



ISSN: 2249-894X  
 IMPACT FACTOR : 5.7631(UIF)  
 UGC APPROVED JOURNAL NO. 48514  
 VOLUME - 8 | ISSUE - 8 | MAY - 2019



## CITIZENS' PREFERENCES FOR URBAN PARKS OF KOLKATA MUNICIPAL CORPORATION: A TRAVEL COST APPROACH

**Dr. Laxmi Narayan Saha**

Assistant Professor, Department of Geography, Panihati Mahavidyalaya, Barasat Road, Sodepur, Kolkata.

### ABSTRACT:

The urban environment is subject to pollution, degradation and other negative externalities. These losses include the loss of green and open spaces. As urban centres grow, concretised surfaces take over these spaces. While this process seems unavoidable, across the world, cities also prioritise provisioning of green spaces for their citizens and the ecosystem at large. Planning open and green spaces in the forms of parks, squares, gardens and avenues is common in Indian cities as well. Such environmental resources provide valuable attributes, however, remain unrecognized by us, as it

is mostly unpriced and thereby undervalued. Environmental entities, however, have been assessed with the help of non-market valuation techniques. This paper attempts to assess citizens' preferences for green spaces in their own city by using the Travel Cost Method, which is a choice based model where travel cost is used as a proxy for the price of visiting the parks or gardens (representing open green space). The study is based on Kolkata. Based upon visitors' surveys conducted across eight parks in the Kolkata Municipal Corporation, the study has attempted to find variations in the relative importance that people attach to such destinations. Travel characteristics such as travel time, travel cost, distance, timing of visit and time spent are analysed alongside respondents' characteristics like income per month, age etc. to find determinants of user preferences in a detailed manner. Analysis of variance is also performed across groups to help understand citizens' preferences with more clarity. The findings of the study indicate determinants of travel cost. The present study also try to find out the relation between purposes of park visit, mode of transport and distance travelled with travel cost. Overall, the findings indicate that parks and gardens are highly preferred by citizens as spaces of recreation, inspite of several modes of recreation available today. The study emerges as indicative of the fact that though most direct stakeholders are likely to actively participate in the conservation activities, often they do not have the means to pay for conservation. It is important to sensitize the urban population (both direct and indirect stakeholders) by providing more lucid information about ecosystem services of greenery and open space, to society. The findings, therefore, imply that the immediate concern is to strengthen the basis of scientific knowledge on urban forestry in general such that citizens may be actively and effectively involved in conservation programmes.

**KEYWORDS:** citizen' preferences, urban parks, travel cost method.

### 1. INTRODUCTION

Cities are centres of economic activities, innovation and

cultural connotations making them vibrant centres of development. At the same time, they are receptacles of waste, pollution and are characterized by severe degradation of environmental quality. Often

planners are faced with the dilemma of choice – between ecological safety-nets vis a vis development projects for cities. In most cases, pro-development decisions do not turn out to be sustainable, and as a

consequence, the ponds, lakes, forests, greenery disappear with rapidly as manifestations of development replace them. Therefore, scarcity of green areas is not exclusive to any particular city. It is a problem faced by most cities. Urban planners constantly strive to provide green landscapes to incorporate sustainable development options for cities. According to Wooley,2003[11] public parks as an important element of urban green areas have played a significant role that balances the needs for city conservation against degradation of urban environment while keeping the rapid urban development, unaffected. Green areas of many towns and cities around the world is relentlessly under threat due to different reasons, e.g. lack of land-use planning, urban expansion, construction activity like building and road, lack of integration in every aspects of city administration with reference to monitoring, design and management *etc.* On the contrary, the process of urbanization demands green space to serve multiple objectives of environmental protection, recreation and aesthetics. It is apparent that the perceptions of the citizen's play a major role in accessing benefits. Thus, this study focuses upon the citizens' perception of urban parks in Kolkata.

