

Economic Valuation of Urban Parks Using Travel Cost Method: Study from Kathmandu and Rupandehi Nepal

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Abstract

Economic valuation of recreation provided by different national parks, zoos, urban park, lake etc. is important to understand the willingness to pay for ecotourism. However, such researches are very limited in Nepal. Thus this research was intended to assess the economic valuation of recreation using travel cost method; the income and employment trend of five years as well as the ecosystem services provided by both parks namely Manimukunda Park/Fulbari Park in Rupandehi district and Balaju Baisdhara Park in Kathmandu district. Total 35 visitors from each park were interviewed by administering close ended questionnaire. Two observations dated from September 11 to 15, 2020 at Fulbari Park and from September 25 to 29 at Balaju Park respectively were conducted to meet the objectives. Similarly, two focus group discussion on September 12 and 27, 2020 were done respectively in Fulbari and Balaju Park to collect the primary data. Total 20 each 10 key informants interview at each site also done to collect the data. Collected data were analyzed using economic analysis and The regression result showed, travel cost, monthly income, age, household size are as major variables that affects the frequency of visits in both parks. The Consumer surplus of Fulbari and Balaju parks was US\$ 1.08 and 0.81 respectively. Matrix method showed that the cultural services of Fulbari park obtained the highest score with 103 while in Balaju park the highest score was acquired by ecological integrity having the 96. The average income of five years and benefit cost ratio of Fulbari park were \$133492.96 and 1.43 similarly \$129653.26 and 1.75 were the income and benefit ratio of Balaju park. The average expenditure of Fulbari and Balaju park were \$92975.7 and \$73937.6 respectively. The number of employment was decreasing in Balaju park while this was increasing in Fulbari Park. The travel cost method will be reliable practice to assess understand the income generation from small urban park.

Keywords: *Urban Park, Economic Analysis, Travel Cost Method*

Introduction

Urban parks are great source of recreation which add greenery in city area and also help in the sustainable development of cities in both developed and developing countries [1,2]. The size may vary from place to place. These provide a multitude of benefits to residents and visitors, such as leisure, fresh air, esthetic and ecological function [3]. The creation of urban parks is justified by the services they provide to the inhabitants of cities and also by their environmental regulatory function [4]. Public parks, as a representative of urban green areas, have played an excellent role in balancing urban conservation needs against the degradation of the urban environment while maintaining a rapid pace of urban growth [5,6].

Urban parks are also great source of income generation from activities such as selling goods in and around the parks, café, toilet service, entrance fee etc. and employment opportunities as well. They are also a major contributor in stabilizing the urban climate, the growth of biodiversity [7]. Urban parks also support in balancing different type of ecosystem services such as water ecosystem, forest ecosystem etc [8]. Public parks provide the community with a variety of benefits and recreational opportunities that cannot be expressed directly on the basis of financial market values and are therefore often ignored or given inappropriate weights in a traditional cost-benefit decision-making method.

Travel cost method is simple way to estimate the nonmarket economic values of recreation resources. Travel cost method (TCM) has been developed by [9,10] in order to estimate social benefits from recreation in natural sites. Travel Cost is used to estimate recreation demand for a particular site where market prices are not available. The method is based on the assumption that the recreational benefits in a specific site can be derived from the demand function, estimated observing users' behavior, in relation to the costs sustained by them per number of visits. Travel cost models (TCs) estimate the number of visits required by each user as a function of travel costs and other explanatory costs include all direct and out-of-pocket expenses and indirect elements such as the value of travel time and the utilities of travel [11]. The travel cost is defined as the economic value as a measure of the maximum amount an individual wishes to forgo in other goods and services to obtain some good [12]. The willingness to pay is a measure of economic sacrifice that the person is willing and able to forgo in income or other goods or services in order to obtain more of another good or service. In Werribben national park annual income from tourism is € 25 million with € 2 million of costs of the park [13].

Materials and Methods

Description of study area

Manimukunda park/fulbari: This Park used to be the garden for king Manimukundasen earlier. The latitude, Longitude, Temperature, Elevation of Manimukunda park are 27° 42' 22.64" N, 83° 27' 22.33" E (Figure 1), in summer is 23 to 45°C and winter temperature varies from 9 to 23°C and 100 to 1229 m from sea level respectively. The park is consisting of small zoo which is occupied by small animals such as leopard, deer, and nilgai. The vegetation species found around the project area are Sal (*Shorea robusta*), Asana (*Terminalia tomentosa*), Harro (*Terminalia chebula*), Barro (*Terminalia bellirica*), Jamun (*Syzygium cumini*), Karma (*Adina cordifolia*), Satisal (*Dalbergia latifolia*), Simal (*Bombax ceiba*), Neem (*Azadirachta indica*), Kusum (*Schleichera oleosa*), Teak (*Tectona grandis*), Ipilipil (*Leucaena leucocephala*), Peepal (*Ficus religiosa*) and Chilaune (*Schima wallichii*).The common mammalian species found upper side of the park area are Wild Boar (*Sus scrofa*), Langur (*Semnopithecus schistaceus*), Squirrel, Barking Deer (*Muntiacus muntjak*) and Mongoose (*Herpestes edwardsi*). Similarly, the bird species found around the area are Dove (*Streptopelia orientalis*), Common Myna (*Acridotheres tristis*), Quail (*Coturnix coturnix*), Eagle (*Aquila nipalensis*), Sparrow (*Passer domesticus*), Cattle egret (*Bubulcus ibis*), Kite Environmental Impact Assessment (EIA) of Butwal Mandap Proponent: Department of Urban Development and Building Construction Consultant: Lumbini Environmental Services Pvt. Ltd. 55 (*Milvus migrans*), Common Koel (*Eudynamys scolopaceus*), Common Magpie (*Pica pica*) and Common Hoopoe (*Upupa epops*). None of these species falls Children park is also available. The sources of income are entry fees, picnic fee, film shooting fee etc [14].



