Original article

Estimating the recreational value for the sustainability of Hingol National Park in Pakistan

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ABSTRACT

Hingol National Park (HNP), in Baluchistan, Pakistan, is rich in biodiversity and has a variety of eco-services and marine eco-services. It has dune and mountain habitats that provide a significant environment for wildlife, including amphibians, dolphins, green marine turtles, and migratory birds, but the number of species is declining. HNP faces many problems such as unregulated tourism and lack of a budget to protect and conserve precious wildlife. The study used a negative binomial regression model and a zero-truncated regression model to estimate the visitors' travel demand and recreational value of the National Park by collecting a sample of 210 respondents. The study estimated a consumer surplus of USD 270 per person per visit and thus a total annual recreational value of the park at USD 35.11 million. Since the elasticity of demand is low, the study suggests the imposition of an entrance fee of USD 0.86 (PKR 100) that would generate an annual revenue of USD 113,000. It is recommended that both provisional and federal governments should take the necessary steps to maintain and promote heritage tourism in the region by reshaping the national parks for the protection of scarce natural resources and the protection of biodiversity.

KEY WORDS: recreational value; Travel Cost Method; negative binomial regression; consumer surplus, sustainability

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1. Introduction

National Parks and protected areas represent the most valuable method for the protection of biological diversity for present and future generations. National Parks provide a foundation for spiritual, scientific, educational, and recreational opportunities for their visitors. Thus National Parks consist of an area that is either developed, or naturally designated, for the conservation of biodiversity. However, the definition of a National Park varies from country to country but the main purpose of a National Park is to preserve nature in its true form (STEMBERK ET AL., 2018).

Nature based tourism is a growing industry in developing countries, which is very dependent on the characteristics of the nature based environment, particularly where it takes place in National Parks

(EAGLES, 2014). The ecotourism literature has found that the growing demand for nature-based tourism increases employment opportunities for indigenous households, but at the cost of resource degradation (MOGHAVVEMI ET AL., 2017). Generating income from recreational activities plays an important role in creating sustainable eco-tourism. Consequently, the sustainability of a recreational site by preserving its unique qualities is important to decision makers and managers.

There are many examples of National Parks and the revenue they generate from tourism and also their benefits to local communities. If revenues generated by the National Parks are used to hire local people as regular park staff, or as contractors, such as for infrastructure development, then parks can benefit local communities and generate their support for the conservation of biodiversity.

This shows that tourism is not just one benefit for National Parks, but it is also a source of revenue generation (SUHEL ET AL., 2019). Such an initiative for alternative land use shows the important role of tourism as the best choice for revenue generation associated with the conservation of biodiversity. The problem in estimating the recreational benefit of a nature based National Park, especially in developing countries, lies in the difficulty with accessibility and hence the frequency of visitors is low (EAGLES, 2014). Estimation of the recreational value of a National Park and its ecosystem services, by applying the standard methodology, is convenient for researchers in developed countries. MAYER & WOLTERING (2018) estimated the recreational value of 15 National Parks in Germany from surveys conducted by different authors between 2004 to 2015 as they had a similar methodology developed by JOB ET AL., (2005). Through meta-analysis they were able to overcome the multiple destination trip bias due to visitor monitoring.

Pakistan is blessed with ecotourism sites across the country, but tourists prefer to visit the northern region for its weather conditions and easy accessibility. Therefore, few studies are available that have used the travel cost method to estimate the ecotourism of protected and natural sites such as KHAN (2006) about Margalla Hill National Park. RAFIQ & SHAFIQUZZAH (2007) analysed the recreational demand in the Chitral Valley by estimating the willingness to pay for the conservation of biodiversity and tourism in the Kalam Valley. BAKHSH ET AL., (2019) estimated the recreational value of Kalar Kahar Lake in Punjab province, while DEHLAVI & ADIL (2011) estimated the recreational value of the wetland of Khinger Lake.

