



Investigation of the statue of visitor s willing to pay Shiraz Eram Botanical Gardens and its influencing factors

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ABSTRACT: Place of an urban green spaces and recreational sites is important at leisure and creating emotional happiness of citizens. The purpose of this study is to determine the amusement value of the Eram Botanical Gardens of Shiraz and measure the visitor s willingness to pay for the garden and leisure of the province. To calculate this value, the contingent valuation method (CVM) was used. Average willingness to pay was estimated by using Logit model based on maximum likelihood by numerical integration. Required data were collected through questionnaires and interviews from 200 visits from the area in 2013. The results showed that the visitors have to pay 34, 484 dollars for a daily use and annual benefit of the Eram Botanical Gardens is about 13,121, 264,735 dollars. The results also indicated that the proposed rates, daily study, the duration of the garden and income that are statistically significant at the one percent are the most important factors influencing the willingness to pay for conservation and use of the garden and education level and garden quality variables are next factors influencing the willingness to pay. Therefore, based on the findings of this study, it is recommended that planners and managers to develop tourism and increase the number of visitors and tourists, and also enhance the welfare of visitors, pay more attention to these places.

Classification JEL: Q56, Q51, C52

Keywords: Eram Botanical Garden, Contingent valuation, willingness to pay, logit model.

INTRODUCTION

Today, although economists consider the consumption of natural resources more (including direct use value, such as revenues from tourism), the non-utilizable value (recreational activities, environmental and ecological services) natural resource is increasingly under assessment and recognition (Christrom, 1999). Of the non-utilizable values can be pointed to the value of natural ecosystem satisfaction, often regarded as the recreational value of an ecosystem.

Accordingly, more than direct economic benefits of environmental resources, the indirect benefits are numerous and considered, so the lack of understanding of the functions and services produced by these sources is a serious danger to society and can ignore their social and environmental impact and destroy them ultimately. The degradation of environmental resources, the quality and quantity of services that accrue to society through them is reduced. Therefore, knowledge of the benefits that the degradation of environmental resources can put them out of reach of the community creates the motivation in the community to protect them. In other words, the non-utilizable value of natural resources has led to willingness to pay for environmental conservation (Amir Nejad, *et al.*, 2009). Accordingly, the value of the willingness to pay (WTP) to protect the

population of the place, the legacy of the WTP to protect the desired location for the benefit of future generations and the value of selection as WTP to protect them, for possible future opportunities and consumer activities are defined. Recreational value to the desired location as value of consumption include the use of space for recreation, leisure and entertainment, hiking and such uses (Khaksar Astaneh *et al.*, 2010).

To the management and sustainable use of environmental resources, the cost-benefit analysis of projects, resource conservation, and social assessment of damages resulting from the degradation of environmental resources (Farber *et al.*, 2006), providing a useful tool for policy makers to explain the importance of resources (bank WHO, 2005), Establishing the relationship between economic policies and interests of environmental resources (Tysdl, 2005) and investment prioritize in environmental resources such as water, forests, sea, mountains and other natural sources (World Bank, 2005), it is necessary that the benefits of environmental resources be measured and valued in an understandable way (Turner *et al.*, 1374). Urban green spaces and parks, including natural resources are important functions that in addition to the environmental, provide tangible and intangible social and economic benefits for many human (Chaysvra, 2004).

In Iran numerous natural and artificial ecosystems such as forests, national parks and green spaces cause urban growth and development of domestic and foreign tourism. Eram Botanical Garden of Shiraz that increases the attractiveness of the urban landscape as one of the tourist and recreational visitor's attention attracts many tourists every year. Among the factors that can indicate the people's attitudes toward the urban promenade, it is the value that visitors are allowed to visit and use of this resort. This value as direct benefits of the resort is part of the stated amounts expressed their willingness to pay.

Given the importance of the garden, the present study conducted to determine the factors affecting the willingness to pay to protect it and estimates each family's annual average willingness to pay to preserve these recreational sites. In the end, the amusement-conversational value of Eram Botanical Gardens of Shiraz that is one of the rare and unique gardens of the country and even the world and has potential and actual abilities will be determined per hectare of garden.

