

Estimation of Economic Value of an Archaeological Site: A Case Study of Takht-i Bahi

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Abstract: Non-market valuations have taken a central role in valuing sites for which markets generally do not exist. It is important to place a value on a site – recreational or archaeological – for making policies regarding preservation and others relating to it. This study uses a travel cost method to value the Takht-i Bahi archaeological site, located in the province of Khyber-Pakhtunkhwa, Pakistan. Primary data were collected from the visitors through a well-structured questionnaire. Various econometric specifications were estimated such as Ordinary Least Square (OLS), poisson and negative binomial to estimate the impact of various factors on the visitation rate. The consumer surplus per person per visit was calculated to be Rs. 2132 approximately equal to 20 US dollars and the total value of the site was found to be Rs. 7,808,102 approximately equal to 74,719 US dollars. The study provides both theoretical and an empirical methods to place a value on a public site, which would help evaluate. Placing a value on a site of public interest helps to evaluate the expected revenue generated from them and provide guidance about spending on improvements and maintenance of the site. This type of study can be replicated in other areas of cultural and educational importance as policies relating to such sites increasingly depend on their accurate valuations.

Keywords: Tourism Economics, Non-Market Valuations, Travel Cost Method, Negative Binomial Model, Consumer Surplus.

Introduction

Government institutions and private organizations have been investing much efforts, time and money for preserving and sustaining the cultural and heritage sites in Pakistan. These sites and institutes provide several opportunities to the users; such as recreational activities, spending time with friends and family etc. On the other hand, these institutions also benefit the local businesses from the spending of tourists. The Khyber Pakhtunkhwa province of Pakistan is abundant in different natural resources. The province has thick forests, vast minerals and gemstones deposits, plenty of water and mountains. The Buddhist remains of Mardan and other places contribute to the pristine beauty of the province. Mardan, the second largest city of the province forms promising part of ancient Gandhara as a good number of Buddhist sites are located in and around the Takht-i Bahi, Sahri Bahlol, Jamalgarhi, Aziz Dheri, Shahbazgarhi etc. However, the Buddhist remains at Takht-i Bahi are internationally recognized as well as it presents stunning beauty because it has been well-preserved in its nature. In 2002, it was estimated that around 640 international tourists visited the site while after the burst of war against terror and the lack of facilities at the site decreased this number. In 2003, around 320 international visitors visited Takht-i Bahi site. Several benefits associated with

the site motivated the current study to estimate its economic benefits.

There may be many benefits associated with a public good ranging from visible to intrinsic ones. Some of them are: (i) any place may have a historical value because of an associated historical figure or event, activity or phase relating to that place. The archaeological site at Takht-i Bahi signifies a vital phase of human history from the second century to the seventh century of the Buddhist community. (ii) The Takht-i Bahi site has identity value as it is the symbol of historical and cultural vision of past. It is considered an icon of the nation recognized by the international community. (iii) The beauty of Buddhist sites in district Mardan attract the tourists for hiking as well, and therefore provide visual value. (iv) The site is also known to provide an excellent educational value as many students and researchers visit the place from within and outside the country. The Buddhist remains at Takht-i Bahi are about 19 centuries old, providing information about the Buddhist civilization of the region. The nature of sculpture and other artefacts found at the site are valuable in terms of their archaeological identity. The students and the researchers can benefit from the site by gaining knowledge about how people lived in that era. (v) The Takht-i Bahi site could become an economic resource for local population

by the frequent visitation of international tourists. It would also change the infrastructure in the vicinity. The site has the potential of income generation for local businessmen by renting the given facilities to the tourists. (vi) The subject site is the symbolic property of the international community. The relation of the site to the community in its vicinity creates a sense of pride and hence intensifies the social cohesion among the international and local communities.

Furthermore, the study is also motivated by the negligence of the site since the start of the war against terror. Previously, the site was well-maintained but today it has been neglected for several years in terms of maintenance and infrastructure. Near the site, different facilities like hotels, tuck shops, proper roads for transportation etc. are required to be provided by the local and provincial government.

