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An Investigation on the Promenade Value of Javanmardan Park in Tehran, Using Contingent Valuation Method (CVM)

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Abstract: The present research was conducted to study and explain this indicator in the promenade space of Javanmardan Park in Tehran and aimed to estimate the promenade and recreational value and determine the factors influencing the park visitors' willingness to pay. For this purpose, the required data were gathered through questionnaires and simple random sampling method. Then, the role and share of individual, social and economic factors and the visitors' willingness to pay were examined using contingent valuation method and Logit model and the model parameters were estimated. The obtained results suggest that each household is willing to pay 29643.9 Rials per month, in average for the recreational value of Javanmardan Park and using the environment of this district. Accordingly, the mean annual recreational value of this park is 355726.8 for each household. Also, the obtained results regarding the recreational value of this park represent the high importance and value that the visitors and users consider for this site.

Key words: Recreational value, contingent valuation, willingness to pay, Javanmardan Park, Tehran

INTRODUCTION

Promenade planning, implementing different environmental projects and creating various promenades and various entertainment centers for people are among the most important concerns of management at the regional and macro level in any country. The increasing growth of population, changes in residential patterns, environmental pollution in cities and the urgent need for leisure has added to the importance of this issue, now more than ever. These problems arise because human beings are not completely familiar with the real value of ecosystem in their lives and consider the values of these resources very low. In the meantime, the obvious lack of fiscal resources for creating or forming proper promenade spaces has guided the natural resource management towards the valuation of these resources using new scientific methods and techniques. Analyzing and measuring the Willingness To Pay (WTP) indicator among the users and visitors of promenade and recreational sites is one of these new scientific methods that nowadays have allocated a recognized and important position to itself in conducting researches in this field. The utility created by these spaces are among the direct benefits of promenades that include using them for spending their leisure time, entertainment, walking, hiking and aesthetics. This issue led economists to search for methods using which they can specify the real value of ecosystem quantitatively and because the market lacked the necessary ability for this goal, non-market valuation methods have been devised and widely used, since the second half of the last century (the 20th century) to valuate promenades. Using economic valuation, we can step in creating human welfare index and sustainable development. Economic valuation can be used to enhance environmental policies which results in human welfare enhancement. Hence, quantifying these benefits and making them understandable is of great importance (Kramer and Mercer, 1977). Asafu-Adjaye and Tapsuwan (2008), in a research entitled "A Contingent Valuation Study of Scuba Diving Benefits: Case Study in Mu KoSimilan Marine National Park, Thailand" by applying contingent valuation method and based on single bounded and double bounded dichotomous choice survey method indicated that in average, the willingness to pay for the entrance fee was estimated around 27.07-62.64 Dollars for each person annually and paying attention to this issue, the benefits resulting from implementing this plan was estimated to be 932940-2100000 Dollars, annually. Reynisdottri *et al.* (2008) calculated the mean value of individuals' willingness to pay for entrance fee for Skaftafell National Park and Gullfoss waterfall in Iceland, to be 508 and 333 million Icelandic Krona, respectively and

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introduced income, the attitude towards nature and environment, the number of previous visits, the background of paying entrance fee, age and education levels as factors influencing the willingness to pay. In this regard, the present research has been conducted using contingent valuation method, to investigate the promenade value of Javanmardan Park in Tehran. This valuation seems necessary for developing the park functions, improving the park current and future facilities, preventing the destruction of national lands and awareness of visitors' opinions and perspectives.

MATERIALS AND METHODS

Usually logit and probit regression models are used for qualitative choice methods (Henli, 1997). In this research, logit regression model has been used with the following equation:

$$U(Y, S)$$

Where:

U = The indirect utility function gained by an individual
Y and A = Income and offered price
S = A vector of other socioeconomic factors that depend on individuals' tastes

Each visitor is willing to pay part of his/her income as offered price (A), to use environmental recourses which creates utility for that person. The amount of utility created by using environmental resources is greater than when he/she does not use environmental resources which is shown in the following equation (Hanemann, 1994):

$$U(1, y - A; S) + \varepsilon 1 \geq U(0, Y; S) + \varepsilon 0 \quad (2)$$

where, ε0 and ε1 are random variables with an average of zero that have been distributed randomly and independent from one another. The difference created in utility (ΔU) by using environmental resources can be described in the following equation (Lee and Han, 2000):

$$\Delta U - U(1, Y - A; S) - U(O, Y; S) + (\varepsilon 1 + \varepsilon 0) \quad (3)$$