Figure 1: Map showing Balaju Park and Fulbari Park (Manimukunda Park).

Balaju Baisdhara park: The latitude, Longitude, Temperature, Elevation of Balaju Baisdhara Park are 27° 44' 7.08" N, 85° 18' 05" E, in summer is 23 to 35 °C and winter temperature varies from 19 to 35 °C and 2° to 12 °C respectively. Different vegetation found here are Rhododendron, Katus (*Castanopsis indica*), Pine (*Pinus species*) etc. It lies in the center of Kathmandu city which is also one of the best places for recreation and tourism (Figure 1). Children playing park, picnic spot and to enjoy the natural environment this park is very important. 5 km north-west of Kathmandu is the Balaju Gardens, a quiet park ideal for relaxation. The park has a line of twenty-two stone water spouts built in the 18th Century, each of which has an ornately carved crocodile head. During an annual festival, people come here to bathe. The garden has a swimming pool open to the public and the ponds beside the flower gardens are teeming with fishes. A replica of the stone image of Budanilkantha was built here specifically for the royal family as they were barred from visiting the real one. The sources of income are entry fees, picnic fee, film shooting fee etc. There are major facilities established such as picnic sheds, toilets, community inn (Pati), swimming pool, ponds etc. in the study areas due to urban communities demand for recreation purposes. The beneficiaries are mainly the local communities along with urban tourist, religious groups, students, researchers. The beneficiaries derived benefits such as collection of forest products, participation in picnics, bird watching, nature walks, worship in the temple, conduct marriages, study tours, research from the study areas [15].

Data collection: Both Primary data as well as secondary data were collected during the research. The main aim of this research was to identify the economic value of recreation in two public parks by using travel cost method in the study area and to compare the employment and income generated by two parks. This requires the total economic value of environmental goods and services of the Parks (the sum of use values and Nonuse values of the Parks) and identification of producers, and consumers of the goods and services. Therefore a significant volume of information on use and nonuse values were required [16] which were collected from both primary and secondary information sources. The values of goods and services to producers or consumers who use or enjoy such environmental resources as water, land, tress, landscape, and air are terms as use values. Whereas, non-use values are the values people place on a good and services that they do not personally use but place value on preserving them for future generations (for an example a forest or landscape). Use of Travel Cost Method (TCM) was also done to value the non-market goods and non-market values are measured through directly questioning individuals on their willingness-to-pay for a good or service [17,18].

Data analysis: Descriptive analysis of different cases of environmental services particularly those services that cannot be quantified or monetized such as biodiversity conservation and soil and watershed management practices were also be carried out for better understanding of the problems, and their remedies. Simple statistical tools like average mean, bar diagram, pie chart, ANOVA, net present value (NPV), Benefits cost Ratio (BCR) etc. were used to analyze the data [19,20].

In this study individual visitors were chosen as respondents for interviews. "Visitors" were defined as those Nepalese individuals who travelled to Parks for the purpose of recreation. A closed ended questionnaire schedule to be filled in by enumerators was surveyed for 5 days in each park during September 2019. Only 35 Nepali respondents were sampled by visiting the above site during five days, 5 on other days and 15 on holidays.

In order to model the travel cost function, it has been followed the [21] and assume that the individual's utility depends on the number of visits to the Parks, the quality of the parks, and the quantity of the numeric's. The individual solves the following utility maximizing problem:

Max: $U(X, r, q)$ (1)

Subject to the twin constraints of monetary budget: $M = X + c.r$ (2)

Where X = the quantity of numeric's whose price is one,

r = number of visits to the Parks,

q = environmental quality at the site,

M = exogenous income, c = monetary cost of a trip,

It is assumed that r and q are (weak) complements and opportunity cost is controlled for this study. Maximizing equation (1) subject to the constraint of equation (2) yield the individual’s demand functions for visits:

$$r = r (Pr, M, q). \dots\dots\dots (3)$$

Various independent variables were used to explain variation in the dependent variable r. Both economic theory and the considerable experience of recreation managers have shown that demographic and other independent variables influence recreation visitation.