Generally, Cost Benefit Analysis (CBA) has been used to evaluate policies and projects. The basic requirement for conducting CBA is to account for all the costs and benefits associated with any action, usually expressed in monetary terms. However, assessing the benefits of cultural institutions is difficult to quantify in monetary terms especially when society uses cultural institutions for recreational purposes. Conventional economic analysis based on supply and demand yields a measure of total surplus to value benefits to society, where the prices are known and goods are private. However, cultural institutions are often considered public goods for which there is no actual market price. Therefore, it is difficult to quantify the social benefits associated with such goods and services. Fortunately, it is possible to estimate the economic benefits of such institutions by using non-market valuation methods. Non-market valuation methods have some key benefits. First, these methods allow policymakers to formulate policies towards public goods and services in the light of benefits for society. Second, these methods provide indirect economic values in monetary terms, which provide important information for policymakers to allocate funds efficiently. Third, values of public goods are interlinked to social wellbeing (Pearce, 2002).

Cultural and heritage sites possess the characteristics of public goods; non-rival and non-excludable, because it is either provided free or at

a minimal price, therefore, the traditional market methodology cannot be applied for estimating the social surplus rather economists used the non-market evolution methods to estimate the economic values of the cultural and heritage sites. There exist two types of methods for estimating the economic values of public goods, stated preferences and revealed preferences. Stated preferences technique commonly known as Contingent Valuation (CV) method where we estimate the value of the public good that the individual place on it, through direct queries. Travel Cost Method (TCM) incorporates the revealed preferences technique, which estimates the economic value of the public good from individual's travel expenditures to reach and utilize the public good (Ready and Navrud, 2002:15). Huszar and Seckler (1974) used Travel Cost Method (TCM) for estimating the economic value of a museum by utilizing the data of attendance after imposing an entry fee. Forrest, Grime and woods (2000) applied revealed preferences method for estimating the consumer surplus of an urban theatre. Similarly, Martin (1994) used Zonal Travel Cost method for estimating the economic value of an urban museum.

This study aims to estimate the economic value of Takht-i Bahi site using the individual Travel Cost Method. We used the data collected from visitors for a day-long trip to the site and estimated the total economic value of the site. Therefore, the study not only contributes to the cultural economics literature but also addresses the local and provincial governments on the total user's value of the historical site in understandable measures.

Literature Review

Resource allocation among different alternatives is based on market prices and standard measures of the price of goods and services. Mitchel and Carsons (1989) stated that non-market goods fail to demonstrate the prices of goods in question. Generally, the value is referred to the amount that an individual is willing to pay to obtain goods and services in the market. The economic concepts of supply and demand are utilized to compute willingness to accept and willingness to pay. Willig (1995:31-37) argued that economic value is the measure of the maximum amount that an individual is willing to relinquish to obtain other goods and

services. The authors add further that economic valuation of goods and services are instituted by utilizing the welfare-economics concepts; consumer surplus derived from the consumption of natural resources and environmental goods and services.

There have been several empirical studies carried out using TCM for monetizing non-market resources including parks and heritage sites for example. Navrud and Mungatana (1994) estimated the recreational value of Lake Nakuru National Park (LNNP) in Nigeria using contingent valuation methodology (CVM) and TCM to estimate the monetary value of wildlife viewing for resident and non-resident visitors. The results showed a negative relationship between visits to the park and travel cost, while for all other variables they found a positive relationship. The authors concluded the total monetary value ranged from \$7.5 million to \$15 million USD. Smith (1993) carried out an empirical TCM study of water quality benefits in the US by investigating twenty-one water-based sites. Ordinary Least Square (OLS) was used, which revealed that income for nine sites was positive while for the remaining 12 sites it was negative. Travel cost showed a negative association with visitation rate for all sites. A monetary value of \$5.87 – 54.20 USD/trip was calculated based on Marshallian consumer surplus.

There have been many studies that used TCM to estimate the values of public goods including Garrod and Wills (1992) for public forests in the UK; Iamtrakul, Teknomo and Hokao (2004) national parks in Japan; Himayatullah (2004) to estimate the value of Margalla Hills National Park, Pakistan, Chase et al (1998), Rafiq and Bangash (2007), Bharali and Mazumder (2012), and Sohngen (2000).

With respect to cultural heritage sites, in particular, Raharjo and Gravitaniani (2012) used TCM to estimate the non-market value of the Sangiran Museum in Indonesia. The study utilized data collected from 180 respondents by using the travel cost method and estimated the total economic value of the museum to be \$80,890 USD at an entry fee equal to zero. A proposed entry fee equal to \$0.03 USD was estimated to reduce the total value to \$59,198 USD.