The city of Kolkata is one of the most densely populated mega-cities of India. The city has a rich and long colonial history that has seen planning of parks, squares and gardens in keeping with the tradition of the then British urban planners. With the passage of time and the increasing pressure of urbanization, the city witnessed large-scale conversion of land for different urban uses. While large-scale transition has implied loss of agricultural land, bare ground, forest and vegetation patches, the city centre has also witnessed efforts at redesigning of greenery through planned interventions like the landscaped gardens that have been built in an around the old business district, the new townships being adequately provided with parks and open spaces.

## 2. URBAN FORESTRY: FUNCTIONS AND VALUES

Urban forest is one of the major trajectories of a sustainable urban environment. It provides habitat with great diversity of wildlife in the city. Urban forest, woodlands, parks *etc.* provide significant form of physical environment. Urban greens have remarkable economic and sustainability value to urban environment. Some of the well-known environmental, economic, and social benefits of urban forests are –

**Intake of gaseous air pollutants:** Tree leaves absorb CO<sub>2</sub> and other atmospheric gases and replenish the air with oxygen for breathing. It is estimated that a mature tree in a year can absorb 11.8 kg of CO<sub>2</sub> and cleans up pollution created by vehicles driven for 18200km. The same tree can also produce oxygen for family of four to breath for a year.

**Storm-water reduction:** In general green cover can reduce impact of rain, decrease soil erosion *etc.* A green cover can reduce storm water run-off by 2%. It was also estimated that a single tree can recycle US \$ 35000 of water.

**Conservation of energy through transpiration cooling, shade and wind reduction:** Green cover can reduce 30% of air conditioning and 25-50% heating of houses. It acts as a windbreak protection.

**Noise buffering:** Green cover can absorb sound and thus decrease intensity of noise. A green cover with 30.5 m of width can absorb about 6-8 dB of sound intensity.

**Ecological habitats:** Green cover provide habitat for birds and animals.

**Increase of aesthetic values:** Green cover acts as a visual screen, and reduces stress in human body.

**Recreation:** Urban parks act as a recreation place for city dwellers and tourists.

**Economic values:** Urban forestry also supplies food, fuel, wood, fodder, grazing areas *etc.*

**Property value:** Green cover can increase property value by 10-20%. Also it can increase tax revenue, income level, no. of jobs *etc.*

Thus, expansion of green space and developing urban forestry constitutes an intrinsic and critical support system for the environment of cities, and in this case of Kolkata Municipal Corporation (KMC), which is burdened by immense population densities and inadequate infrastructure in general.

## 3. DESIGN OF THE STUDY

Citizens' preferences have been assessed in this paper by use of a revealed preference valuation method, the Travel Cost Method (TCM). Environmental Valuation method here, seek to place a value on parks as recreational sites. It views the environmental entity as a non-market good and attempts to assign values to it, by considering how much people are ready to spend on travel (transport costs) to reach the site.

Literature abounds on the sturdiness of the TCM for assessing how much people "prefer" a specific environmental good or service – the urban parks, in this case. The preferences are studied on the basis of a respondent survey conducted with the help of a pre-determined interview schedule. The schedule incorporated questions relating to the balance between economic and environmental cost-benefit – a relationship that an individual assesses while making a choice for recreation or enjoyment of aesthetic beauty provided by greenery. An important component comprised the travel modes, costs incurred and distance travelled for park visits. Eight important parks located within KMC have been selected for study, these being Mohor Kunja, Maidan, Elliot park, College square, Hedua park; Millennium park; Golf green central park and Taratala nature park..