Demographic variables such as age, sex, education, income, and family size affect recreational. Intuitively it is assumed as age increases, participation decreases. It was expected that men would be more likely to participate than women. People with higher education were expected to appreciate outdoor nature-based activities more than people with less formal education. Household income is positively associated to the rate of visits.

The model is specified as follows: $r_i = \beta_0 + \beta_1 TC + \beta_2 MI + \beta_3 AG + \beta_4 VHLE + \beta_5 HS + e_i. \dots\dots (4)$

Where r_i stands for the number of visits by the i^{th} individual to Parks per period of time, TC is the travel cost that refers round trip total cost from an individual’s residence to and from the site. MI is the monthly income, AG the age of visitor, VHLE visitor’s highest level of education; HS refers size of the household.

B/C = Benefit/Total management cost

Benefit = Total returns - Total management cost;

Loss = Total management cost - Total returns [22].

Recreational value (Consumer surplus)

To estimate the recreational value, the consumer surplus theory is often used as an assessment method for measuring the maximum net benefit of visitors using recreational areas represented as the difference between the price that consumer are willing to pay and the price that they actually pay. Value= total no of people × willingness to pay [23].

Result and Discussion

The following table 1 shows the demographic characters of the respondents.

Variables	Categories	N = 35	
	Fulbari Park		Balaju Park
Average Age of visitors	(Years)	27.34	29.74
Average household size		3.85	4.37
Gender	Male	60%	54%
	Female	40%	46%
Monthly income (NRs)	0 - 10000	9%	6%
	10000 - 20000	20%	9%
	20000 - 30000	29%	20%
	30000 - 40000	33%	37%
	40000 - 50000	9%	28%

Education	Illiterate	3%	6%
	Primary level	3%	3%
	Secondary level+ 2 level	20%	23%
	University level	74%	68%
Means of Transportation	Public Vehicles	23%	25%
	Private Vehicles	69%	69%
	No vehicles	8%	6%

Table 1: Descriptive analysis of sample respondent of Manimukunda Park (Fulbari Park).

The average age and household size was 27.34 and 3.85 respectively in Fulbari Park and in case of Balaju Park the average age and household size was 29.74 and 4.37. Most of the sampled respondents in both Parks were highly educated with good income. Most of the respondents were male in both parks. 69% of respondent use private vehicles to reach both Parks.

Effect of different variables on the frequency of visit to urban park

Correlation between the variables and visitors at Fulbari Park: The frequency of visitor depends up on different variables. Statistically, the t-test showed that cost of travel, monthly income and household size have significant relation with the number visitors at 95% level of confidence. The negative sign of coefficient of cost of travel implies that the decrease in the price paid by visitors to reach the Park, the higher would be their frequency of visits. A unit increase in the cost of travel to the park (price) would decrease the visitation rate (demand) by 0.11 times. Monthly income was positively related to rate of visitation to Park. If the income of consumer were raised by one unit then the rate of visit to the Park would increase around by 2.4 times. The coefficient of education was also positive which indicates that increase in education level by 1 unit means the frequency to visit the park will increase by 0.103 times. Age and visitation rate to park were negatively related. An increase in the age of the visitors by 1 year would decrease the rate of visitation to the park by 0.55 times. Similarly household size and visitation rate to the park were negatively related. An increase in the household size of the visitor by 1 person would decrease the rate of visitation to park by 0.295 times. The adjusted R² was 0.87 it means 87% of variations in visitation rate, were explained by the explanatory variables, taking into account the degrees of freedom. The remaining 13% is explained by other variables captured by the error term.

Recreation value applying consumer surplus of Fulbari park and Balaju park

The table 2 indicates that 80 percent of the respondents were willing to pay for the improved condition of the Fulbari Park. From the improved amenities of the Park, more than 30% of the respondents were willing to pay US\$ 0.13 and 0.17 as entry fee whereas 10% and 7% of them were willing to pay US\$ 0.26 and 0.43. The consumer surplus (CS) was US \$ 1.08 /person for a trip to Park among Nepali visitors.

The table 2 indicates that 90 percent of the respondents were willing to pay for the improved condition of Balaju Park. From the improved amenities of the Park, 40% of the respondents were willing to pay US \$ 0.08, 20% of respondent were willing to pay US \$ 0.13, 18% of the respondent were willing to pay US \$ 0.17 and 12% of the respondent were willing to pay US \$ 0.21 as entry fee. The consumer surplus (CS) was US \$. 0.81 people per visit to park.