National Parks have no direct market for their use and option use values for tourists because scenic beauty, an ocean view, biodiversity, and pleasant weather at sites etc., are non-marketable goods, thus a non-market valuation method is used to estimate their economic or recreational value. Their recreational benefit, according to a tourist wish list, or preferences, is used to formulate their Natural Resource Management policy (RAFIQ & SHAFIQUZZAH, 2007). The tourism department in developing countries has targets to increase the number of visitors at recreational sites. Due to lack of a budget and financial support from the government, park management is least concerned with improvement of the environmental quality of the park (BAKHSH ET AL., 2019). The number of tourists at National Parks increases with an increase in budget, particularly for their maintenance and improvement, however, visits from tourists is

inversely proportional to park employees. In the case of Kalkalpen National Park (Austria) and Bayerischer Wald National Park (Germany), the number of tourists is proportional to employees as park management teams have specialized professionals and trained staff (STEMBERK ET AL., 2018). Estimation of recreational value is important for the conservation, or restoration, of a National Park through the perception of tourists. Effective management for the protection of the National Park requires a cost-benefit analysis (BORZYKOWSKI ET AL., 2017).

This study fills the information gap by estimating the recreational value of ecosystem and biodiversity conservation of Hingol National Park. The aims of the study were to evaluate the recreational heritage value of HNP using the travel cost method; to estimate the consumer surplus through demand function and; to estimate the optimal entry fee through price elasticity of demand. The results of the study can assist park management in generating revenue and employment opportunities for indigenous people. Revenue generation can be used to upgrade the park's infrastructure and recreational facilities, as tourists are willing to pay for nature.

The arrangement of the article is as follows; section 2 describes the study area, sampling and data collection, section 3 explains the methodology of the study followed by results and discussion in section 4. Conclusions and policy recommendations are given in section 5.

2. Literature review

There are two approaches for the conservation of biodiversity in National Parks: a preservation approach and a community-based conservation approach. The community-based conservation approach, which permits the people (especially those in the vicinity of the National Park) to benefit socially, or economically, from parks (MUHUMUZA & BALKWILL, 2013). The community-based conservation approach was proposed to address the problems resulting from the exclusion of human activities from a park. The community-based conservation approach allows the people living in the vicinity of the park to benefit from it and also involves initiatives aimed at conserving biodiversity in the park (DUDLEY ET AL., 2010).

Protected areas are formed to conserve the iconic landscape, or seascape, and to offer protection to endangered wildlife, and they also play a vital role in uplifting the economic life of communities settled near the National Parks (WATSON ET AL., 2014). Areas were originally protected to meet

narrow conservation objectives but are now expected to fulfil a wider variety of ecological, economic, and social functions (BOOTH ET AL., 2010). For example, areas in the United Kingdom (UK) originally protected because of species, or habitat conservation, are now not only evaluated on the basis of their ecological success, but on their ability to provide recreational services, educational opportunities, and other means of resource utilization (GASTON ET AL., 2006).

MAYER & WOLTERING, (2018), after accessing and valuing the recreational value of 15 National Parks in Germany, concluded that parks generate enormous recreational ecosystem and social values for society that cannot be measured in monetary flows. The estimated consumer surplus and recreational value of the cultural ecosystem services of National Parks cannot be compared with travel costs, as travel costs are more or less constant. The travel cost method can be used for the imposition of carbon tax and parking fees.

Although there is a contrast in the literature that national parks help the communities in the vicinity of the park, and that parks have negative impacts on the livelihood of the local communities. In the majority of cases, national parks affect the livelihood of the local people and the objectives of conservation of the landscape and its biodiversity are not fulfilled (WALPOLE & GOODWIN, 2001). This is because most people living around National Parks live below the poverty line and their livelihoods depend on the natural resources in these parks. Hence local people living near the parks are a threat to the forest and wildlife. The main concern of park authorities in developing countries has been a reduction of human interference in the parks. So, people have been displaced from their living places and denied access to the park resources such as hunting, collection of fuelwood and food products, which has, in turn, increased the economic insecurity for several social groups and caused extreme hatred towards official conservation measures (GHIMIRE, 1994; AGYEMAN ET AL., 2019).