An economic valuation of Eram Botanical Garden to identify and understand the value of it is the step towards solving problems in the conservation and development of the sector. Check it may be a useful guide for policy makers and planners of cultural heritage in order to determine the appropriate price entry fee to visit this place, the cost of providing tourism and recreation services, repair and building infrastructure and evaluation of conservational policy and preserve this art.

REVIEW OF LITERATURE

The idea of assessing the mall is seriously pursued from 1974 on. Contingent valuation method CVM first proposed in 1947 by Chris and Vanryp (Fattahi, 1389), but Davis for the first time in 1963, used the method empirically (Vnkatachalam, 2003).

Using contingent valuation to estimate the recreational value is very common in foreign studies. But in developing countries due to government intervention in economic activity, the valuation is more limited than in developed countries.

A. Foreign studies on the valuation of natural resources
Many studies on the value of ecosystem protection and recreation areas have been conducted abroad. Chen *et al.*, (2004), conducted a study to evaluate the recreational value of a coastal area along the eastern coast of the Zhyamn island of China by using Travel Cost Method. Based on the results of this study, the total monthly value of the beach and places of recreation estimated more than \$ 53 million USA dollars. Jens and Zandrsvn (2005), examines the value of forest Recreation Park in East Europe using travel

costs paid. Based on the results of this study, the average income for each one of local residents for entry of tourists into the region estimated \$ 122 in a month. Lvmys *et al.*, (2007), by using the contingent valuation method, estimated the average willingness to pay for the Caribbean National Forest in Puerto Rico. The results show that the averaged willingness to pay was \$ 29. Bidding variables and the number of tables in the amusement park with a negative coefficient and road appeared as effective factors on access to the area with a positive coefficient in the estimation of the model. Nabiin *et al.*, (2008), using contingent valuation method and logit model began to assess the value of the recreational area of Napomay Nepal. Based on the results of this study, the mean willingness of the visitors to pay to protect the region was \$ 2/69. Also indicated that the proposed price, size of household, visitor's satisfaction, use the Help and size of these variables affect the willingness to pay. Bekly and colleagues (2011), in a study used contingent valuation method for estimating the amount of visitor's willing to pay for infrastructure development and improvement of upland and lowland pasture and showed that visitors were willing to pay 9.08 and 12.22 pounds to the Highlands and lowlands on average.

B. Studies on the valuation of natural resources

So far the evaluation of resorts has not been done such as developed countries yet. The reason for this can be searched in the small background of resort scientific management run (Zebardast *et al.*, 2010). Zebardast *et al.*, (2010) in a study to determine the non-utilizable values of Anzali wetland used contingent valuation method. To economically evaluate the wetland using econometric techniques with Logit model began to estimate the maximum willingness to pay based on the suggested values. Based on this the respondent's maximum willingness to pay for an indefinite period of time that had discounted currently, was estimated 8803.92 tomans annually. HashemNejad et al (2011) in the study by measuring the index of consumer's willingness to pay in Forest Park using contingent valuation method and dual questionnaire determined the recreational park value. The results indicated that the mean willingness to pay of visitors for this part is 3875 rials per visiting. Haiati and Khan Boldi Pour (2012) studied the recreational value of Ghori-gol wetland using contingent valuation method. Based on the results of this study, 81 percent of the visitors were ready to pay money to recreational use of the wetland. Also education level, household income, the amount of information on wetlands and hours of attendance has positive and significant effect age, price and distance to the location of the pond has a significant negative effect on the probability of visitor's willingness to pay.

The individual's average willingness to pay for each visiting 7430 Rials and annual recreational value of GhoriGol wetland 743 million rials was estimated. Rafat and Mousavi (2013) in a study determined the recreational value of Hahst-Behesht Park of Esfahan and visitors willingness to pay by using contingent valuation method. Based on the results of this study individual income, household income, education, quality of parks, great environment and the type of housing have a positive effect on the willingness of visitors to use the environment pleasant. Also indicated that age and the distance between the house and park, have negative relationship with the willingness of individuals to pay. The average of willingness to pay of each visitor for the recreational value of this park obtained 2618 rials per visiting. The average willingness to annual pay of each family for visiting the park was estimated 106.8 rials.

THE METHODOLOGY

A. Data

the visitors of Eram Botanical garden of Shiraz were selected as statistical society. The number of samples was determined by using a simple random sampling of 200 patients who were visiting and completing the questionnaires. Research questionnaires during a three month period in 2013 were collected as the sample. To analyze the data SHAZAM and SPSS software package were used.