Recreational Value of Fulbari Park			Recreational Value of Balaju Park		
Willingness to Pay (in US \$)	N = 35	Value	Willingness to Pay (in US \$)	N = 35	Value
0	20%	0	0	10%	0
0.13	33%	1.57	0.08	40%	1.22
0.17	30%	1.75	0.13	20%	0.92
0.30	10%	1.22	0.17	18%	1.05
0.43	7%	0.87	0.21	12%	0.87
Total	100%	5.41	Total (Average) US \$	100%	4.06
Consumer surplus (Average) US \$ 1.08/person per visit			CS=0.81/person per visit		

Table 2: Recreational Value of Fulbari Park and Balaju Park (Consumer Surplus).

Field survey, 2019.

Regression equation of different variables (Fulbari Park): The t-test showed that cost of travel, monthly income and household size have significant relation with the number visitors at 95% level of confidence. The adjusted R² was 0.87 it means 87% of variations in visitation rate, were explained by the explanatory variables, taking into account the degrees of freedom. The remaining 13% is explained by other variables captured by the error term (Table 3).

Regression equation of different variables (Balaju Park): Travel cost, Monthly income, Household size and Education were statically significant. The adjusted R² 0.85 shows that, about 85% of variations in visitation rate were explained by the explanatory variables, taking into account the degrees of freedom. The remaining 15% is explained by other variables captured by the error term (Table 3).

Variables	Standard coefficient	t-statistic	Significance (P- value)	Standard coefficient	t-statistic	Sig
	Regression Equation: Fulbari Park			Regression Equation: Balaju Park		
Constant	6.364	5.591	4.92	4.30	8.82	1.03
Travel cost	-0.11	-5.21	0.042	-0.82	-5.67	0.028
Monthly Income	2.4	2.853	0.0078	1.27	1.86	.0007
Age	-0.55	-1.52	0.129	-0.052	-0.316	.074
Household size	-0.295	-3.77	0.0072	-0.29	-4.12	0.00028
Education	0.103	0.342	0.73	0.028	2.04	0.04
Adjusted R ²	0.874			0.852		

Table 3: Regression equation showing frequency of visitors demand and different variables.

Note: Confidence level 95%.

Ecosystem services in Fulbari park and Balaju park

A matrix was created to evaluate the urban park Landscape capabilities to provide ecosystem services and scale ranges from 0 to 5 where 0 = no relevant capacity, 1 = low relevant capacity, 2 = relevant capacity, 3 = medium relevant capacity, 4 = high relevant capacity and 5 = very high relevant capacity. The evaluation was done with the help of Park experts and head of the office who knows well about ecosystem and the parks landscape in both parks.

Table 4 and 5 describes about the Landscape of Urban Parks that have different capacity to provide different ecosystem services. On y axis there were different landscape of both Urban Parks and on X axis there were different ecosystem services provided or supported by both parks. Different scoring was given according to the park capacities. The highest score was gained by biodiversity in both Parks in ecological integrity sector that was 32 in Fulbari Park and 27 in Balaju Park. In Provisioning services the highest score was gained by energy which was 15 in Fulbari Park and Food which was 13 in Balaju Park. Similarly in regulating service the highest score was gained by water purification which was 82 in Fulbari Park and Ground water recharge in Balaju Park which was 69. At last in cultural services the highest score was gained by Recreation in both parks which score were 37 in Fulbari Park and 31 in Balaju Park. From all this we can conclude that Urban Parks are major source of Recreation and this is proved by the highest score obtained by recreation in both parks.

	Ecological integrity	Abiotic heterogeneity	Biodiversity	Biotic Water flows	Storage capacity	Reduction of Nutrient loss	Provisioning service	Food	Live-stock	Energy	Medicines	Regulating Services	Nutrient recycling	Local climate regulation	Erosion regulation	Water Purification	Ground Water recharge	Cultural Services	Recreational	Educational	Religious	Tourism
Road	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
Recreation site	13	2	4	3	2	2	7	2	2	2	1	10	2	2	2	2	2	14	5	3	2	4
Dump sites	6	2	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Garden	10	2	2	2	2	2	2	0	0		2	8	2	2	1	1	2	16	4	4	3	5
Water ponds	9	1	3	2	2	2	4	1	1	2	0	15	3	3	2	3	4	13	4	2	3	4
Mixed Forest	14	3	3	3	3	2	13	3	3	4	3	17	3	3	4	4	3	13	4	3	2	4
Sport and leisure	8	2	2	1	2	1	0	0	0	0	0	4	0	0	1	2	1	6	5	1	0	0
Children Park	7	2	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0	7	5	2	0	0
Construction sites	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fruits tress	13	3	4	1	2	3	9	3	0	3	3	13	2	2	3	3	3	9	3	2	2	2
Natural vegetation	12	3	3	2	2	2	12	3	2	4	3	15	3	3	2	4	3	12	4	3	2	3
Temples	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	3	2	5	3
Commercial units	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sum	98	30	31	20	22	20	47	12	8	15	12	82	15	15	15	19	18	105	37	22	17	27

Table 4: Urban park landscapes capacities to support ecosystem services: Fulbari park.