The structure of dichotomous choice questionnaire, for investigating the individuals' willingness to pay has a variable which is dependent on dichotomous choice. Thus, logit model was used to examine the effectiveness of different explanatory variables on the visitors' WTP, in order to determine the recreational and promenade value. Based on logit model, the Probability (P_i) that one person accept one of these suggestions is explained in the following equation (Hanemann, 1994):

$$P_i = F\eta(\Delta U) = \frac{1}{1 + \exp(-\Delta u)} = \frac{1}{1 + \exp\{-(\alpha - \beta A + \gamma Y - \theta S)\}} \quad (4)$$

where, Fη (ΔU) is a cumulative distribution function with a standard logistic difference and contains some socioeconomic variables such as income, offered price, age, gender, the size of household and education level, in this research, β, γ and θ are estimable coefficients and it is expected that $\beta \leq 0$, $\gamma >$ and $\theta > 0$.

To calculate the mean value of the park visitors' willingness to pay, partial willingness to pay methods have been used. Also, in order to analyze the variables and for mathematic calculations, Excel and SPSS Software programs were used and to estimate the data of the logit model parameters, Eviews software was used.

RESULTS AND DISCUSSION

In examining the factors influencing the willingness to pay, the logit model was used through the maximum likelihood method. Answers given to contingent valuation method (yes or no) was considered as a dependent variable and other variables such as offered price and socioeconomic variables were considered as dependent variables. According to the marginal effect calculated for the variable; offered price, an increase of 10 Rials (1 toman) in prices offered to individuals, on the assumption that other variables are constant, reduces the probability of accepting a price as the recreational value of Javanmardan Park by 0.00017. Also, the elasticity calculated for this variable suggests that an increase of 1% in the offered price, reduces the probability of its acceptance by 0.29399%. Based on the marginal effect calculated for the variable; income, it can be said that if other variables are constant with an increase of 1 Rial in the individuals' income, the probability of willingness to pay and acceptance to the offered price for taking advantage of environmental balminess and benefits of Javanmardan Park will increase by 0.05829 units (Table 1).

Table 1: The factors influencing the willingness to pay, using the logit model

Variables	Coefficient	Z-statistic	Elasticity value	Marginal effect
y-intercept	0.59970	0.75	-	-
Offered price	0.00069	-2.19	0.29399	-0.00017
Income	-0.23500	1.91	0.32470	0.05829
Level of education	0.16556	1.74	0.30330	0.04100
Household size	-0.22140	-1.75	-0.34370	-0.05480
Age	-0.32170	1.73	-0.21440	-0.07970
Gender	0.02070	0.29	0.03726	0.00510

Also, according to the elasticity calculated for this variable, an increase of 1% in the respondents' income, increases the probability of accepting the offered price by 0.3247%. According to the elasticity obtained for the variable; education level, in case of an increase of one percent in the respondents' education level and on the assumption that other variables are constant, the probability of the existence of willingness to pay increases by 0.3033%. According to the values calculated for the variable; age, an increase of 1% in the respondents' age, reduces the probability of accepting the offered price for enjoying the tourism benefits of Javanmardan park by 0.2144%. Also, according to the marginal effect of this variable with an increase of one year in the visitors' age, the probability of accepting the offered price decreases by 0.0797 unit.

CONCLUSION

Finally, it an be said the with an increase of one percent in the number of household members, the probability of the existence of willingness to pay, decreases by 0.3437% and according to the marginal effect calculated for this variable with an increase of 1 person in the number of household members, the probability of willingness to pay for entrance fee, decreases by 0.0548.

According to this equation, the mean value of willingness to pay for the recreational value of Javanmardan Park is calculated 8983 Rials per month. Considering that the average size of each household is 3.3 persons according to the obtained information, each household is willing to pay 29643.9 Rials per month, in average, for the recreational value of Javanmardan Park and using the environment of this district. Accordingly, the mean annual recreational value of this park is 355726.8, for each household.

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