#### 4. STUDYING CITIZENS' PREFERENCES BY TRAVEL COST METHOD

Different methods of valuing environmental goods and services have evolved in recent years. TCM is one of the commonly used valuation methods, which is used extensively around the world to value public recreation sites. It is an anthropocentric approach and helps to estimate value of urban ecosystem services. According to Hanley and Spash, 1994[9] it is the best known technique for valuing the non-market benefits of outdoor recreation sources. The method is also known as Clawson-Knetsch approach because the method was formally introduced by them. This method is extensively used in USA, UK and Australia *etc.* e.g. the Forestry Commission of UK has started to use it quite extensively. It is an indirect method used for estimating user benefits from visits to recreational sites e.g. beaches, parks and heritage site (Liston-Heyes and Heyes, 1999[4]). The expenditure related to recreation travel would be treated as travel cost which is also associated with distance travelled and value of time spent in travel (Englin and Shonkwiler, 1995[1]). But this approach also has some lacunas depend on the approach to estimate the benefit (Whitehead et.al. 2000[5]). In spite of various practical and theoretical problems in TCM, it remains a popular practice to estimate the benefits from a particular outdoor recreational site. Here in this paper TCM is an attempt to estimate the economic value of public parks within KMC. According to Iamtrakul et.al. 2004[7] different characteristics of public space affects different individual's patterns of activities, the modes and frequencies of utilization. The perceived value of individual's regarding public parks differ due to their personal characteristics, such as age, income, and the different attractiveness and accessibility of parks also resulted to the different value of parks benefit from different patterns of public parks utilization which are very essential information to guide local planning authority to locate suitable plan for existing and future policy for public park service improvement and to enhance the quality of life of the city dwellers as well as urban environment. Data regarding socio-economic profiles, demographic characteristics were collected alongside the mode of transport, travel time, travel distance and travel cost.

#### 5. METHOD OF ANALYSIS

In this study, travel cost, together with mode of transport, travel time and travel distance are used to identify the value of park benefit to users. This study integrates the traditional method on travel cost valuation together with other variables to reflect total benefit generated by a site visit. However, it is necessary to assume that users select one site rather than multiple sites to visit on any one trip. The travel cost incurred is calculated by this assumption.

Park visitors have different purposes. To perform the analysis, classification on different purposes needs to be tested to determine whether means of different category in the same variable are different or not using the analysis of variance (ANOVA). The reason for doing an ANOVA is to see if there is any difference between groups on some variable. ANOVA looks at is the way groups differ internally versus what the difference is between them. It calculates, within each group, the total

deviation of each individual's score from the group mean - within group variation. Next, it calculates the deviation of each group mean from the overall mean - between group variations. Finally, ANOVA produces the F statistic which is the ratio between group variation to the within group variation. If the between group variation is significantly greater than the within group variation, then it is likely that there is a statistically significant difference between the groups and finally whether F ratio is significant or not.

## 6. STUDY AREA

The KMC is selected for the present study which was originally developed on the natural levee of the Hugli River which is a distributary of the Ganga. The expansion of Kolkata was largely controlled by River Hugli in the west and by numerous wetlands in the east. Initially the expansion of KMC was in north-south direction but by the passage of time and with increase in population, KMC has witnessed large scale conversion of land for urban use in the east.

KMC has an area of 187.33 sq.km. It has 141 wards arranged within 15 boroughs. The total population of KMC as per 2011 census is 4496694. The largest green area of KMC spread over Maidan area which is supposed to be the lung of the city. According to Ghosh in ENDEV, 2001[12] that KMC has 290 parks with different range of canopy cover. Most Indian cities today are facing huge population influx together with unplanned development. Rising urban population over the years, results in decrease in open space and greenery. The KMC has been selected for this case study, wherein green cover is decreasing day by day. This causes concern for the sustenance of the forest based ecosystem which provides several benefits for the city.

## 7. THE SURVEY SITES

Eight major parks of KMC have been selected for this analysis. The selection is based on varying accessibility, popularity and aesthetic criteria that affect travel behavior of park visitors. In this connection field survey and respondents' interview was conducted on five park locations. The questionnaire survey used random sampling interview of park visitors while they spend leisure time at park. The sites selected are as follows:

**Mohor Kunja:** This Park was previously known as Citizen Park and was established in the year 2007. Later the park was renamed as Mohor Kunja after famous Rabindra Sangeet exponent Kanika Bandyopadhyay who is popularly known as Mohor *di* (sister). It is located on Cathedral Road by the side of Victoria Memorial and opposite to Nandan. This park has musical fountains and also an open air stage for cultural events. This park is popular for its aesthetic beauty.