EAGLES (2014) revealed that when revenues generated by National Parks are used to hire local people as regular park staff, or contractors, such communities can benefit from these parks and their support can be utilised for the conservation of their biodiversity. This shows that tourism is not the only benefit from National Parks, but they can be used as a source of revenue generation for local people contributing to national progress. Such an initiative for alternative land use proves to be the best choice for revenue generation associated with the conservation of biodiversity. Recreation brings important benefits to human

beings like experiencing nature in protected areas while revenue generated through recreation activities can be used for conservation objectives. Nevertheless, not all recreational activities are compatible with environmental management goals (STIGNER ET AL., 2016).

There are many examples of community-based conservation of National Parks. For instance, in Pakistan, communities were involved in the management of wildlife conservation and given incentives (the hunting fees) for the conservation of Markhor through the Trophy Hunting Program in the Khyber Pakhtoon Khwa province of Pakistan (ALI, 2008). There is quite a long history of the concept of protected areas and over the last decades, these have been developed on a large scale throughout the world. Pakistan is one of those countries which has given serious attention to the conservation of biodiversity in a sustainable manner (SOMUNCU ET AL., 2009).

3. Materials and methods

3.1. Study area

Hingol National Park (HNP) is the largest National Park in Pakistan and covers an area of 6.190 km² and is spread over three districts of Baluchistan province: Lasbela, Awaran, and Gawadar (Fig. 1). The name HNP has the same name as the River Hingol, which runs through the middle of the park and flows into the Arabian Sea. The park has dune and mountain habitats that provide a significant environment for wildlife, including amphibians, dolphins, green marine turtles, and migratory birds. The main structural features of HNP are rocks, clay mountain ranges, dunes, and beaches (Fig. 2). These diverse landscape features provide significant ecological environments for many species of flora and fauna.

Until now, 65 species of reptiles and amphibians, 204 species of birds, and 35 species of mammals have been recorded in the park. There are also natural architectural structures in the park known as "Princes of Hope" and "Sphinx" which are rock formations (Fig. 3). Over time, the number of migratory birds has declined including the *houbara bustard Chlamydotis undulata* which is on the IUCN Red List and is considered to be vulnerable in Pakistan. Mammals, like Alpine ibex are also found in the park which are also on the IUCN Red List. The number of these protected bird, mammal, and reptile species is declining due to climatic factors and to the lack of budget allocations to the Hingol National Park by the government (GHALIB ET AL., 2008).

Fig. 1. Hingol National Park – location and cover land

Fig. 2. Sapta Beach, Hingol National Park

Fig. 3. Princes of Hope, Hingol National Park

HNP has Ramsar sites in its vicinity such as Jiواني Coastal Wetland that is located in the west of the parkland. The area consists of five distinct ecosystem regions: Daran Taak, Jangan, Taak, Shaheed Taak, Deedlo Taak and Cahrlo. The site is an important nesting ground for marine turtles (*Olive ridely* or *Pacific ridley sea turtle*) that are on the IUCN Red List and categorized as endangered. *Ormara Turtle Beach* is a Ramsar site located in the southeast of HNP, a sandy beach spread over about an area of 10 km² (WAQAS ET AL., 2012).

3.2. Data collection and sample size

The study used cross-sectional data and the information was gathered through a structured questionnaire from those visitors who were there at the time of sampling. A simple random sampling procedure was used to collect the data. The

questionnaire was divided into three parts. The first part collected information about the socio-economic characteristics of the visitors. In the second part there were questions regarding the recreational behaviour of the visitors and the third part was about visitor's perceptions of the quality of HNP. The data collection sites for the study were: Kund Malir, Golden Beach, Sapat Beach, Nani Madir and Princes of Hope. The survey was conducted in the month of April 2018.

As there was no entrance fee at HNP at the time of sampling, the study used information regarding daily visitor data from the wildlife department of Baluchistan. The average weekly visitor data were utilized to determine sample size and in peak seasons, it was around 2500 visitors per week, so the study decided on 210 samples after a cleaning process from the field survey of 250 samples with a response rate of 84%.

3.3. Methodology: Travel Cost Method

There is an increasing tendency in the literature to determine the price non-market goods and services by using the goods market for estimating their economic values. Such as, the Hedonic Pricing Method (HPM), Contingent Valuation Method (CVM) and Travel Cost Method (TCM). The Travel Cost Method is more precise and yields more significant consequences for recreational sites than the Contingent Valuation Method and other non-market valuation methods. It is because the Travel Cost Method is based on the cost and expenses of the visit that a visitor bears during a visit while, other valuation methods are based on a hypothetical scenario (AMIRNEJAD & JAHANIFAR, 2018).