B. Contingent valuation method

In this study contingent valuation method was used. In this method to determine the economic value of goods and environmental services it is necessary to refer to people. Using the results, People's willingness to pay WTP under certain hypothetical market scenarios will be specified (Li, 1997). Because of this the mostly call the contingent valuation method as preference method (Venkatachlam, 2003). In view of the current economic value is introduced as the degree of human preference. With regard to this way of thinking, using the questionnaire and observation of behavior can inform of the willingness to pay for non-market environmental services (Amyrnzhad *et al.*, 1388). This study was conducted to measure the contingent valuation by using the dual two-dimensional questionnaire method. Dual selection method supposes a person has a utility function in equation (1) and (Amyrnzhad *et al.*, 1388).

$$(1) U(Y,S)$$

In equation (1), U is the indirect utility that is obtained for each person. S is the social-economic characteristics of persons (age, sex, education level, number of households,) that are influenced by personal manners. Y is the family income. Each visitor is ready to pay money for

using the environmental resource as a suggested amount (A) that this usage will cause utility for him. To determine the measure of willingness to pay, it is assumed that the responsive person accepts or rejects the proposed amount for the recreational values of desired location on the maximizing its utility under condition (2):

(2)

$$U(1, Y - A; S) + \varepsilon_1 \geq U(0, Y; S) + \varepsilon_0$$

In equation (2), 0 means that the person doesn't visit the place and 1 means that the person visits the garden. ε_0 and ε_1 are random variables with mean zero that are set equally and independent (kin *et al.*, 2007). The difference created in the utility (ΔU) because of using the environmental resource can be expressed as equations (3) and (4) (Li and Han, 2002).

(3)

$$\Delta U = U(1, Y - A; S) - U(0, Y; S) + (\varepsilon_1 - \varepsilon_0)$$

(4)

$$\Delta U = \alpha + \beta A + \gamma Y + \theta S$$

A. The model used in this study: In this study, the Logit model (5) to determine the effect of different explanatory variables on the willingness to pay in order to determine the eco-tourist value of the Eram Botanical Gardens. According to the logit model, the probability (the responder accepts an offer), the relation (5) is expressed (Hvars and Farber, 2002):

(5)

$$P_i = F_\eta(\Delta U) = \frac{1}{1 + \exp(-\Delta U)}$$

$$= \frac{1}{1 + \exp\{-(\alpha - \beta A + \gamma Y + \theta S)\}}$$

In which $F_\eta(\Delta U)$ is a cumulative distribution function with a standard logistic difference and included some socio-economic variables such as income, the proposed amount, age, gender and education in this research. α , β , γ , and θ are the estimated coefficients of the variables; proposed amount, income and socio-economic characteristics of individuals and it is expected that $\gamma > 0$, $\theta > 0$ and $\alpha > 0$. Logit model parameters have been estimated using the maximum likelihood estimation technique that is the only method for estimating the logit model (Jadj *et al.*, 1988). Then the expected value of the willingness to pay by numerical integration in the range of zero to the highest bidder (M) was calculated according to equation (6) (Lee and Han, 2002):

(6)

$$E(WTP) = \int_0^M F_{\eta}(\Delta U) dA$$

$$= \int_0^M \left(\frac{1}{1 + \exp\{-(\alpha^* + \beta A)\}} \right) dA$$

In which E(WTP) is the expect to pay and α^* is the adjusted intercept that is added to the main intercept by socio-economic clause and is defined as follows:

(7)

$$= + \gamma Y + \theta S$$

The estimated coefficients of the model have no direct economic interpretation. Thus the coefficients that are famous among economists are the effects of the final stretch. To assess the effects of each take partial derivative of equation (5) to obtain the final result (Jaj *et al.*, 1988). To calculate the main weight tension variable, final result must be multiplied by the average of the variable (Tarshizi and salami, 1386) and finally the elasticity of my kth explanatory variable in the equation (8) is obtained as follows (Jaj *et al.*, 1988):

(8)

$$\varepsilon_i = \left[\frac{e^{\Delta U_i}}{(1 + e^{\Delta U})^2} \beta_k \right] \frac{X_{ik}}{P_i}$$

The elasticity of each explanatory variable indicates that the one percent change in (X_k) leads to multi-percent change in success probability of dependent variable ($Y_i = 1$).