	Ecological integrity	Abiotic heterogeneity	Biodiversity	Biotic Water flows	Storage capacity	Reduction of Nutrient loss	Provisioning service	Food	Live-stock	Energy	Medicines	Regulating Services	Nutrient recycling	Local climate regulation	Erosion regulation	Water Purification	Ground Water recharge	Cultural Services	Recreational	Educational	Religious	Tourism
Road	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
Recreation site	14	2	3	3	3	3	2	0	0	1	1	10	2	2	2	2	2	12	4	2	2	4
Dump sites	7	2	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gardens	9	3	2	1	1	2	3	0	0	1	2	5	1	1	1	1	1	13	4	3	2	4
Water ponds	12	2	3	3	2	2	2	1	0	1	0	10	2	2	1	2	3	13	4	2	3	4
Mixed Forest	13	2	3	2	3	3	11	3	3	3	2	16	3	3	3	3	4	10	3	2	2	3
Sport and leisure	2	2	0	0	0	0	0	0	0	0	0	4	0	0	1	2	1	5	4	1	0	0
Children Park	7	2	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0	5	3	2	0	0
Construction sites	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
Fruits tress	10	2	3	1	2	2	7	3	0	2	2	10	2	2	2	2	2	8	2	2	2	2
Natural vegetation	15	3	3	3	3	3	13	3	2	3	2	14	3	3	2	3	3	13	4	3	2	4
Temples	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	3	2	4	3
Commercial units	2	2	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sum	96	25	27	17	19	17	41	13	5	11	9	69	13	13	12	15	16	93	31	19	17	26

Table 5: Urban park landscapes capacities to provide ecosystem services: Balaju park.

Table 6 provides information’s about different ecosystem services present in both Parks. By this table we can conclude that both urban parks have different types of ecosystem services but the number or amount may not be same in both Parks. Urban Parks are source or place for recreation no doubt but beside this they can play great role in balancing the different types of ecosystem somehow. Upper side of the both Parks there had dense forest which consists of different types of tree species by which different types of ecosystem services such as provisioning services, regulating services, supporting services and cultural services are supported by both Fulbari and Balaju Park.

Ecosystem Services	Services	Fulbari	Balaju
Provisioning services		Presence	Presence
	Food		
	Fiber		
	Fresh water		
	Ornaments		
	Genetic Resources		
	Raw materials		
Regulating Services	Climate regulation		
	Flood prevention		
	Pollination		
	Water purification		
Cultural Services	Recreational		
	Education		
	Religious temple		
	Aesthetic		
	Sense of place		
	Tourism		
Supporting Services	Nutrient Cycling		
	Habitat		
	Soil formation		
	Primary Production		

Table 6: Listing out different ecosystem services provided by each parks.

Income and employment of Fulbari and Balaju park

Trend of income and expenditure of Fulbari and Balaju park within 5 years

Figure 2 provides information about Income and Expenditure (in Dollar) of both Parks i.e. Fulbari Park and Balaju Park from year 2015A.D to 2019 A.D. Sources of income for both park were entry fees, donation from different organizations, Picnic spot fees, Marriage fees, canteen Fees etc. while expenditure were in different topic such as salary of staff, maintenance of park, electricity, telephone bills, etc. From the data and figure 2 we can conclude that both the income as well as expenditure was increasing every year. We can see wider gap between the income and expenditure in the recent year in both parks because the annual program of both parks were not completed. According to head of Balaju Park the income level had been decreased after the earthquake in 2015 because swimming pool was good

source of income but now no swimming pool in used due to great damage after earthquake but nothing such damage was seen in case of Fulbari Park. The average benefit and benefit cost ratio of Fulbari and Balaju were \$40517.02, \$55715.64, 1.43 and 1.75 respectively. At last it is clear that the benefit of Balaju Park was higher in comparison to Fulbari Park.

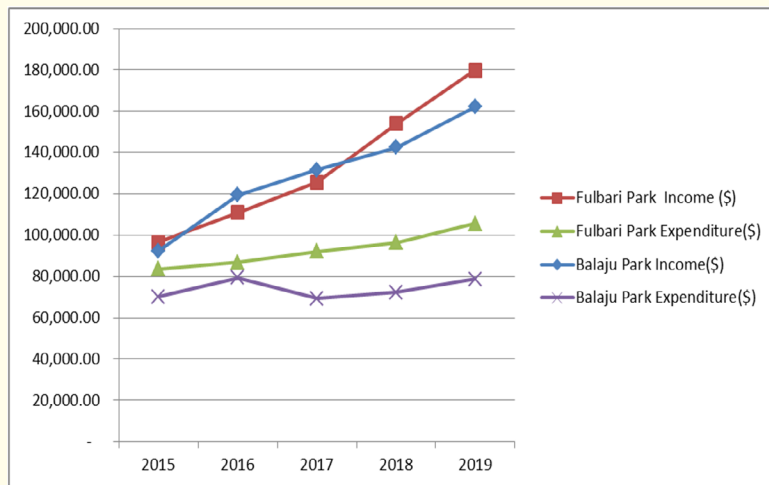


Figure 2: Trend of income and expenditure of Fulbari park and Balaju park of 5 years.