**Maidan:** This is the largest urban green space of KMC, considered as the green lungs of the city. Literally the word Maidan refers to open field which has a broad expanse of field with numerous play ground e.g. Eden Garden, Race Course etc. The area is totally under the Indian army and it is place of leisure, sports and entertainment for the city dwellers.

**Elliot Park:** This is a three acre park located opposite to the Tata Centre building on Chowringhee and along Jawaharlal Nehru Road. In the past, the Park was maintained by Tata Company but recently KMC took over the maintenance charge. Presently different beautification program like new lights, improved landscaping etc. have taken. This park is also popular for its aesthetic beauty.

**College Square:** It is located in the central part of Kolkata and is surrounded by different well-known and popular educational institutions like University of Calcutta, Presidency University, Calcutta Medical College etc. It has a swimming pool at the centre which is very popular for the budding swimmers.

**Hedua Park:** Hedua park or Azad Hind Bagh is located in the central Kolkata. This park is also famous for Swimming pool. The park is located at Beadon Street near Scottish Church and Bethune College.

**Millennium Park:** This park is the first riverside beautification project which was developed by KMDA in the year 1999. It is located along the Strand Road on eastern bank of river Hugli. It has a total length of 2.5 km and consisting of landscape garden and children park. This park is also a place of leisure, play, and entertainment for the city dwellers.

**Golf Green Central Park:** This public park is maintained by KMC. This is a well maintained park of south Kolkata which is mainly visited by local people both at morning and evening hours.

**Taratala Brace Bridge Nature Park:** This park is popularly known as Mudiali nature park which is located in the Brace Bridge area of west Kolkata. The park is developed and maintained by Mudiali fishermen's co-operative. This park is located in the ward no. 80 of KMC which well connected by railway line as well as road networks. The park is mainly visited by youth and also famous for picnic spot.

## 8. RESPONDENTS' PROFILE

Parks and squares of urban areas have played significant role which balances the needs for city conservation against degradation of urban environment while keeping the rapid urban development. Recently, urbanization in many cities forwarded the need for more greenery to serve for various objectives like environmental protection, recreation, physical activities etc. Development, maintenance and preservation of the parks and squares are tough issues for govt. as well as for different communities. To measure value of parks benefits, questionnaire was framed regarding demographic, socioeconomic, travel characteristics of the park users'.

Park visitors were approached randomly and a total of 501 questionnaires were used in this case. The important findings from the survey are summarized in Table 1 and 2. The survey data showed that there are differences in mean value of park visitors' characteristics, e.g. avg. age of park visitors is low in Brace Bridge nature park and high in Golf Green central park. Avg. income of Millennium park visitors are high and it is low in case of visitors of Maidan, Mohor kunj and Elliot park. Also the travel characteristics depend on accessibility of parks. On the basis of mean value of travel time, and travel distance we found that visitors spent more time, more distance to visit Brace Bridge nature park. But in case of travel cost they spent more to visit Maidan, Citizen park and Elliot park.

**Table 1: Summary of variables on travel cost for park visit.**

Variables	Park Location (N=501)				
	Maidan, Mohor Kunja and Elliot Park (N=135)	College Square, Hedua Park (N=100)	Millenium Park (N=101)	Golf Green Central Park (N=85)	Brace Bridge Nature Park (N=80)
	Mean	Mean	Mean	Mean	Mean
Age	32.01	31.58	27.19	40.06	25.88
Income per Month	19351.11	21940.00	24131.68	21629.41	22325.00
Time taken (min)	26.46	26.16	30.64	11.22	33.44
Distance travelled(km)	7.36	8.03	9.98	1.67	11.86
Travelling Cost in Rs	47.84	22.32	20.16	9.62	35.24

Source: Computed by author based on primary data (2013-2014)