Burton, Louviere, and Young (2009) conducted

a survey for estimating the total economic value of two museums in Australia. They used an online survey and collected data from 82 respondents for the national museum and 89 respondents for the state museum. They developed discreet choice scenarios and asked respondents which scenario would result in more visits. They used a multinomial logit model on observed data and argue that different choice sets increased the number of visits to both museums.

Poor and Smith (2004) conducted the economic study of St. Mary's City, Maryland. They collected data from visitors to St. Mary's City for three years and used different functional forms to estimate visitors' demand. The study employed the zonal travel cost methodology. Average consumer surplus ranged from \$8.00 to \$19.26 USD based on different functional forms, while the aggregate economic value of the city ranged from \$75,492 to \$176,550 USD. Additional examples of non-market valuation of cultural sites include those done by Pakdeeburee *et al.* (2011) for the Ayutthaya Historical City in Thailand; Driml (2002) for the Wet Tropics World Heritage Area in Queensland, Australia; Fonseca and Rebelo (2010) for the Alto Douro world heritage site in Portugal; and Pérez-Álvarez *et al.* (2016) for estimating the economic value of the El Soplao Cave in Spain.

Site Description

Buddhism has been one of the major religions of the contemporary and near contemporary world. There are 400 million followers of the Buddhist *dharma* spread all over the world. Majority of the followers are concentrated in China, Japan, Thailand, Korea, Taiwan, Vietnam, Myanmar, and Cambodia. In the 3rd century BC under the patronage of Ashoka under whose patronage Buddhism was taken to other countries of Asia. Stupas and monasteries were built all over Asia after the conversion of Ashoka to Buddhism (UNESCO, 2010).

The Khyber Pakhtunkhwa province has been bestowed with natural and cultural resources characterizing the Buddhist civilization of ancient Gandhara. The major Buddhist sites are situated in the districts of Mardan, Swat, and Buner. The site of Takht-i Bahi (Fig. 1) is one of the most magnificent remains of the Buddhist civilization in Pakistan. It is situated about two kilometres off the



Fig. 1. Archaeological site of Takht-i Bahi (Photograph courtesy of Muhammad Ashfaq, Curator, F.A. Durrani Museum, Abdul Wali Khan University, Garden Campus, Mardan)

Swat-Mardan main highway. Takht-i Bahi monastic complex lies on the northern slopes of the isolated mountain range. The remains are one of the oldest relics of Buddhist culture from first century BC to 7th century CE. These remains comprise four main areas: Stupa Court, Monastic Chambers, Temple Complex of Stupas and Tantric Monastic complex. The complex of Buddhist stands on 120-500 feet above surrounding ground and it is built on various hilltops. The main complex is about 200 feet above the surrounding area.

Methods and Data

Travel Cost Method (TCM) is a revealed preference method, which uses the travel expenses that visitors incur on visiting a site. These travel expenses basically work like the price that they pay by visiting the site. Therefore, the researcher can derive a demand function and by integrating it provides a value of the site. Hedonic method is another revealed preference method that is used to estimate the value of a site from the changes in properties values close to the site under study. On the other hand, Contingent Valuation (CV) is typically used to elicit the responses from the users about their willingness to pay or willingness to

accept to visit a site or bringing an improvement in the quality of the site. Contingent Valuation can suffer from biases due to the types of questions that the respondent is asked and since in the TCM we observe the travel data, therefore, TCM is used compared to the CV in this study. Furthermore, there are several reasons for choosing the individual Travel Cost Method (ITCM) instead of Zonal Travel Cost Method (ZTCM). First, ZTCM allows us to divide the surrounding area of the site into different zones on the distances from the recreational site, this method has been applied by several authors (Inhyuck, 2007; Benneer, 2005; Bateman et al., 1999) for estimating the recreational demand. However, in the present study, we use TCM because of the limitations of ZTCM in terms of loss of information in aggregation process and serious difficulties in the effects of average travel cost on individual demand. Secondly, Travel Cost Method is suitable for the unique recreational site (in the present study it is the site of Takht-i Bahi).

This study follows Hotelling's (1947) approach, which states that the individual's utility depends on the total time spent on the recreational site,¹ the quantity of numeraire and the quality of the site. The individual maximizes utility given as follows;

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

Where U represents the level of utility derived from the respective prospects; X, r, and q represent the quantity of numeraire good, which takes a value equal to 1, number of visits to the site and quality of the site respectively. The utility is subject to the monetary budget constraint as well as to the time constraint, given as follows,

$$I+W T_w=X+C_r------(2)$$

Where I denote exogenous income, W represents wage rate and T_w represents work time and C represents monetary value incurred by the individual to reach the site. Furthermore, we can specify the time available to the individuals as follows:

$$T^t= T_w+ (T_1+ T_2)r------(3)$$

In equation 3, T^t represents total discretionary time; T_1 and T_2 represent time taken to reach the site and time spent on the site respectively.

