ECONOMIC EVALUATION OF ECOTOURISM: EVIDENCE FROM FORESTS RESORTS OF MURREE HILLS OF PAKISTAN

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ABSTRACT

Pakistan has only 4.8% area covered under forests. The major part of it lies in Northern areas of Pakistan that is reserved for protective services like watershed management, soil protection etc. and most of the Blue pine *(Pinus wallichiana)* and Chir pine (*Pinus roxberghii)* lies in Himalayan foot hills. Murree is the most popular hill station lying in foot hills of Himalaya. It is the most popular picnic resort. But other land uses are always threat to remove forests and make commercial areas and housing societies. To prevent land use conflict and to convince planners and policy makers it is important to evaluate non-tangible benefits (Ecotourism) of forests. Ecotourism is the travel to enjoy the world's amazing diversity of natural life and human culture without causing damage to either (Naeem, *et al.,* 2014). It is important to aware communities and public at large about conservation of natural resources by maintaining its forests and making ecotourism spots. In this study the recreational value of Ecotourism, was assessed by using the Individual Travel Cost Method. For this purpose the consumer surplus (in forest resorts) was calculated, that proved to be Rs.577 PKR (6.6 $) per visitor per visit and recreational value of an individual per visit is Rs.16496 PKR (183.29). Average 1.5 to 1.6 millions people visit Murree recreational resort per year so the total benefit of the recreational spot and total recreational value of the Blue Pine and Chir Pine forests is 24745 million rupees (275 million $) per annum. This high intangible monetary value reflects the immense importance of Murree forest resort which needs to be considered for proper protection and conservation of this natural resource.

INTRUDUCTION

Murree city is a very beautiful and green mountain like a heaven for visitors throughout country especially for the people living in nearby areas of Islamabad, Rawalpindi and other cities of Pakistan particularly from Punjab the province where the Murree is located. Murree is situated about 30 Km that is 19 miles North east alongside Islamabad to Kohala highway that is also called N75. Murree town is administratively sub-tehsil of sub-division of Rawalpindi District of Province Punjab.

Murree is a busy town and also a part of beautiful valleys and narrow strips or gullies covered around by high moist and thick forest Covered Mountains known as "Galyat" that is also linked on the Northern side to beautiful

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and bountiful natural areas of Hazara division of Province KP (Khyber Pakhtunkhwa). There are small recreational resorts in those Galyat, the most popular being Ayubia and Nathia Gali. Murree is the largest recreational place that is situated geographically on the southern slopes of Western Himalayan foot hills that are ascending to the North East to the Kashmir. The overall altitude of Murree is 7500 feet that is 2300 meters above sea level.

From the time when World War II ended, it was found that the forests are not only important for wood but they were considered important due to their recreational value also. Because in those days there was an outbreak in the demand of recreational opportunities of all types to spend leisure time. Particularly those forests were of more interest to visitors that were grown around water bodies like rivers, lakes, ponds and lagoons and have particularly very prevalent fascinations for nature lovers. (Alpizar and Francisco, 2002).

Forests provide many benefits and amenities including wood, carbon sequestration from atmosphere, biodiversity conservation and seepage of water at a slow rate, to recharged ground water. In spite of all these benefits forests are a big source for recreation and to spend leisure time. After having experience of multipurpose forestry in the developed countries it was found that the recreational facilities are the most pronounced to provide pleasure and well-being of local inhabitants as well as people coming from neighboring areas. This is a form of welfare provided to any society (Chopra *et al.*, 2005).

In unindustrialized countries, direct consumptive benefits can be taken into record by other sectors of the society and the departments, for example; timber, fodder, fuel wood etc., while the non-consumptive benefits like ecotourism and other recreational benefits are actually at a big stake on the forests. Forests provide a lot of non-tangible benefits including watershed utilities of thick vegetation for watershed, capturing carbon from the atmosphere and serving as a carbon basins, providing a microbial ecosystem, conservation of wild habitat and wild species and foremost the provision of employment. Because of the fact that all these services and their benefits cannot be counted in monitory terms so they are not recorded in the Governments accounting books and records. In Economic terms it can be explained as the market and policy failure. That is very pathetic in the sense that forest land and its goods and services appear less profitable as compared to other land uses (Holland and Dixey, 2003).