**Table 2: Distribution of samples classify by park location and timing, time spent in park visit.**

Park Visited	Timing of Park Visit			Time Spent in Parks		
	Morning	Evening	Afternoon	<1 Hr	1-2hrs	>2hrs
Maidan, Mohor Kunj, Elliot Park	19	50	66	50	58	27
College Square	15	29	56	49	34	17
Millenium Park	20	45	36	23	60	18
Golf Green Central Park	2	13	70	25	49	11

Brace Bridge Nature Park	28	29	23	26	30	24
Total	84	166	251	173	231	97

Source: Computed by author based on primary data (2013-2014)

## 9. ANALYSIS OF FINDINGS

The analysis presented here is based on the results of park visitors survey conducted at different parks at KMC. A total of 501 useful questionnaires were obtained from on site interview in these parks. The data was collected during the park users' visits. With reference to park's location, the distributions of sample are, 27% in Maidan, Mohor Kunja and Elliot Park; 20% each in College square, Hedua Park and Millenium Park; 17% in Golf Green Central Park and 16% in Brace Bridge Nature Park.

### Determinants of Travel Cost:

The first analysis considers travel cost as the dependent variable for the whole sample. Important determinants are time spent in parks, mode of transport, travel time and travel distance.

Table 3: Determinants of travel cost.

Independents	Dependent Variable: Travelling Cost in Rs		
	Coefficient	t	Sig.
Constant	3.055	0.360	.719
Time Spent in Parks	-8.611	-2.772*	.006
Mode of transport	11.717	6.001*	.000
Time taken to reach park ( min)	.722	2.841*	.005
Distance travelled to reach park(km.)	-1.294	-1.875	.061
R Square	.109		
Adjusted R Square	.102		
F	15.134*		.000

\*Significant at 1% level \*\* Significant at 5% level

Source: Computed by author based on primary data (2013-2014)

All these variables have significant effects on the travel cost. Adjusted R square is .10. The F statistics shows that the model is significant. Coefficient of determination shows that 10% of the total variation in determinants of travel cost is explained by above variables. This goes on to reveal that there are other factors at work and these variables explain a very small proportion of variation.

### Analysis of Variance: (ANOVA)

The reason for doing an ANOVA is to see if there is any difference between groups on some of the variables and attempts to find the way groups differ within versus what the difference is between them. It calculates, within each group, the total deviation of each individual's score from the group mean - within group variation. Next, it calculates the deviation of each group mean from the overall mean - between group variations. Finally, ANOVA produces the F statistic which is the ratio between group variation to the within group variation. If the between group variation is significantly greater than the within group variation, then it is likely that there is a statistically significant difference between the groups and finally whether F ratio is significant or not.

### Purposes of Park Visit and Travel Cost

Park visitors have different purposes. To perform the analysis, classification on different purposes needs to be tested to determine whether means of different category in the same variable are different or not using the analysis of variance (ANOVA). The result of calculation for the purpose of park visit and travelling cost and its ANOVA test are presented in Table 4.

**Table 4: Purposes of park visit and mean travel cost**

Purpose of Park Visit	N	Mean Cost of Travel in Rs.	Std. Deviation
Evening Walk	46	13.74	30.175
Exercise	28	22.14	30.964
Fresh Air	40	40.80	70.270
Meeting Friends	67	37.16	58.387
Morning walk	19	10.42	5.910
Play for children	18	59.44	93.715
Relaxation	273	25.86	47.909
No other use of free time	10	66.20	76.172
Total	501	28.67	52.396

**ANOVA results:**

Test	Sum of Squares	df	Mean Square	F	Sig.
Between Group	61787.001	7	8826.714	3.320	.002
Within Groups	1310905.997	493	2659.039		
Total	1372692.998	500			

Determinant: Travelling cost in Rs.

**Source: Computed by author based on primary data (2013-2014)**

The result in Table 4 indicates that different purpose of park visit affected by travel cost. Here the between group variation is greater than the within group variation. That means there is a statistically significant difference between the groups. The F value is also significant at 99% level.