It is assumed that the number of visits and quality of the site are weak components of the utility function; the number of visits to the site may be dependent on the quality of the site and hence, it is an increasing function. The time constraint identifies both the travel time and time spent on the site, the latter of which precludes the visitor from alternative activities. It is also assumed that the individual is free to choose to work or spent time on the site. Thus, the opportunity cost of other activities is the wage rate per hour. Finally, it is assumed; the monetary value of the trip involves two components; the entry fee denoted by f and the travel cost incurred by the visitor to visit the site (C_d) where C_d is the cost of traveling per mile and d represents the distance travelled.

By putting equation (3) in eq. (2), we get

$$I+ W T^t= X + P_r r------(4)$$

Where, P_r represents the total price of the trip, which is given as:

$$P_r= C + W(T_1+ T_2)------(5)$$

$$P_r= f+ C_d d + W(T_1+T_2)------(6)$$

From equation (6), it is clear that the total cost consists of four components: the entry fee, the cost of traveling to the site, the value of travel and the time spent on the site. On the assumption made

earlier, the individual is free to choose the hours worked at a given wage rate, hence, both the times (T_1 and T_2) are valued at the wage rate. Maximizing equation (1) subject to the twin constraint equation (4) yields the following individual demand function:

$$r = r(P_r, I, q)------(7)$$

If all individuals spent the same amount of time at the Takht-i Bahi site and have the same wage per hour, the demand for all individuals would be the same. Holding all assumptions, the data on variation rates in visitations, variations in entry fee (if any) and variations in travel cost could be used to calculate the parameter on P_r in the travel cost variation function.

Data Collection and variable Description

The data used in the present study were collected through a well-structured questionnaire from the visitors of the Takht-i Bahi site. It was a difficult task to collect the information from all population. Therefore, we collected the data from a selected sample size. We collected the data on the main entrance of the site. The data were collected mainly on weekends in June-July of 2015. There were visitors who filled the questionnaire themselves and the rest of visitors were assisted in filling up the questionnaire either in the local language (Pashto) or national language (Urdu). The main difficulties in data collection process were to collect information from female respondents, even though the numbers of female visitors were almost equal to men but either they refused to provide the information or hesitated to provide it. Secondly, the people who were uneducated they also refused to provide information. The current study is based on 692 respondents. The following Table 1 shows the variables used in the present study along with a description of the hypotheses regarding the direction of the relationship.

Descriptive Statistics

This section of the paper presents the general descriptive statistics on all the variables included in this study. Table 2 presents these statistics as follows:

The maximum number of visits made to Takht-i Bahi Buddhist ruins by an individual was 20 while the average visitation was 5.3 times. Travel

Table 1: Variable Description and Hypotheses

Variable	Description of Variables	Hypothesis
Number of Visits (NV)	A number of visits has been taken as the visits made to the site from June-July 2014 to June-July 2015. The number of visits to the Takht-i Bahi Buddhist site has been taken as dependent variable.	
Total Travel Cost (TC)	The variable has been estimated as the aggregate of expenditures on travel reaching the site and expenditures on food, drinks etc. on the site or even on the way to the site.	If total travel cost increases it would decrease the number of visits to the Takht-i Bahi site.
Monthly Income (MI)	In Pakistan, normally the wages of the workers are paid on monthly basis. Therefore, we take monthly income (MI) as a proxy for wages. Secondly, the monthly income has been measured in Pakistani Rupee (PKR)	If the income of the visitor increases it will increase the rate of visitation to the Takht-i-Bahi site.
Distance Travelled (DT)	Distance Travelled is the variables measuring the distance from the originating place of a visitor to the site. This variable has been measured in Kilometres.	The increased distance of travel will increase the expenditure which would result in a decrease in the visitation rate.
Age	Age has been taken as the current age of the response in whole years. It is a demographic variable and assumed that it would significantly determine the recreational demand.	The increase in age will decrease the number of visits to Takht-i Bahi site.
Education (EDU)	The variable has been measured in completed years of schooling.	The more years of education of the visitor, the more frequently he/she will visit the Takht-i Bahi site.
Time Spent (TS)	Time spent has been taken in hours spent on the Takht-i Bahi site. The time spent on site is related to the quality of the site. Hence, it is taken as a proxy for measuring the quality of the site.	Time spent on the Takht-i Bahi Buddhist will increase the number of visit to the site.