FREEMAN (1992) explained the recreation demand using the Travel Cost Method which was first presented by Harold Hotelling in 1947. In his study, he traced the relationship between the trips of visitors to a park and the travel distance to reach the park and concluded that a higher distance caused a decline in the number of trips to the recreational sites. This negative relationship was ultimately used to derive a demand curve for a recreational site that could be used to estimate the total benefits, or consumer surplus, for the visitors. CLAWSON & KNETSCH (1966) introduced the "Zonal Travel Cost Method" to describe the demand for a recreational site and the division of the zones is based on demography, or socio-economic characteristics, of the people. They also introduced the "Individual Travel Cost Method (ITCM)" and this method is based on an individual, or a household, that visits and enjoys seasonal benefits.

The technique of the Individual Travel Cost Method (ITCM) was used in this study for the economic valuation of HNP. The recreationists maximize their service program by visiting recreational sites and carrying out other activities

there. The demand function (number of visits) for any tourist site is a function of expenses (TC) that he/she incurs during the visit to the park, quality of the recreational site such as features, conditions, aesthetics and safety (Q), distance to the park (D) and the socio-economic characteristics of visitors (S). The demand function for the visitors can be written as:

$$Y = f(TC, Q, D, S) \quad 1$$

The detail of dependent and explanatory variables is given in Table 1.

As the numbers of visits to any recreation site are count data it is assumed that the visitors made at least one visit in the year. Since the data was collected from the visitors on site, and the number of visits is the outcome of the Poisson process, the study used a Poisson regression model in order to suppress the issue of sample selection biases. The study used a negative binomial regression model and a zero-truncated regression model (eq. 2) as used by GREENE (2008) to estimate the demand function (eq 3) for Hingol National Park.

Based on the data collected from the visitors through questionnaires, the total cost of a trip was calculated by obtaining the costs of four components such as accommodation, time, travel and other expenses. The study used the actual cost of fuel for those visitors who used their own car, van or motorbike. For those who used public transport, the cost of the return ticket was used for the calculation. Highway taxes, like toll fees, were also added to the cost. The study used the cost of fuel per family (total cost/family member) for the analysis. To estimate the value of time consumed on travelling to the site (round trip) and time spent on site, the study used one-third of the wage rate for calculating the opportunity cost of time as used by BIN ET AL.,(2005).

Table 1. Descriptions of variable

Variables	Nature	Expected sign
No of trips	The trips that each household made in the last 12 months	
Price of trip	This means the price that every commuter, or visitor, pays in total (this consists of monetary cost, time cost of traveling and the opportunity cost of time spent on site)	-
Income	Monthly income of the visitor	+
Age	Age of the visitor (in years).	+, -
Years of schooling	Visitors were asked how many years of schooling he/she attended.	+
Household size	Number of family members of the visitor.	+, -
Distance	Distance from commuters' home to the Park.	-
Gender	Gender of the recreationist (1 for Male and 0 for Female)	+, -
Quality of the park	Visitors were asked if he/she is satisfied with the current quality of the park such as features, conditions, aesthetics and safety, measured in 5 point Likert scale and converted into binary variable as 1 for good quality, otherwise zero	+

$$P_r(Y = y|Y > 0) = y \frac{\Gamma(y + \alpha^{-1})}{\Gamma(y + 1)\Gamma\alpha^{-1}} \alpha^y \lambda^{y-1} (1 + \alpha\lambda)^{-(y+\alpha^{-1})} \quad 2$$

$$Y_i = \alpha + \beta TC_i + \delta_i \sum S_i + \sigma \sum Q_i + \varphi \sum D_i + \varepsilon_i \quad 3$$

where;

Y = number of annual visits

TC = total travel cost

S = socio-economic characteristics of visitors and δ is the coefficient of income, age, education, household size and gender)