Such type of classification is needed to measure the level of management intensity. This is useful for the Forest Ranger and managers of recreational sites and administration of a specific unit of land to develop for recreational purposes. Such intensive management of the recreational areas involves the recreation of people at the highest level of satisfaction but without any negative impact on natural terrain.

The land under Forest cover in Murree is managed according to a legal classification system that categorizes land according to their tenure. Mostly the study area is classified into state owned Forests. That mainly includes Reserved Forests and Protected Forests. The total population of Murree is 162521, the urban population being 2532.Total house-holds in the area are 31768. (BISP survey 2011).

Nowadays, different parts of Murree hills are developed as Tourist resort for example Jhika Gali, Patriata, Bhurban, Kashmir point, Main city (The Mall). All of these places are developed keeping in view the altitude of the hills and different forest types that adds in the beauty of the area. Jhika Gali is also developed as a small town where boarding schools of international standard are there, small dispensary and market is also available. Jhika Gali is located Rawalpindi to Murree road while Bhurban is located on Murree to Kashmir road.

The altitude of Bhurban is about 6000 feet. It is beautiful due to naturally growing fruit trees of apple, apricot and plums along with other forest trees. The availability of one of the biggest hotels chain that is Pearl Continental hotel Bhurban adds a very big facility for international tourist and people coming from high gentry to attend international conferences, workshops and seminars.

On daily basis visitors also come to this place to enjoy serene environment and beautiful landscape. Patriata is also developed as a big tourist resort having many small food huts and small hotels to stay. One of the major attractions is the chairlift and cable car that passes through forest, having water falls, streams and passes over small mud houses of the villagers dwelling in these areas.

Another aspect related to pricing, demand and market of recreational site is that there is no fixed price or market to have access and all the tourists are offered at some zero prices or very little entry amount of entry ticket is to pay. This entry fee has no empirical relationship with attitude of the visitor that how he or she will give value (valuate) to that natural resource or ecosystem (Freeman and Myrick, 2003). There is no doubt in the importance of state owned big parks developed by any state. Such parks serve the society in many ways as do other environmental resources and public goods. They accomplish many biological and ecological services along with providing leisure and pleasure for individuals of the society.

These state owned parks (National parks) also earn foreign exchange for the addition in the GDP. Pakistan is already having very scarce resources of Forests. Only 5 percent of the total area is covered under a forest that is very low of the standard area that must of under forest for any country. The national parks of Pakistan are not only less in number but also not well developed. They are

also facing challenges of illegal encroachment by housing societies and local communities, housing of local people inside the park area , natural disasters like forest fire soil erosion land sliding etc. The mismanagement of these parks is more exaggerated due to these natural and social disaster and unavailability of enough funds.

There are two types of funds available for parks management. First; that is allocated in the budget by the federal or provincial government. Second; by the money collected from the nominal entry fee. While making the budget for national park it has to be justified as compared to the other budget allocations. For example it has to be justified against development and social welfare projects, which mostly comprise of sectors of Education, health, infra-structure and the most important being defense. In this scenario it becomes more important to improve the site quality and raise the entry fee. The main objective of current study is to get the monetary value of recreational site to help in getting a successful budget and a practical policy that can be further improved and the allocation of funds can be enhanced.

In most of the cases this is fact that the present value includes only the tangible benefits (timber and non-timber forest produce value). It gives an under-estimated picture of income generation. The economic value that is generated from non-tangible benefits will help in making policy decisions regarding land use planning as compared to the competitions with other land use systems. On the other hand, this will investigate the consumer time value that is consumer surplus and the consumer economic attitude that will change with the change in entry free. This will depict how efficient an ecotourism place is to satisfy the tourists. The focus of current research work is about forest role in enhancing Murree hills towards people's satisfaction of ecotourism by Chir pine forest and Blue pine forests mainly.