Average benefits of five years (Fulbari park):

Average (Benefit) = Average Revenue - Average Expenses

= 133492.78 - 92975.76

= \$40517.02

Benefit Cost Ratio = Net Benefits/ Net Cost

= 133492.78 / 92975.76

= 1.43

Average benefits of five years (Balaju park):

Average (Benefit) = Average Revenue - Average Expenses

= 129653.26 - 73937.62

= 55715.64

Benefit Cost Ratio = Net Benefits/Net Cost

= 129653.26 / 73937.62

= 1.75

Numbers of visitor in the year 2018 A.D: Figure 3 in Fulbari Parks explains the total numbers of visitors in the year 2018. When comparing two Parks the numbers of visitors were high in Balaju Parks because Balaju Parks lies in the Kathmandu district and the numbers of people here are large in compare to Butwal and people living in Kathmandu feel Balaju Parks as natural beauty where they can take out there stress of their busy life.

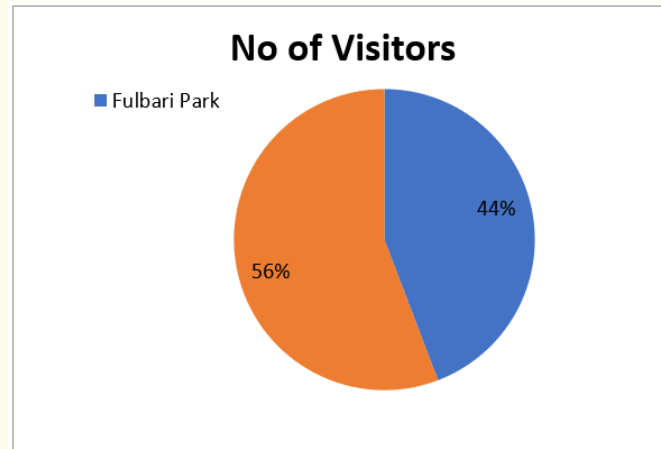


Figure 3: Numbers of visitors in Fulbari and Balaju parks in the year 2018 A.D.

Income levels of different shopkeeper present within both parks

From both table 7 and 8 we can understand that both Fulbari Park and Balaju Park have great contribution in income generating to different peoples. Different types of shops, Large, Medium and small was seen nearby the both parks area. In case of Fulbari park, large shops were not found but Medium and small size of shops selling different types of goods such as Food, cloth, gifts, ornaments etc. was seen where in medium size shop the income ranges from 5 to 8 thousands per day and little more 10 to 12 thousands during holidays due to large number of people visit to park. In small size shop the income after selling goods ranges from 4 to 6 thousand per day and 8 to 10 thousands during holidays. In case of Balaju Park, large shops income ranges from 10 to 12 thousand per day and 15 to 20 thousand during holiday, medium size shops income ranges from 5 to 6 thousand per day and 10 to 12 thousand during holidays, small size shops incomes ranges from 3 to 5 thousands per day and 8 to 9 thousands during holiday. From all such information we can conclude that different people were able to make their living with the help of such urban parks which plays very important role in sustainable livelihood.

Types of Shops	No of shops	Types of goods	Income per day (Approx.)
Large	0	-	-
Medium	Around 11	Cloth, Fruits, Restaurant	5 to 8 thousand per day and 10 to 12 thousand during holidays
Small	Around 27	Gift shop, fruit cart, Food cart, ornaments	4 to 6 thousand per days, 8 to 10 thousand during holidays.

Table 7: Checklist for shopkeeper: (Fulbari park).

Types of Shops	No of shops	Types of goods	Income per day (Approx.)
Large	Around 5	Cloths, Restaurants	10 to 12 thousands per day, 15 to 20 thousands during holidays
Medium	Around 7	Cloth, Fruits, Restaurant	5 to 6 thousand per day and 10 to 12 thousand during holidays
Small	Around 4	Fruit cart, Food cart	3 to 5 thousand per days, 8 to 9 thousand during holidays.

Table 8: Checklist for shopkeeper (Balaju park).

Employment trend in Fulbari and Balaju park

From figure it is clear that large numbers of people were employed in both Parks. In each and every year the numbers were sometime increasing while sometime decreasing but different people were able to sustain their livelihood from Parks so we can say that urban Parks are not only the source of recreation but also a good platform to earn living to different peoples. In fulbari Park the number of employment in year 2017 the numbers were decreasing but other than that number were increasing. In case of Balaju Park, the number of were decreasing every year and according to the head of the park the environment ministry is responsible and it decide how many people are necessary according to the need for Park management. And we can see the trend of employment in figure 4.