Q = quality of the HNP

D = distance from commuters' home to the park

ε = error term

Other factors that can affect the visit to a recreational site are the quality of the Park (like conditions of ecosystem services, wildlife and marine life), visitor's age, income, education, gender, family size, accessibility, and the cost of an alternative site. In this study the quality of the park is expected to be positively related to the numbers of trips. Distance from the recreation site is expected to be negatively related to the demand for the recreation site. Male, in terms of gender, are more likely to travel for outdoor recreation site than women as of culture and inheritance (HENA ET AL., 2021). Level of education is positively correlated with demand for the recreation sites. Age is expected to be inversely related to the demand for the outdoor recreation sites, as people get older, they demand less from the recreation site than the immature ones. The higher the visitor's income the higher will be the demand for visits to recreation sites. Cost of an alternative site has a positive effect on demand for a recreation site. These variables were adopted from KHAN (2006) and MANGAN ET AL., (2013).

4. Results

4.1. Descriptive statistics of visitors

The results show that around 87% of respondent that participated in the survey are male as they are available and represent the head of the family, whereas women due to culture were reluctant to answer questions to strangers. The median age of the respondent was 26 years and the range was from 18 to 42 years. The range of ages shows that adults and middle people visit the site more because they have the potential to enjoy long distance

travelling. The sample shows that families visit HNP in groups as the mean family size is 6, the range of the group size varies from 2 to 9 members. The majority of visitors to Hingol National Park were from urban areas (75%) and this shows that demand for recreation sites is higher for people living in metropolitan areas compared to villagers. The participation of people from other provinces was negligible because of a lack of hotel and camping facilities. The average distance travelled was 300 km and this means that on average 3 to 4 hours of travelling time were required. The distance and number of visits have an inverse relationship and it was found that the household that travelled a distance of 2000 metres made 8 visits in a year.

The travel cost ranged from PKR 1562 to PKR 25938 and this means that visitors from the local area spent less as the heaviest element of travel costs is fuel costs while on site expenses were the same for all visitors. People from different income groups visited the site, but the average income of the respondents demonstrated that mostly low income groups visit HNP.

The perception of the visitors about HNP shows that 85% of the respondents were satisfied with the natural quality of the park. The perceptions of visitors about the recreational value of HNP is due to the richness of its biodiversity, wildlife along with marine life. The visitors who were not satisfied with the quality of the park was 7% and this is ascribable to the lack of infrastructure such as hotels, safari train, chair lift and camping site (Table 2).

The availability of an alternative site has an inverse relationship with the number of visits to the site because tourists consider the quality of an alternative site and the travel costs at the time of decision. The study found that from the sample, 85% of respondents reported that they have no information about the cost of an alternative site and do not know any other National Park. Due to missing, or lack of information, about the cost of an alternative site, the study was unable to add this variable into estimating the recreational value of Hingol National Park.

Table 2. Characteristics of visitors

Variables	Mean	SD	Min	Max	%
Age, in years	26.46	4.962	18	42	
Gender Male [%]					87
Urban visitors [%]					75
Years of schooling	14.36	1.93	10	18	
Household size	5.75	1.66	2	9	
Monthly income in PKR (USD value in parenthesis)	41425 (367 \$)	16862 (149 \$)	15000 (133 \$)	120000 (1062 \$)	
Number of visits taken to HNP in last 12 months	1.35	1.22	1	8	
Distance from home to HNP	302	167.4	2	1500	
Total cost of the trip to HNP (USD value in parenthesis)	11066 (98 \$)	4500.2 (40 \$)	1562 (14 \$)	25938 (229\$)	
Visitors perceptions about the quality of HNP [%]					
Very Poor					2
Poor					7
Don't know					5
Fair					16
Good					40
Excellent					30