MATERIALS AND METHODS

The research studies outlined below were conducted at Murree Forests Recreational Resort, during 20012-2013 which was categorized in following recreational sites i.e., The Mall, Patriata and Bhurban. The specific aspect to be investigated in this study included; (i) if there exists the usual functional relationship between travel cost (p) and park visitation number (q); (ii) to determine the factors that affect the visitors' willingness to pay (WTP) for recreational services of the park; (iii) to estimate the consumer surplus and recreational value (benefits) of the Ecotourism of Murree hill forests. To find out whether improvements in the recreational benefits of the Murree forests hills would lead to a higher demand for park visitation; and (vi) to offer policy recommendations on how overall benefits of these areas can be improved.

Stratified random sampling technique was used to obtain the data from visitors. Approximately 15 questionnaires were distributed per day to every second individual/family at the entrance and/or while waiting their turn to use chair lift during two seasons, the peak season that is summer and during winter snow fall season. During the survey, 250 questionnaires were distributed and more than 200 usable (50 were either unfilled or incomplete) responses are expected to receive. An individual or a parent in a family was given a questionnaire each. In this study we used Travel Cost Method (TCM) to estimate the recreational benefits associated with Murree Hill forests and parks (Weiler and Ham, 2001).

The visitation number (No of visits per person to that location) was used as the dependent variable while travel cost, distance covered, total expenditure made, tie spent on the site, time round the trip, were taken as independent variable. Along with the most important factors that affect the valuation of any visiting place that is cost of travel, time spent on travel, substitute site and quality of site is also very important. The choice about the alternate site was also calculated through questionnaire.

In the start of this study, following factors were set as main variables to study. As age increases participation to outdoor activities decrease so the age is expected to be inversely related to the visitation number. Regarding gender, men are expected to do more visits to recreational areas than women. More educated people like more nature based outdoor activities as compared to the people with less formal education. In the same way it is proved that as the house hold income increases the rate of visitation to parks and picnic resorts also increases. Similarly, the site quality of visiting spot has positive correlation with the visitation number.

Travel Cost Analysis

The travel cost method of economic valuation, travel cost analysis, or Clawson Method is used that is a method of "Revealed preference" of economic valuation. This is used in cost benefit analysis to calculate the value of something that cannot be obtained through market prices (i.e. National Parks, Beaches, and Ecosystems).

Methodological Framework

The travel cost method of economic valuation is a revealed preference method because it looks at actual human behavior to try to define the value people place on something. According to Ecosystemvaluation.org "The basic premise of the travel cost method is that the time and travel cost expenses that people incur to visit a site represent the "price" of access to the site. Thus,

peoples' willingness to pay to visit the site can be estimated based on the number of trips that they make at different travel costs. This is analogous to estimating peoples' willingness to pay for a marketed good based on the quantity demanded at different prices."

The study followed Freeman's approach (1993) and also used by Himayatullah (2006); assumes that individual's utility depends upon the total time spent at site (measured by the number of visits), in addition to the qualitative and quantitative variables. Every individual wants to maximize its utility:

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

Subject to the twin constraints of monetary and time budgets:

$$M + pw * tw = X + c * r \dots \dots \dots \dots \dots \dots (2)$$

$$t^* = tw + (t_1 + t_2)r \dots \dots \dots \dots \dots \dots (3)$$

Where

      X = the quantity of numeraire whose price is one,
      r = number of visits to the Park,
      q = environmental quality at the site,
      M = exogenous income,
      pw = wage rate,
      c = monetary cost of a trip,
      t^* = total discretionary time,
      tw = hours worked,
      t_1 = round-trip travel time, and
      t_2 = time spent on site

