

Evaluating the recreational value of Mogarmon tourist area using contingent valuation method (CVM)

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Abstract: This study, using contingent valuation method (CVM) and dual choice questionnaire has referred to the evaluation of recreational value of this tourist area. Necessary information has been gathered using 160 questionnaires in the spring and summer of the year 2014. For the purpose, the model parameters have been evaluated and estimated using Logit analyzing method and on the basis of maximum likelihood estimation model. The results show that 92 percent of people under study in this research are ready to pay for visiting this touristic area. The visitors' willingness average of payment for recreational value of the district is estimated 2835 Rials per visit, and the annual recreational value of this place for every family has been achieved 139141.8 Rials.

Key words: Contingent valuation; Willingness to pay; Logit Model; Mogarmon tourist district

1. Introduction

The environment is one of the main components in the global macro policies and many other components, such as the military, political, economic, etc. are affected by that. Therefore the most important factor and the prerequisite for any macro activity would be compatibility with the environment. (Hosseini and Ghorbanifar, 2005).

In recent decades, the quality of the environment has been considered as a good in economic theories. In a way that economists refer to the sustainable growth and development on environmental protection. Valuation of environment non-market services and operations is important for many reasons such as: understanding and recognizing the ecologic and environmental benefits by humans, presenting the country's environmental issues to decision makers and planners, providing the link between economic policies and natural revenues, assessment of the role and importance of environmental resources in support of human well-being and sustainable development, national calculations correction and adjustment. (Vaze, 1998)

Correct management of facilities, recreational facilities and green space of an area, has a significant impact on the area economy. This issue has uncovered the importance of the decision making in the field of development projects planning than before, and has made the variety of tools and methods in this field being created. Natural

resources economic valuation, is of these methods that today is used as an effective tool by environment administrators. (Turner and colleagues, 1995)

With the use of economic valuation, great steps can be taken in human welfare and sustainable development indicators creation. Economic valuation can be used in environmental policies improvement that its result is raising human welfare. Therefore making these benefits understandable and quantitative is of main importance. (Kramer, 1977)

Usually the main target "to assist in the management decisions of the forests is to show the overall economic performance, in conjunction with various competitive usages in the use of forest resources. The main assumption is that forest resources should be specified to the users who offer the overall net profit to the society. Determining the monetary value of the public entertaining places and green spaces plays a double role in the compilation management of natural systems and human. (Khorshidoost, 1997)

Non-market valuation makes access to information relating to the ecosystem's structure and function and their diverse and complex role in the human welfare protection. Also the ecosystem valuation can be effective in human welfare components correction and durable improvement and encourages the managers for protection and investment for resources' surviving. (Kniivila, 2006)

In conducted studies, contingent valuation method has been used for estimating non-market valuation. In this method, people's willing to pay for

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resources protection, is estimated. In these studies, through dual questionnaires, the price which people were satisfied with to pay to survive the resource, was estimated. Many studies have been conducted in Iran in accordance with the valuation that mostly has pointed out the entertaining value.

As an example, in Amir Nejad and colleagues study (2006) the forest's existence value in north of Iran has been estimated 30/1 \$ for every family per year. Dashti and Sohrabi (2008), in a study and using contingent valuation method, have estimated the visitors' willingness average for Karaj Nabovat park entertaining value, 3300 Rials for each visit. Khodaverdizadeh and colleagues (2008), have estimated the visitors' willingness to pay for kandovan village and also the yearly entertaining value using the contingent valuation method 3905 and 171500000 Rials.

The aim of this study is to determine the entertaining value of Mogarmon tourist area and visitors willingness to pay (WTP) by the contingent valuation method (CVM) and multiple-choice questionnaire.

2. Research methodology

Natural resources total economic value (TEV) can be divided in to two groups of consuming or tool value and inherent or non-consuming value. Consuming values are deprived from direct benefits from environmental resources that can be measured simply by market prices or other tools and enters them in plan making process. But non-consuming values are problem making as they are not exchanged so cannot be valued with market prices. (Dehghaniyan and Farajzadeh, 20012) As a whole there are four approaches for estimating environmental services value that include market price or uncovered willing to pay, the evidence implied or given ratio gnilliw to pay, benefits transmission method and expressed methods of estimation or willing to pay. (Amir Nejad, 2007) Many of environment services cannot be exchanged in the market and are not dependent or related to any market goods. Therefore people cannot show and uncover what are eager to pay for market purchase. In this situation, examining and evaluation can be used to ask people express what they are satisfied to pay for a service, directly and according to an assumed scenario.

Contingent valuation method is expressed on the basis of evaluation and examining approach and willing to pay. This method is a No-market valuation and flexible method that is expendable widely of goods and environmental services and is used for expense analyzing -benefits and evaluating environmental effects and seeks for direct extraction of environmental values from the questionnaire respondents. In addition to the application of this method in environmental economics including the value of consuming and non-consuming values or both of them for environmental benefits also. (Amir Nejad, 2007) In this study, DDC contingent valuation

method has been used for measuring visitors willing to pay. In this method respondents select only one offer between a numbers of suggestions. Respondents encountering with proposed market price in an assuming market position, answer only Yes or no. Carson and Hanman (1985), has moderated and corrected DC and the result has been the DDC technique that requires the determination and selection of a proposal more than the initial offer, in a way that the proposal depends more to the Yes or no response in initial proposal.