4.2. Estimation of travel costs

Table 3. Results of econometric models

Variables	Poisson regression	Zero- truncated Poisson
Total Travel Cost (per trip)	-0.0000224** (7.77e-06)	-0.0000313* (.0000147)
Income	0.00000751*** (1.32e-06)	0.00000983*** (2.65e-06)
Age	-0.0200** (0.0068824)	-0.0296* (0.014715)
Years of schooling	0.0456** (0.0157964)	0.0664* (0.028974)
Household size (HHS)	0.0589** (0.0220972)	0.0846* (0.0396027)
Gender	0.194* (0.0831777)	0.257 (0.1811058)
Distance to park	-0.000309 (0.0003355)	-0.000454 (0.0004304)
Quality of Park	0.020213*** (0.00745)	0.013595* (0.006289)
Constant	0.227 (0.3282697)	-0.164 (0.5994554)
Model summary statistics		
Log likelihood	-316.495	-284.634
Wald chi2	137.42	57.92
Pseudo R2	0.0541	0.0923
N	210	210
Welfare measure		
Consumer surplus/person/trip (USD)	414	270
Recreational value (million USD)	53.92	35.11
Revenue [entry fee (0.86)* number of visitors (130000)] = USD 113000		
Note: standard errors are in parenthesis * p<0.05, ** p<0.01, *** p<0.001 USD exchange rate to PKR= 115 (April 2018)		

The results of Poisson and Zero-truncated Poisson regression model are presented in Table 3. Poisson regression is used when there is a discrete probability distribution in the data. There were visitors who had visited the site more than once a year and this increased the bias in selecting the sample. Because visitors who had made more than one visit to the site, led to an over-dispersion of the number of visits, this made the model of Poisson regression more restrictive. The truncated Poisson model solves over-dispersal and its results, in terms of the coefficient, are more meaningful than the Poisson regression model. The study used both models and the sign of the explanatory variables are same. However, consumer surplus and recreation value in the truncated model are more accurate than Poisson regression model.

The signs of the regression coefficient in both models are as required and according to the theory of recreational demand. The coefficient of travel cost was significant at the 1% level of significance and was inversely linked to number of visits. The negative sign of the travel cost coefficient shows a negatively sloped demand curve for number of visits. The income of the respondents had a positive impact on visitors' behaviour and the probability of frequent visits was high with high income and vice versa. Age of the respondent was statistically significant, but had a negative relationship with the number of visits. The basis for the negative relationship of age with number of visits was because of high travelling time not being preferable for people of old age. Education of the visitors was positive and significant in both models, the higher the number of years of schooling, the higher was the number of visits and this was because educated people are inclined to visit heritage sites to gain knowledge.

Household size had a statistically positive and significant effect on the number of visits. An addition, or gain, of one household member in a household increased the number of visits because most of the visitors visited the HNP with their families and enjoyed recreational services such as swimming, watching wildlife. The dummy variable of gender was statistically significant and had a positive coefficient and this indicated that male visit recreational sites more than females and the same finding were obtained by [HENA ET AL., \(2021\)](#). The distance to HNP was negative in both models, but were not significant and this demonstrates that visitors, visit HNP due to its recreational services and do not consider the distance when making a visit. Visitors' perceptions about the quality of the park was positive, those visitors

who were satisfied with the recreational services of the park visited more frequently.

4.3. Estimation of consumer surplus

The demand curves from the Poisson and Zero-truncated Poisson regression models can be derived by putting the mean coefficient value of the travel cost in equation 3 and it is as follows;

$$\begin{array}{ll} Y = 0.227 - 0.0000224TC & 4 \\ Y = -0.164 - 0.0000313TC & 5 \end{array}$$

The consumer surplus is measured by using the coefficient value of the travel costs for each visitor. The consumer surplus for the Poisson regression model is USD 414 per person per visit and for the Zero-truncated Poisson model is USD 270 per person per visit. It is noted that the value of the consumer surplus is 35% less in the Zero-truncated regression model. The annual recreational value of HNP was estimated by multiplying the consumer surplus by the average number of annual visitors i.e. N=130,000. The recreational value of HNP is USD 53.92 million for the Poisson regression model and USD 35 million for the Zero-truncated regression model. The consumer surplus, as well as the recreational value of HNP, can be used to formulate policies for the improvement of the park.