Solving the maximizing yields the individual's demand function for recreational visits:

$$v_i = v(Pc, M, q)$$

The estimable form of individual's recreational visit demand function can be written as in econometric model:

$$v_i = \beta_0 + \sum_{i=1}^{n} X_i + \mu_i$$

Different functional forms of recreational visit demand function suggested were:

Linear Regression Model $v_i = \beta_0 + \sum_{i=1}^{n} \beta_i X_i$

Log Linear Regression Model $\ln v_i = \beta_0 + \sum\limits_{i=1}^{n} \beta_i \ln X_i$

Log Lin Regression Model $\ln v_i = \beta_0 + \sum\limits_{i=1}^{n} \beta_i X_i$

Lin Log Regression Model $\ln v_i = \beta_0 + \sum\limits_{i=1}^{n} \beta_i X_i$

Where

X_i is the vector of factors affecting the visitation number whereas X_i also represents the travel cost (TC_i) in Individual Travel Cost Method (ITCM) to estimate the demand curve for recreational visits in above functional forms suggested by Freeman (1993). The area under the demand curve and above market price is consumer surplus. Finally the log linear model was found to be best after estimation of all functional forms of the regression models. After estimating demand curve, consumer surplus and recreational value of the site were calculated for log-linear models by using formulas:

$$CS_i = \left[\frac{e^{\beta_0}}{\beta_1 + 1}\right] + TC^{\beta_1+1} \qquad \text{if} \qquad \beta_1 \text{ is not less than -1.}$$

$$\mathrm{Re}\,creational\ \ Value = CS\,/\,visitor + Average\ \ Total\ \ \ Expenditure$$

Where consumer surplus per visit was calculated by:

$$CS\,/\,visit = \frac{\sum\limits_{i=1}^{250} CS_i}{N}$$

$$Total\ \ Benifit = CS\,/\,visit * Total\ \ Visitors$$

The per visit consumer surplus was then multiplied by total number of visitors to calculate annual total benefit of Murree Hills:

RESULTS AND DISCUSSION

Different functional forms of the regression model were estimated, including linear regression model, log linear, linear log and double log regression model. Linear regression model also suffered from hetroscedasticity, multicolinearity, and non normality of error term. Then significance of the variables (by using t-test) and overall goodness of fit of the model (by using

adjusted R^2 and f-test) for model selection were used. The regression results of log-log regression models were found to be satisfactory. So the log-log model was used to estimate the determinants of the visitation of the Murree Hills. Table 1 summarizes the results obtained from log linear regression model. All of the variables have significant impact on visit number for recreational trips. The regression results indicate the highly significant inverse relationship of price of trip (individual travel cost) and visit number. Accordingly distance is also negatively affecting the number of visits implying that the people living at larger distance having very little number of trips in comparison to those living nearby. Contrary education, income, age and group size are positively related to number of visits to Murree Hills implying that more educated persons are more likely to go for outing. Larger groups having less per person travel cost so the groups of large sizes are more often visitors. The age variable having the positive coefficient, representing that older people are more frequent visitors than younger. Gender has positive coefficient indicative of male visitors is more than female visitors in Murree Hills for recreation activities. About 95 percent adjusted R square of the model is showing that 95 percent visits numbers are due to these factors and only 5 percent variations in visitation number is due to other factors that are not included in the model. Probability value of F-stat is showing that overall model is highly significant (Table 1). Descriptive analysis is also in line with these findings such as average age of visitors of Murree Hills is about 31 year with average income and education of 49 thousand rupees and 9 years respectively. This implies that comparatively young visitors are few, while the educated visitors having higher income were found to be high.