Table 2: Descriptive Statistics

Variables	Mean	Variance	Stand. Dev.	Min.	Max.
Number of Visits (NV)	5.3	13	3.6	1	20
Travel Cost (TC)	325.737	23331.87	152.75	70	1110
Monthly Income (MI)	12355	7×10^7	8213.6	0	50000
Distance Travelled (DT)	13.3	56.8	7.53	3	160
AGE	25	13	3.6	16	38
Education (EDU)	13.9	3.41	1.85	5	17
Time Spend (TS)	2.79	1.02	1.01	1	5

cost included the cost incurred for traveling as well as the expenditure on site. The maximum amount spent on traveling was 1110 PKR while on average the visitors spent 325.737 PKR to reach the site. The maximum monthly income was 50,000 PKR while on average the respondents had Rs. 12,355 PKR monthly income. Majority of the respondents lived nearby to the site except a few; the maximum distance travelled in our data case was 160 kilometres and on average the respondents travelled 13.3 kilometres of distance to reach the site. Majority of the response in our data fell in the age of 20s; on average the visitors were 25 years old while the maximum age was 38 years. Majority of the respondents were educated and the maximum years completed education was 17 years. On average the visitors had 13.9 years of completed education. On average the visitors spent 2.79 hours on site while the maximum time spent on site was 5 hours.

Econometric Methodology

The previous literature is not definitive regarding functional form for the estimation and computation of value. Generally, various functional forms have been used including linear, log-linear, double log and negative exponential. The dependent variable (Number of Visits to the Takht-i Bahi Buddhist site) is a non-negative integer. In other words, the data on a said variable are count and have a small number, which might constitute a significant proportion of the dataset. Therefore, we use the count data model and specifically, Poisson model. Anderson (2010), Winkelmann (2008:110) and Wackerly et al. (2008:132) stated that for applying the Poisson model to count data require that the mean value of the dependent variable must be equal to its variance. This process is known as equidispersion. However, the collected observed behaviour data normally follow a decay-process. Hence, the variance exceeds the mean value. More precisely, in our study, the mean value of many visits to the Takht-i Bahi site was 5.291 and the variance was 12.88, which mean that there is overdispersion in the data. If we apply simple Poisson model for regression purposes then the results would be biased. The over-dispersion of the dependent variable makes the Poisson model overly restrictive (Amoako-Tuffour and Martinez-Espineira 2008).

Furthermore, the remedy might be Poisson maximum likelihood estimation, which could be applied to the data set for obtaining the parameters of the model. Despite Amoako-Tuffour and Martinez-Espineira (2008) argument, our data set include 49 observations representing 7.08 percent of the total observations, representing the number of visitors who didn't make a visit to Takht-i Bahi ruins in the last year. We can't ignore the first visit or zero visit in previous year, for considering the zero visit or first ever visit made to the site we need to use truncated Poisson model for estimation purpose; the zero-inflated Poisson (ZIP) model. This takes into account that some visitors derive zero utility from visiting a re-creational site while other choose zero visit to the recreational sites by choice (Anderson, 2010). Normally Zero-inflated Poisson Model accounts for two kinds of zeros that are; "true zero" values and "excess zeros". Williamson *et al.* (2011) and Cheung (2002) argued that if the probability of "excess zero" P_i such that $(1 \geq P_i \geq 0)$ then number of visits follow Zero-inflated Poisson distribution.

Erdman et al. (2008) stated that Negative Binomial model is the generalized form of the Poisson regression model which allows over-dispersion by introducing unobserved heterogeneity in observation i . For example, if a variable (in our study number of visits) follow Poisson distribution λ_i then λ_i is itself a random variable with gamma distribution; the number of visits follow a Negative Binomial distribution. Furthermore, Anderson (2010), and Sarker and Surry (2004) used the model in their research and argued that the model is justified on the grounds that the omission or addition of an explanatory variable into the model might cause additional heterogeneity and hence over-dispersion in the data. Greene (2009) argued that lognormal model should be used to show how the mean average number of visits is specified in the count data.