**Mode of transport and travel cost**

Here the study used travel cost method to determine the relationship between variables of mode of transport and travel cost. The result in Table 5 indicates that mode of transport for park visit affected by travelling cost. Here also the between group variation is greater than the within group variation. That means there is a statistically significant difference between the groups. The F value is also significant at 99% level

**Table 5 Mode of transport and travel cost**

Mode of Transport	N	Mean Travel Cost in Rs.	Std. Deviation
Foot	98	0.00	0.000
Bus	184	13.26	3.630
Taxi	26	213.46	45.951
Metro Rail	133	18.29	4.300
Pvt.Car	30	112.67	49.178
Bike	25	22.44	8.520
Cycle	5	0.00	0.000
Total	501	28.67	52.396

**ANOVA Results:**

	Sum of Squares	df	Mean Square	F	Sig.
--	----------------	----	-------------	---	------

Between Groups	1243173.089	6	207195.515	790.261	000
Within Groups	129519.909	494	262.186		
Total	1372692.998	500			

Determinants: Travel cost in Rs

Source: Computed by author based on primary data (2013-2014)

### Travel distance and travel cost

Here the study used travel cost method to determine the relationship between variables of travel distance and travel cost.

The result in Table 6 indicates that distance travelled for park visit affected by travelling cost. Here also the between group variation is greater than the within group variation. That means there is a statistically significant difference between the groups. The F value is also significant at 99% level.

**Table 6 Travel distance in km and mean travel cost**

Distance Travel in km	N	Mean Cost of Travel in Rs.	Std. Deviation	Distance Travel in km	N	Mean Cost of Travel in Rs.	Std. Deviation
1	99	0.00	0.000	12	32	62.44	70.697
2	9	11.11	7.817	14	31	21.61	24.300
3	29	10.34	9.443	15	2	110.00	127.279
4	23	14.17	10.853	16	23	20.17	.834
5	21	36.90	49.892	18	5	20.00	0.000
6	84	26.10	46.857	20	16	24.00	0.000
7	6	45.00	75.934	22	5	24.00	0.000
8	63	50.70	69.983	24	13	24.00	0.000
9	3	18.00	0.000	Total	501	28.67	52.396

### ANOVA Results:

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	277093.510	17	16299.618	7.186	.000
Within Groups	1095599.488	483	2268.322		
Total	1372692.998	500			

Determinants: Travel cost in Rs

Source: Computed by author based on primary data (2013-2014)

## 10. CONCLUSION

The present study uses a revealed preference valuation method, namely, the Travel Cost Method, to represent citizens' preferences for urban greenery – eight well maintained urban parks were considered for the study. Variables included time spent in parks, mode of transport, time taken to reach parks and distance travelled to reach parks, cost incurred, etc. The result highlight that, all other factors remaining the same, park visitors who spend more on park visits would like to maximize utility values by staying longer. This utilitarian attitude increases aesthetics values indirectly. While walking and



cycling is opted for short distances, citizens do not hesitate to avail buses, taxi, metro rails, private cars or bikes and thereby spend much more. This reveals their preference for urban greens for relaxation and recreation. As expected, the analysis reveals that the greater attractiveness of parks induced higher travel cost together with higher benefit value in the form of facilities. This result is due to willingness of citizens to travel greater distances and pay more to utilise services and facilities of the parks concerned. The best instance is the choice of parks on the basis of security, adequate lighting and toilets especially in case of family visits that include children and elderly persons. On the basis of travel characteristics it is found that most of the park visitors who spend higher amount to visit park would compensate their recreation time by spending more activity time in parks, and thereby also seeks more recreation options there like children play areas, boating facilities etc.

