregate consumer surplus is LKR 2,564,716,560 ($33,891.2 \times 75,675$, where 345986 is the total number of visitors in 2022). The total consumer surplus for Pinnawala Elephant Orphanage is US \$ 2 billion. This calculation was done during the COVID-19 period when local travel was restricted. Moreover, this calculation has another limitation. During COVID-19, foreigners did not visit Sri Lanka due to border restrictions. Therefore, this valuation is based only on the travel costs of the local visitors.

4. CONCLUSION AND POLICY IMPLICATIONS

One of the most popular tourist destinations worldwide is Sri Lanka. Sri Lanka has many historical, religious, and natural places that tourists would like to visit. Pinnawala Elephant Orphanage is one among many others. The objective of this paper was to estimate the value of the Pinnawala Elephant Orphanage using the travel cost method with 40 participants who visited Pinnawala in 2020.

The average consumer surplus was LKR 33,891, and the annual entertainment value of the 75,675 people who visited the park was around LKR 2 billion. As the recreational value is only one part of the overall economic value of the tourism area, the overall economic value of the elephant orphanage may be higher than the estimated recreational value. According to the results of the regression analysis, it was confirmed that there was a statistically reliable relationship between the monthly income of the person and the travel cost of visiting the substitute places. Here, the value of R^2 was high, which indicates that there is a high relationship between the variables included in the model and the number of times a person visits the elephant orphanage.

The estimated recreational value derived from this study can be used for various purposes. It can be used for purposes such as conducting cost-benefit analyses and making policy decisions. As good as the entertainment value of the Pinnawala Elephant Orphanage is (even during the COVID-19 period), this place can be further improved to attract more foreign tourists. Some of the suggestions to develop this place include increasing accommodation facilities and developing other sanitary facilities. The tourist attraction can be further increased by establishing and improving the best features a tourist town should have.

5. LIMITATIONS OF THE STUDY

This study was conducted in 2020 when the country's borders were closed to foreigners. Therefore, the estimated recreational value and the consumer surplus are based only on the information collected from local travelers. Further, due to the Covid 19 impact, even the number of local visitors to the Orphanage was limited. As a result, the sample size is small, and all the calculations are based on this small sample size. Moreover, there are some limitations in the travel cost method. For example, the travel cost method assumes that travel cost is a proxy for willingness to pay. This is not always correct.

The estimated economic value of the Orphanage is based on the direct cost value. However, the estimated economic value may change if the other values, such as

indirect use value, are considered. Future research in this field can consider these other types of values of the Pinnawala Elephant Orphanage. This study did not consider tourism's environmental and social impacts on the local community and the park's ecosystem, which could be important factors to consider in future research.

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