Specifically, we formulate the econometric model as follows;

$$NV_i = \beta_1 + \beta_2 TC_i + \beta_3 DT_i + \beta_4 MI_i + \beta_5 A_i + \beta_6 TS_i + \beta_7 Edu_i + \mu_i$$

Where NV is the dependent variable representing number of visits to the Takht-i Bahi Buddhist ruins, TC stands for total trip cost in Rs. to the site, DT represents distance travelled in

kilometres, *MI* represents the individual income per month in Pakistani rupees, Age represents age of the visitor in complete years, EDU stands for highest education level of the respondents, and μ is the random term in the model.

Results and Discussion

We estimated the parameters of the model by two econometric techniques: Ordinary Least Square (OLS) and Negative Bi-nominal Poisson. Further, we used different functional forms for Ordinary Least Square (OLS) estimation; Linear, Log-linear, Linear-Log and double Log. We came to the conclusion that data best fit the Negative Binomial Model. The results are given in the following Table 3:

All the variables are significant at 1% except demographic variable Education (EDU), which is significant at 5%. The expected sign of variables is in accordance with economic theory. The adjusted R-Squared value is 0.64 and the LR-Statistic P-value is less than 0.005. Specifically, Travel Cost (TC) is negatively affecting the Number of visits to Takht-i Bahi Archaeological site.

9. Consumer Surplus

The travel cost method gives us the Marshallian Demand Curve. Consumer surplus is normally the area under the demand curve and above the market price. The formula for measuring consumer

surplus from a demand function is.² We calculated the consumer surplus and total value from the estimated model of negative binomial given above in Table 3, and the results are given in Table 4 as follows:

The consumer surplus per person per visit was found to be 2132.196 in Pakistani Rupees (PKR) and the total economic value of Takht-i Bahi was found to be Pakistani Rupees (PKR) 7808,102.

Conclusions

Takht-i Bahi is one of the famous Buddhist sites in Pakistan. The site has been recognized by the International Community and UNESCO. It was visited by international visitors until the end of 2003 but after the start of War against terror and law and order situation in the Khyber Pakhtunkhwa decrease the number of international visitors. The primary aim of the paper was to estimate the recreational value of the Takht-i Bahi Buddhist site. We applied a well known Non-Market valuation method; Travel Cost Method (TCM) for estimating the demand for the recreational site. We collected the data from 692 respondents on the site in June-July 2015. We estimated the demand for the site by using two different econometric techniques; Ordinary Least (OLS) with different functional forms and Negative Binomial model. The data were best fitted by the Negative Binomial model; hence, we use the model for estimation purposes.

Table 3: Negative Binomial Model Regression Results

Variables			
	Co-efficient	Standard Error	Probability
Constant	3.746040**	0.178982	0.0000
Total trip cost (TC)	-0.000469**	0.000129	0.0003
Income per month (MI)	1.12E-05**	2.46 x 10 ⁻⁰⁶	0.0000
Distance traveled (DT)	-0.084340**	0.004675	0.0000
Education (EDU)	0.022183*	0.010066	0.0275
AGE	-0.055466**	0.007307	0.0000
Adj.R ²	0.649756		
LR Statistic	970.3411	P-LR Statistic	0.0000

Table 4: Consumer Surplus and Total Economic Value

Model	Consumer Surplus	Total Economic Value
Negative Binomial	2132.196	7808102

The individual consumer surplus is estimated approximately to be 2132 Pakistani Rupees (PKR) which is equal to 20.40 US dollars. The total annual recreational value of the Takht-i Bahi site was estimated to be 7808,102 Pakistani Rupees (PKR) approximately equal to 74,719 US dollars. The estimation of the total recreational value should be considered as the lower limit because of the limited sample size of 692 observations used in the study. This study is unique in a sense that not a single study has been undertaken to value an archaeological site. This study provides both the theoretical and empirical framework to study sites of educational and cultural importance. This study can be used to estimate the value of the site and policies regarding its maintenance and improvement can be formulated. The researchers found collecting data from individuals a daunting task as people were reluctant to provide data. Also, due to cultural issues, female respondents could not be approach for collecting data. Therefore, this study probably underestimates the value of the site. It is suggested that this study may be replicated with a larger number of observations and more representative sample covering the entire year.

Notes

- 1 In this study the site taken is Takht-i Bahi Buddhist ruins situated in District Mardan, Khyber Pakhtunkhwa, Pakistan.
- 2 For more details see Hesselin et.al., 2003.

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