As the model is in log form the coefficients of the travel cost in equation 4 and 5 can also be used as demand elasticity of HNP. The study found that in both models, elasticity of demand is very low at 0.0000224 and 0.0000313. A similar inelastic demand, or low price elasticity, were also found in the study of [BAKHSH ET AL., \(2019\)](#) for Kallar Kahar Lake (0.0004). The low price elasticity of demand can be used by the local authorities to impose an entrance fee as suggested by [GÜRLÜK & REHBER \(2008\)](#) who suggested imposing an entrance fee for Lake Manyas in Turkey. The study of [KHAN \(2006\)](#) also found a low elasticity of demand (0.04) and suggested PKR 20 for the protection of Margalla Hill National Park, Pakistan.

The study found that during the field survey visitors were asked about the imposition of entry fee with certain improvements, whether they would be willing to pay an entry fee, or not, and if yes then how much?. Different bid prices such as PKR 10, PKR 50, PKR 100, PKR 200, PKR 500 and PKR 1000 were used to get a response about their willingness to pay for an entrance fee. The visitors, on average, were willing to pay USD 0.86 (PKR 100) as the entrance fee. The imposition of an entry fee up to USD 0.86 (PKR 100) will not affect the consumer surplus, as it is only 0.032% of the consumer surplus ($270 \times 0.0032 = 0.86$) and this can

generate a revenue for the management of HNP of USD 113,000 per annum.

5. Discussion

The results show that the total cost of the trip (including the financial cost and the opportunity cost of time) has a negative relationship with the number of visits to the park. The negative relationship confirms the existence of the law of demand as the cost of the trip has an inverse relationship with the number of visits. RANDALL (1994) argued that cost increases with distance while BHARALI & MAZUMDER (2012) confirm the existence of an inverse relationship between number of visits and cost for “Kaziranga National Park”.

Results for travel costs show that the income of the visitor has a positive impact on the number of visits to the recreation site. The higher the income the higher will be the projected number of visits to the recreation sites. Visitors maximize their utilities subject to time and income constraints, people with high incomes spend more time at the recreation sites so they have higher utility. A household income should take on the travel expenses of the trip as this study also discovered that either income can be increased, or the price of the recreational trip is decreased proportionately. People with higher incomes visit the recreation sites frequently as they can afford the expense and can spend more time enjoying such sites. VICENTE & DE FRUTOS (2011) also found a positive relationship between income and recreation site especially for cultural and artistic goods using the travel cost method.

The variable of age indicates that with an increase in age, the number of visits to recreation sites decreases, because people visit the recreation site less frequently as they spend more time on building their careers and professional development after their middle age. Professionals, like businessmen, visit recreation sites more often than non-professionals irrespective of age. Older people prefer to remain in town and spend time with their friends and relatives than to travel far to National Parks for recreational purposes as their age factor does not allow them to do so. WITT (2019) found that 51% of tourists are aged between 30–40 years while few visitors are above the age of 60. There is also literature to support the fact that as distance increases, people visit in groups less due to differences in age especially with older members (PIRIKIYA ET AL., 2016). ZYDROŃ ET AL., (2021) observed age differences in terms of willingness to pay for the protection of the National Park and found that people of the age group 26–40 were least willing

to pay while older people (above age 60) were more willing to bear the financial cost of protection.

The variable ‘Years of Schooling’ has a positive sign with the number of visitors to the park. It demonstrates that people with higher levels of education visit recreation sites more frequently than less educated people. Education has a positive effect on the number of days of stay as stated by FLEMING & COOK (2008) but LOOMIS ET AL. (2000) argue that education does not need to have a positive relationship with the number of visits, it can be negative as well depending on the feasibility and socioeconomic demography of the visitors. Other studies conclude that the level of education probably plays an important role in the mobility of people as tourists. The variable ‘Household Size’ has a positive relationship with the number of visits to the recreation sites. MANGAN ET AL., (2013) resolved that a larger family size can cause a spill-over effect on the visitor’s income, because as family size increases, the visitor will have a reduced budget available for recreational activities. Other studies like PIRIKIYA ET AL., (2016) concluded that household size may have a positive relationship with recreational activities because when the household grows, there are more opportunities to visit the recreation sites, like parks, due to children in the household. Moreover, after the same tiring routine of weeks and months, families with more family members feel the need to have a get together and spend some quality time with each other, so they prefer to visit a relaxing site. The study of BAKHSH ET AL., (2019) about Kallar Kahar Lake, in Pakistan, found that there is a variation in education age and the mean age group was 12 years of schooling. However, in the context of Pakistan, where the literacy rate is very low, anyone above matriculation (10 years of schooling) is considered to be an educated person.