Table 1. Estimates of Log Linear Recreational Visits Model

Model	B	t-value	Significance
Constant	0.316	1.015	0.311
Travel Cost	-0.069	-2.800	0.006
Income	0.134	8.687	0.000
Expenses	0.147	4.380	0.000
Education	0.072	3.095	0.002
Distance	-0.264	-8.515	0.000
Group Size	0.142	4.211	0.000
Age	0.031	2.236	0.026
Gender	0.045	4.213	0.000
R	0.976		
R-Square	0.952		
Adjusted R	0.951		
Standard Error of the estimate	0.06342		
F-Stat	603.952		0.000

*All variables used in the model are in log form

Individual Travel Cost Method

The ITCM was applied to obtain the demand function of the recreational visit model for actual scenario and then for the new scenario after some improvements of Murree Hills. The results represents that travel cost (trip price) has significant negative coefficient indicating that with 1 percent increase in travel cost will decrease the visits by about 0.32 percent. R-square of the model is very high (84 %) showing the goodness of fit of the model. After some improvements in the park the people respond that they will increase number of trips, so the demand function with new scenario exhibit that 1 percent increase in travel cost will decrease the recreational trips by about 0.26 percent implying that percentage decrease in average demand for visits is 19 percent less after improvements with 1 percent increase in trip price. The two demand functions are given below. Demand curves were also drawn with the help of these two demand functions indicating that if there are some improvements are made in Murree Hills then people will be willing to increase their recreational visits with the same cost as is represented by the shift in demand curve with new scenario (Fig.1).

Demand function for recreational visit (Actual)

$$\ln V_i = 4.242 - 0.324 \ln TC_i \qquad R^2 = 0.8$$

Demand function for recreational visit (New Scenario)

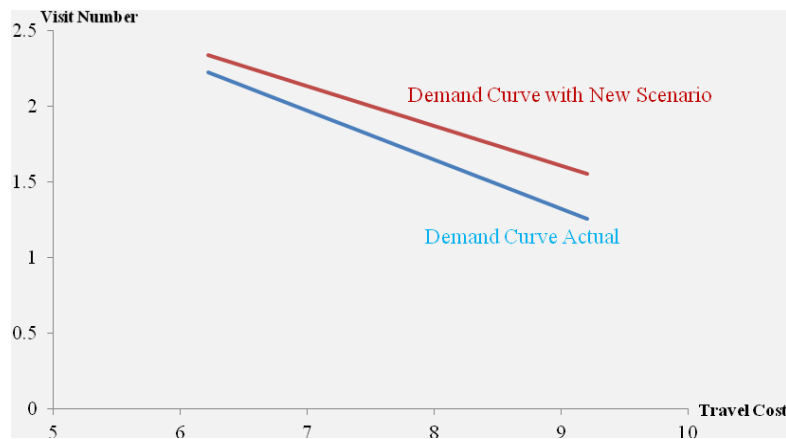$$\ln V_i = 3.969 - 0.262 \ln TC_i \qquad R^2 = 0.53$$

Fig. 1. Demand Curves from ITCM (Actual and New Scenarios)

Consumer surplus

The ITCM showed the estimated consumer surplus for Murree Hills about 577 rupees per visit. However the recreational value was 16496 rupees. It was found that after improvements the consumer surplus will increase by about 59 percent per visit however increase in recreational value will only be 2 percent per visit. Total benefit in terms of consumer surplus is 866 million rupees and total recreational value is about 24745 million rupees while after improvements the total consumer surplus will be 1377 million rupees and total recreational value will be about 25255 million rupees (Table 2) so it is advantageous to make improvements in Murree Hills.

Table 2. Consumer Surplus and Recreational Value of Murree Hills

	Consumer Surplus		Recreational Value	
	Actual	New	Actual	New
Per Visitor (Rs.) per visit	577.473	917.954	16496.45	16836.93
Total Benefit (Million Rs.)	866.21	1376.93	24744.67	25255.39

CONCLUSIONS

The high recreational value of ecotourism can provide revenue for the Development of local area and local community of Murree hills. The revenue gained from entry tickets, as well development of other side businesses of local people can be used in providing social sector facilities to the local people. The policy makers and development workers should consider the high intangible value of ecotourism in Murree Forest Resort. Ecotourism is an opportunity to raise the funds for the conservation of Forest and Natural Resources.

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