RESULTS AND DISCUSSION

In this section, the descriptive statistics of the variables used in the model is expressed, then the results of the Logit model estimating brought and finally the status of the willingness to pay of visitors to the Eram Botanical Gardens was evaluated. In the next section, descriptive statistics was expressed for a range of personal and economic characteristics of visitors including: age, individual income, education level, etc. summarized in Table 1. Based on the table, the mean statistic sample age is 31 years. Thus, young people are more likely to visit the Eram Botanical Gardens. The monthly average income of respondents was 4210.75 and mostly the people with high average income were the visitors. Also the visitors spent 112.4 minutes per visit to use the recreational place. This amount of time indicates the high favor of the visitors to visit the garden because they were likely to spend a long time of their spare time in the garden.

Table1: Some demographic and economic characteristics of visitors of Eram Botanical Garden in 2012.

Variable	Mean	Maximum	ST	Minimum
age	31.055	70	16.066	12
sex	0.6	1	5.492	0
Education level	2.085	3	0.824	1
Monthly income of family (thousands rials)	4210.75	20000	2810.667	1000
Garden quality	3.33	5	1.126	1
Interest in the environment	0.61	1	0.489	0
sport	0.26	1	0.439	0
Time (minutes)	112.4	1440	193.818	10
study	6.59	55	8.621	0

Resources: findings

A. The statue of the answer to the amounts proposed for calculating the recreational value of Eram garden

After reviewing the findings of descriptive statistics, the willingness of the subjects to pay the amounts to be paid as the entrance to the garden was analyzed and its results briefly stated in Table 2. According to this table, 44.5% of people did not accept the offer and had not any willing to pay a monthly income of 20,000 dollars as cost of entrance to Eram Botanical Garden of Shiraz while 55.5% had accepted it. Then to the people who had refused to pay a lower initial amount the amount lower than the 10,000 dollars was presented. Among them 79.67 percent of people accepted the second

amount and 20.32 did not accept. In the third step a higher amount (40000 rials) offered to the people who accepted the initiate cost and among these people 13 percent didn't accept the third offer and 87 percent accepted. Thus, despite an increase in the amount proposed, yet people are willing to pay to use this entertainment place.

The results of Logit model: Estimation results were presented in Table 3. The table shows that although age, interest in the environment and sport has the expected signs but they were not statistically significant. The proposed amount of the variable is statistically significant at the one percent level and the sign consistent with expect is negative.

Table 2: The statue of responding to the offered amounts for calculating the recreational value of Eram Botanical Garden in 2012.

	Acceptance statue	Higher offered amount (40000 rials)	Lower offered amount (10000 rials)	The initial offered amount (20000 rials)
Acceptance of the offered amount	number	51	98	111
	percent	87	79.67	55.5
Non-Acceptance of the offered amount	number	26	25	89
	percent	13	20.32	44.5
total	number	77	123	200
	percent	38.5	61.5	100/00

Resources: findings

Table 3: The result of estimation of Logit model for Eram Botanical Garden in 2012.

Variables	Weight Tension	Statistics T	Coefficients	Final Effect
Intercept	-1/355	-2/852	***	---
age	-0/198	-0/888	-0/013	-0/003
sex	-0/195	-1/795	-0/654**	-0/144
Education level	0/438	1/622	0/411*	0/091
income	0/566	2/630	0/003***	0/001
Garden quality	0/392	1/224	0/232*	0/051
Interest in the environment	0/358	0/772	0/175	0/039
sport	0/014	0/281	0/113	0/025
Time (minutes)	0/229	2/935	0/004***	0/001
study	0/267	3/391	0/076***	0/017
suggestion	-0/836	-3/862	-0/00007***	0/00002-

Likelihood Ratio Test =48.34, With 10 D.F. P-value = 0.00, Percentage OF Right Predictions:0.740, Mcfadden R-Square : 0.68

LM2 = 4.32, P-value=0.028

Resources: finding of the research

Significant: at 1, 5 and 10 percent *, ** and ***

This shows that the probability of answer yes to pay in higher proposed amounts is less. Estimated coefficient of the income variable is statistically positive at one percent and shows that with the increase of income, the probability of accepting the proposed fee increases. Because with the increase in per capita income the liquidity for daily activities increased and when people

have money more than their monthly needs at their disposal, the tendency to use the part of these costs to benefit from the recreational benefits to spend the leisure increases. Education level of the workers is positive and significant at the 10% level. Due to the weight tension, a one percent increase in the education level increases the probability of accepting the willingness to pay 43.8 percent in visits.