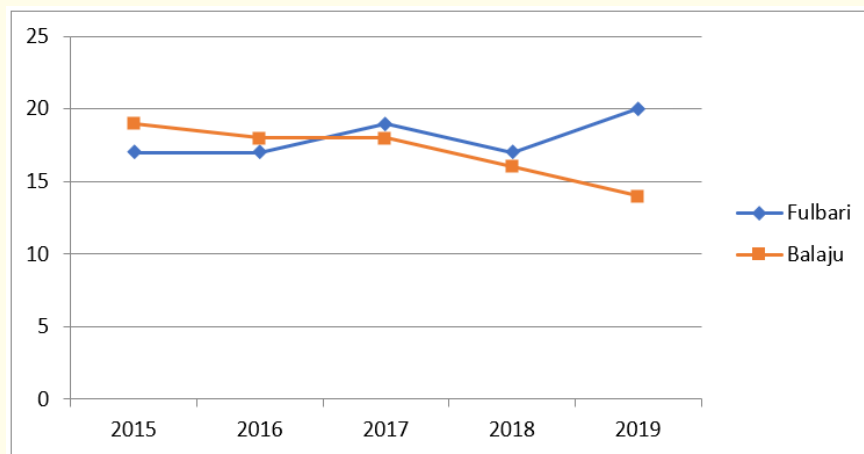


Figure 4: Trend of employment in Fulbari and Balaju park of five years.

Discussion

A study of urban park has several useful applications to generate the income and provide recreation [24,25]. Different variables were analyzed such as Travel cost, Income of Visitors, Education; Household size etc. which can bring effect on numbers of visits [26,27]. This research aims to compare two parks economic valuation of recreation using Travel Cost Methods [28]. Beside this, income and employment trend of five years. According to the result of this study, in Fulbari Park the Travel cost, Monthly income and Household size are statically significant whereas in Balaju Park, Travel cost, Monthly income, Household size and Education are statically significant.

Most used variables such as travel costs, income, travel time, age, replacement locations, distance traveled and country of origins etc [29]. To measure the economic value of three different parks in Saga City, Japan, [28] used the TCM. They decided to determine how the Saga Castle Park, Kono Park and Shrin Park regard the visitors. The research used the cost of travel, distance, income and age as its important variables. The results showed that travel expenses, income, and age were related positively on all three sites and in this study also shows that in both Parks travel cost, Age, and income were also related positively. The average consumer surplus in Fulbari Park and Balaju Park were US\$1.04 and US\$ 0.81 respectively and the estimated consumer surplus for Castle Park was US\$11, 35; Kono Park was \$230,972 and \$242,107 for Shinrin Park which is very high in comparison to Fulbari and Balaju Park because it is due to low entry fee as well as all the respondent were domestic and no any accommodation were needed.

The study was conducted in Greece about the travel cost in Greece aiming that to put a monetary value on an abandoned quarry site in Athens, Greece. Variables adopted were the cost of travel, employment, place of replacement, occupation and age [30]. They found that travel costs, employment, replacement locations, and occupation are linked negatively to the number of visitor rates. They found their consumer surplus as to be between US \$ 194.1 and 1423.4, which is more in comparison to Fulbari and Balaju Park.

The average benefit and benefit cost ratio of Fulbari and Balaju were US\$ 133492.96, US\$ 129653.26, 1.43 and 1.75 respectively. In Werribben park annual income from tourism is US \$25 million with US \$ 2 million of costs of the park [13]. This shows that the annual benefit of Werribben park was high it may be due to high fees on different sources of income such as entry fee, picnic fee, children park fee etc.

Conclusion and Recommendation

This study revealed that the economic value of both urban parks (Fulbari Park and Balaju Baisdhara Parks) were large in term of providing natural beauty or recreation to big numbers of people and in term of income and employment too. Urban parks plays very important and significant role. This study was based on the travel cost techniques and consumer surplus techniques where it was assumed that frequency of visit to urban parks depends on different variables such as travel cost to reach the parks, monthly income of the visitors, education level, household size etc. and from the result it was believed that this all variable had great contribution in both Parks in making visit to urban parks such as when travel cost increases then the frequency of visit to parks are low and vice versa. Different people had different purpose to visit to Parks such as some for recreational purpose, some for picnic, some for any events or activities, some for religious reason etc. Urban parks also support different types of ecosystem services and from the matrix method done with discussion with Head of the officers it was found that highest score was obtained by cultural services in Fulbari Park similarly in Balaju Park highest score was obtained by the ecological integrity. Both parks have different level of incomes from different source like, entry fee, picnic fee, donation, Punishment, etc but the amounts were different in both parks. The average income of Fulbari Park of five years was relatively higher than Balaju Park but the benefit cost ratio of Balaju Park was higher than Fulbari Park. The total numbers of visitors in 2018 was higher in Balaju Park than in Fulbari Park. The number of employment provided by both park were different, in Fulbari Parks total number of staff were increasing while in case of Balaju Park the number of employment were decreasing slowly. By this we can conclude that urban parks are not only source of recreation or beauty but it is the source of sustainable livelihood.