Quality of the recreation site has a positive effect on the number of visits, the better the quality of the park, the higher the number of visits to the park. This is because visitors demand a more respectable spot with a gracious ambience to spend their time. In addition to this, visitors have more recreational activities to do when an environment of a site is satisfactory, as it eventually influences the attitude of the visitors and their choice of destination as well (IAMTRAKUL ET AL., 2005). The impact of a park’s quality has a positive effect on the rate of visits to a recreation site which can generate more revenue for recreation sites (KHAN, 2006). Better quality and environment can increase the willingness to pay for further improvements and have a greater inclination towards paying the entry fee. GONZÁLEZ ET AL., (2019) stated that the number of visitors and their

mobility may affect the quality of environment through CO₂ emissions and high volume of vehicles. The design and implementation of transport management policies can conserve the quality of the park through a willingness to pay for travel choices.

One other factor is 'gender' which has a positive coefficient with the number of visits to the park. This reveals that males, as the household head, visit recreation sites more than females and are not reluctant to travel most of the time. Females prefer to visit a recreation site close to their home and are reluctant to travel a long distance. There is significant bias between the male visitors compared to the females (BOOTH ET AL., 2010). Another study by CZAJKOWSKI ET AL., (2015) found that the ratio of visits by males for outdoor recreation trips was more than females and they were willing to pay more. The role of gender varies in different regions and cultures, for example in Pakistan, a female has many constraints to visit recreation sites alone. Concerns about security and personal safety are common reasons for women being underrepresented among outdoor recreationists in both urban and wilderness contexts.

KRENICHYN (2006), RANDALL (1994) and SHORES ET AL., (2007) concluded that site visitation and recreation participation rates decrease with increase in distance. The aforesaid researchers assume that travelling is costly and the cost increases with the distance which also increases the access cost of the site, i.e., to reach the destination while managing expenses and to meet their needs there. It appears that the rate of visits to the recreation site is reduced as the cost of visiting increases as stated by OVASKAINEN ET AL., (2012).

The study has some limitations due to sample constraints and statistical methods. The sample size is small and data was collected in the peak season, tourists that visit in other seasons were not included in the study. The alternative sites were not included in the model as tourists had no information about the costs of a substitute. This may overestimate the consumer surplus and recreational value.

6. Conclusions

This study used the Individual Travel Cost Method for the valuation of the largest National Park in Pakistan, which is spread across three districts of the province of Baluchistan, i.e., Awaran, Lasbela and Gawadar, covering an area of 6.190 km². Hingol National Park is not only one of the most important and beautiful places for nature based tourism, but it also has great scenic views, wetlands,

historical and religious places, a variety of eco-system services, and many species of flora and fauna.

The survey discovered that visitors from various areas came for recreational uses. The visitors who visited the park were mostly middle-income people, almost all respondents were educated, had an awareness about the environment and recreational services, and liked to visit nature-based tourist places on an annual basis. The estimated annual recreational value of HNP is USD 53.92 million, while revenue of USD 113000 annually can be generated by imposing an entry fee of USD 0.86 per visitor. Approximately 2500 visitors per week in the peak season visit the park, whereas, the park receives thousands of people from the Hindu community who come there for the "Tirak Yathra" religious festival of the Hindus, in April every year.

Given the high recreational value of HNP and consumer surplus, the provincial and federal governments can generate a budget to improve the facilities. The tourism department of Baluchistan should focus on quality improvements of HNP to promote tourism in Baluchistan. People living within the park are mostly dependent on marine fishing. If tourism is promoted in these areas, it will generate employment for the native people in the form of tourist guiding, hoteling and food stalls etc. The budget allocated by the government for maintaining National Parks and other natural resources is limited compared with other development programs. The best alternative for revenue generation activities is the imposition of an entry fee to recreation sites. An entrance fee of USD 0.86 could be used for the protection of wildlife and the conservation of biodiversity of HNP.

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