The reasons are the greater awareness of the environmental benefits and protect them and this is the indirect result of increased education and awareness. Because the cultural environment and enhance the quality of gardens including the creation of an environment for studying and training classes can attract educated people in these areas. Quality of garden is also significant at 10% level and has a positive effect on people's willingness to pay to visit Eram. So individuals who better assessed the quality of Eram the probability of answer yes to their willingness to pay increases. Variable time is significant at one percent level and has positive effect on people's willingness to pay visits to the Eram Garden. If the time of visiting the park increases the person's willingness to pay visits higher as it allows them to benefit more from the benefits of this garden. Also the coefficients of the imaginary sex are significant with a negative sign at the 5% level. The negative sign indicates that the respondents women, compared with men, are more willing to pay. The variable study is significant at the one percent level and according to its sign, has a positive effect on willingness to pay. Weight tension shows that one percent increase in variable daily study the probability of acceptance to pay visits in each visitor increases 26.7 percent. To assess the significance of the regression estimate of the likelihood ratio statistics (LR) was used. This statistic is significant at one percent level and explanatory variables could well describe the dependent variable. Coefficients of determination Mac Fowden (68/0) showed that the explanatory variables of the model explained well about 68% of the variability in the model. The average willingness to pay visits or in other words recreational value of Eram Botanical Garden was USD 27/34484. This amount shows the optimal price for each visit. Now entrance to Eram is 20,000 rials and the obtained willingness to pay indicates that visitors are given a high value for the garden. According to the number of visitors on holiday and non-holiday in different months, the number of visitors visit the garden throughout the year was estimated about 380,500 (Shiraz Municipality of parks and green space) and by using the calculated expected value of the willingness to pay the total value of recreational garden throughout the year was estimated as follows:

The annual recreational value of Eram Botanical Garden = (The average of WTP* the average number of visitors) Total value (Rials) (34484.27*380500) =13121264735

So the Eram Botanical Gardens amusement quarter was 13.1 billion dollars, which in itself is a remarkable figure that indicates the high value of the garden for the

visitors and the importance of protecting the garden. However this number shows the total economic value of the garden.

CONCLUSION AND RECOMMENDATIONS

In terms of management, this study has achieved promising results. First, it shows that people are aware of the importance of natural resources and the National Gardens. Second, the willingness to pay substantial support for the improvement and development of these resources are available. This provides a rationale for policy makers and officials to protect the quality of the environment and natural resources and prevent low and downplay of the gardens due to the lack of support by the government. The results showed that the variables offers, daily study, the time of using the garden and incomes have statistically significant effect on the willingness to pay. Also the variables education level and the quality of garden are the second factors affecting the willingness to pay. According to the results and findings the following recommendations to appreciate the entertainment value of the Eram Botanical Gardens logo and the protection of places of entertainment is offered:

1. Based on the positive effect of the variables time of using the Garden and the quality of Eram Botanical garden on the acceptance of entrance to the garden, on the other hand due to the high value given to the visits from the amusement places and spending more time in these environments by people, it is necessary that the planners and managers to have more attention on this subject and help more by increasing the suitable services for the families in order to further enhance the welfare of invocations. It is recommended that the maintenance and improvement of the garden according to the willingness to pay of visitors be a priority for authorities.
2. The average of calculated willingness to pay can be the scientific base for determination of the entrance to the Eram Botanical garden. If we act to logical demands of the visitors, solve the garden problems and make the necessary charm, visitors would be happy to pay. Since the WTP obtained, is 27/34484 Rials and it is 7/1 times more than the price of the entry fee (20,000 dollars) so officials can provide the costs associated with upgrading the logo and create required charm by increasing the entrance to the garden.
3. Estimated recreational value of Eram Botanical Garden as a part of economic value of the garden, can justify the investment and measures to protect and prevent potential threats such as erosion and degradation. So it is suggested that officials and planners to consider the Garden.

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