The green cover around Kolkata has been facing some serious problems on account of lack of maintenance as encountered by the researchers in course of field survey. To restore the greeneries of the city, proper maintenance programs are to be strictly followed along with trained personnel deputed for proper execution and supervision. Furthermore entry gates and boundary walls to be constructed to avoid unauthorized encroachment and major repairing of internal roads should be done. Landscape gardening around lakes and open spaces should not only be restricted to parks and gardens, but should extend to roadside plantations and roundabouts. Although urban forestry of Kolkata is continually under threat due to improper land-use planning, building and road construction activity, political interference, excavation due to cables and supply network *etc.*, it should be an area of concern not only for the authorities, but for citizens as well. The efforts require intensive interaction with beneficiaries and good advertising of the efforts made, so that politicians and the public are aware and clear about the urban green areas as an important and appreciated resource. Furthermore legal and policy framework should be given priority for tree protection. Above all proper monitoring, design and management of urban forestry through public and private concern can integrate the urban development in the city of Kolkata. Therefore the most crucial requirement is the better understanding of forest based ecosystem of urban area and its diverse roles in sustaining the urban environment. The common people and planners i.e. every levels in the society realized the long-term benefit of urban forestry against conversion of land uses.

The TCM is significant because it can generate valuable economic information for govt. policy makers to place a suitable management plan for maintaining the quality of public parks services in connection with the preferences of park visitors. This can be also a useful method to assist public organizations in planning different uses of public lands and prioritize the budget based on benefit value compared to other kind of public amenities. But it is difficult to get more sophisticated result for effective policy with the help of only accessibility of park and purpose of park visit.

### ACKNOWLEDGEMENT

This paper is a part of my doctoral thesis submitted at University of Calcutta, India, under the supervision of Prof. Sumana Bandyopadhyay. I gratefully acknowledge her guidance and constant support along with valuable suggestions and comments.

### REFERENCES:

1. Englin, J. & Shonkwiler, J.S. (1995). Modeling recreation demand in the presence of unobservable travel costs: Toward a travel price model. *Journal of Environmental Economics and Management*, Vol.29, pp.368-377.
2. Jim,C.Y and Wendy,Y.C.(2009): Ecosystem services and valuation of urban forests in China cities, *Urban Forestry and Urban Greening*, Elsevier, Vol.26, pp.187-194.
3. Konijnendijk,C.C., Ricard,R.M., Kenney,A. and Randrup,T.B. (2006): Defining urban forestry-A comparative perspective of North America and Europe, *Urban Forestry and Urban Greening*, Elsevier, Vol.4,Issue.4, pp.93-103.
4. Liston-Heyes, C. & Heyes, A. (1999). Recreational benefits from the Dartmoor national park. *Journal of Environmental Management*, Vol.55, pp.69-80.

5. Whitehead, J.C., Haab, T.C. & Huang, J. (2000). Measuring recreation benefits of quality improvements with revealed and stated behavior data. *Resource and Energy Economics*, Vol.22, pp.339-354.
6. Fleming, C.M. & Cook, A. (2007). The Recreational value of lake McKenzie: An application of the travel cost method. 51st annual conference of the Australian agricultural and resource economics society, Queenstown, New Zealand.
7. Iamtrakul, P., Teknomo, K. & Hokao, K. (2004). Accessibility and attractiveness for public park utilization: A case study of Saga, Japan. *Proceeding of the International Symposium on Lowland Technology (ISLT 2004)*, Thailand, pp.319-324.
8. Iamtrakul, P., Teknomo, K. and Hokao, K. (2005): Public park valuation using travel cost method, in *proceedings of the Eastern Asia society for transportation studies*, Vol.5, pp.1249-1264.
9. Hanley, N. & Spash, C.L. (1994). *Cost-benefit analysis and the environment*. Edward Elgar publishing limited, UK.
10. Shammin, Md.R. (1999). Application of the travel cost method (TCM): A case study of environmental valuation of Dhaka zoological garden. In Joy E. Hecht, (ed.), *The Economic Value of the Environment: Cases from South Asia*. IUCN.
11. Woolley, H. (2003). *Urban open spaces*. Spon Press, London.
12. ENDEV. (2001): Reports on status of Calcutta's parks and gardens with an integrated management plan, Society for Environment and Development, Jodhpur Park, Kolkata, pp-7.



**Dr. Laxmi Narayan Saha**

**Assistant Professor, Department of Geography, Panihati Mahavidyalaya, Barasat Road, Sodepur, Kolkata.**