Bibliography

1. Ellis D and Schwartz R. "The Roles of an Urban Parks System". In Proceeding of IFLA AR-URBIO Conference (2016).
2. Liu WY., *et al.* "Assessing the Recreational Value of a National Forest Park from Ecotourists' Perspective in Taiwan". *Sustainability* 11.15 (2019): 4084.

3. Rabare RS., *et al.* "The role of urban parks and socio-economic development: Case study of Kisumu Kenya". *Theoretical and Empirical Researchs in Urban Management* 43.12 (2009): 22-36.
4. Lockwood ACM. "Landcare and catchment management in Australia: lessons for state-sponsored community participation". *Society and Natural Resources* 13.1 (2000): 61-73.
5. Woolley H. "Urban open spaces". Taylor and Francis. Spon Press London and New York (2003).
6. Chen CM., *et al.* "The destination competitiveness of Kinmen's tourism industry: exploring the interrelationships between tourist perceptions, service performance, customer satisfaction and sustainable tourism". *Journal of Sustainable Tourism* 19.2 (2011): 247-264.
7. Konijnendijk CC., *et al.* "Defining urban forestry—A comparative perspective of North America and Europe". *Urban Forestry and Urban Greening* 4.3-4 (2006): 93-103.
8. Finlayson M., *et al.* "Millennium Ecosystem Assessment: Ecosystems and human well-being: wetlands and water synthesis (2005).
9. Das S. "Travel cost method for environmental valuation". *Center of Excellence in Environmental Economics, Madras School of Economics, Dissemination Paper* (2013): 23.
10. Gillespie R., *et al.* "Adapting the travel cost method to estimate changes in recreation benefits in the Hawkesbury–Nepean River". *Australasian Journal of Environmental Management* 24.4 (2017): 375-391.
11. Zawacki WT., *et al.* "A travel cost analysis of non consumptive wildlife-associated recreation in the United States". *Forest Science* 46.4 (2000): 496-506.
12. Chee YE. "An ecological perspective on the valuation of ecosystem services". *Biological Conservation* 120.4 (2004): 549-565.
13. Krozer Y., *et al.* "Income generation from tourism in National Parks: European experience". *WIT Transactions on Ecology and the Environment* (2007): 102.
14. DFO. Annual Progress Report, Division Forest Office, Rupandehi Nepal (2019).
15. DFO. Progress report of Annual Activities of Kathmandu Forest. Division Forest Office, Kathmandu Nepal (2019).
16. White PCL and Lovett JC. "Public preferences and willingness-to-pay for nature conservation in the North York Moors National Park, UK". *Journal of Environmental Management* 55.1 (1999): 1-13.
17. Nde TP. "Non-market valuation of beach recreation using the Travel Cost Method (TCM) in the context of the developing world: An application to visitors of the Ngoé Beach in Kribi, Cameroon. Second cycle, A2E. Uppsala: SLU, Dept. of Economics (2011).
18. Thapa AK. "Recreational Demand for Fewa Lake: An Application of Travel Cost Method". *Economic Literature* 11.1 (2013): 54-59.
19. Kothari CR. "Research methodology: Methods and techniques". *New Age International*.
20. Stevens TH., *et al.* "Declining national park visitation: An economic analysis". *Journal of Leisure Research* 46.2 (2014): 153-164.
21. Freeman III., *et al.* "The measurement of environmental and resource values: theory and methods". *Routledge* (2014).

22. Chae DR., *et al.* "Recreational benefits from a marine protected area: A travel cost analysis of Lundy". *Tourism Management* 33.4 (2012): 971-977.
23. Zekri S., *et al.* "Recreational value of an oasis in Oman". *Environmental management* 48.1 (2011): 81-88.
24. Nielsen AB., *et al.* "Species richness in urban parks and its drivers: a review of empirical evidence". *Urban Ecosystems* 17.1 (2014): 305-327.
25. Warner M and Hefetz A. "Rural urban differences in privatization: Limits to the competitive state". *Environment and Planning C: Government and Policy* 21.5 (2003): 703-718.
26. Tameko AM., *et al.* "The economic valuation of improved urban parks: A case study of Warda Park". *Journal of Sustainable Development* 4.1 (2011): 271.
27. Othman J and Jafari Y. "Economic Valuation of an Urban Lake Recreational Park: Case of Taman Tasik Cempaka in Bandar BaruBangi, Malaysia". *Sustainability* 11.11 (2019): 3023.
28. Lamtrakul P., *et al.* "Public park valuation using travel cost method". *In Proceedings of the Eastern Asia Society for Transportation Studies* 5 (2005): 1249-1264.
29. Weiqi C., *et al.* "Recreation demand and economic value: An application of travel cost method for Xiamen Island". *China Economic Review* 15.4 (2004): 398-406.
30. Latinopoulos D. "Environmental valuation in Greece: a review and analysis of contingent valuation studies". *Interdisciplinary Environmental Review* 16.1 (2015): 77-93.

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