Therefore, in this study a DDC questionnaire has been designed for an interview and extracting the amount of visitors' WTP to determine the value of the Morgmon tourist regions recreational value to provide accurate and sufficient information for the respondents and be informed about the position of the given market. This questionnaire consists of two parts. The first part encompasses economic and social situation of people as marital status, occupation, level of education, age, families 'income level and many other features of respondents are asked. The second part of the questions relates to the extent of visitors' willing to pay. In this section three proposed prices 2000, 3000 and 4000 Rials, has been provided as a three dependent questions.

At first the middle offered price (3000) will be asked. The question is asked in such a way: Mogremon recreational area is a place for you that provide an opportunity for resting and entertainment Are you satisfied to pay monthly \$ 3,000 of your income for any of your family members as the park entrance price? If the answer is no, the lower price (2000) Rials will be offered and if the answer is yes, the higher price (4000 Rials) will be asked. As a whole 160 questionnaires were designed for the interview and finding the visitors 'satisfaction level in order to identifying Mogremon area recreational value and inform the respondents of assuming market position.

3. Research model

To estimate the model for measuring the WTP and also it's assumed that the person accepts or denies the offered entrance price on the basis of Mogremon area recreational value according to his maximum satisfaction under these conditions. (Emami Meybodi and Ghazi, 2008).

$$U(1, y - A, s) + \epsilon_t \geq U(0, y, s) + \epsilon_0$$

U is the indirect satisfaction that the person receives. Y and A are individuals' income and offered price and S is the other accidental variables with 0 average that are spread independent and equally. Zero means that the person does not visit the area and one means that the person visits the area. ϵ_0 and ϵ_1 are accidental variables with the average of zero that are spread independent and equally. ΔU

Satisfaction difference can be described as:

$$\Delta U = U(1, y - A, s) - U(0, y, s) + (\epsilon_1 + \epsilon_0)$$

Dual CV review questionnaire form, has a dependent variable which needs a qualitative model of choice. Usually Logit and Probit models are used for qualitative selection methods.

Logit model has been used in the research calculation because of its simplicity. The possibility of accepting one of the offers (A), (P_i) is expressed as the formula (3) according to Logit model. (Emami Meybodi and Ghazi, 2008)

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

That $F_{\eta}(\Delta U)$ the cumulative distribution function is standard with a Logistic dispute and some of the socio-economic variables such as income, age, gender, household size, the proposed amount, the level of education are included in this research. Y and A are family income and proposed amount and S includes the other socio-economic characteristics, θ , β and γ are estimated efficiency that it is expected that γ be higher than zero and $\beta \leq 0$, θ .

There are 3 methods for calculating WTP: The first method is called WTP average method which is used for calculating WTP expectation amount using numerical Integral between zeros to infinity. Second method called the total average WTP that is used for

calculating WTP expected amount by numerical integral in range $-\infty$ to $+\infty$ and the third method is called partial WTP average and is used for calculating the expected WTP amount by numerical Integral in range zero to maximum offer (A). Among these three methods, the third method is better because it's a proven method and maintains the compatibility of limitations with the theory, statistical performance and the gathering ability. Therefore the partial WTP average is used in this research (Amir Nezaad and colleagues, 2006)

Logit model parameters are estimated using the maximum validation method which is the most used technique for Logit model estimation. Then the exception WTP model will be calculated by numerical Integral in zero to highest offer as the formula (4).

$$E(WTP) = \int_0^{\max A} F_{\eta}(\Delta U) dA = \int_0^{\max A} \frac{1}{1 + \exp\{-(\alpha^0 - \beta A)\}} dA$$

That E (WTP) is the expectation amount of WTP and α^0 is the adjusted width of the source that is added by socio-economic to the width from original source (α). For variables' statistical analysis, mathematical calculations and Logit model parameters' estimation, Eviews software has been used.

4. The area of study



Fig. 1: Mogarmon view shows tourist area

Mogarmon tourist area is located at a distance of 15 km from the east side of the city Lende. Mogarmon Paradise Lost is known that shines and shines in the city Lende And tourism and recreational attractions such as river paired the pucker is very beautiful nature with trees, clear water and the beautiful mountain resort boils down to heart and created for tourists. Along the river, rice paddies, natural tree "Mour" the river engulfed a regular basis, natural and pristine gardens and trees around the river area has a certain effect. There are also several fish due to the quality and excellence of fish (trout) from major exporters of fish and other cities and neighboring provinces is.

5. Research findings

In this section the resulting statistical analyses has been cleared by evaluating 160 questionnaires. In table (1) the descriptive results of qualitative variables have been shown. According to table (1) (77.5% in front of 22.5%) (160 respondents) of respondents are men. 79.38 percent (160 respondents) are married. According to table (2), the respondents' age average of statistical sample is 36.75 years old, the youngest is 19 and the oldest is 73 years old.

The results of education level of statistical sample shows that the average years of schooling has been 13.79 and this variable swings between 5 to 22 years, the next household respondents survey shows that the average household of respondents equals to 4.09 people and the household dimension of surveyed people has been variable between 2 to 8

people. The analysis of people income shows that the monthly income average is about 11819000 Rials, the lowest income was 4.5 Million Rials and the highest 28Million Rials. Occupational and educational status of visitors from Mogremon tourist

area has been respectively measured using Likret scale in tables no (3 and 4), as well as the social security and the level of satisfaction of health facilities, in tables (5and 6).

Table 1: Qualitative variables statistic

	Gender		Marital status	
	woman	man	single	married
quantity	36	124	33	127
percentage	22.5	77.5	2.62	79.38

Table 2: Respondents' personal and economic features, the year 2014

variable	average	minimum	maximum	Standard deviation
age	36.75	19	73	10.15
Respondents years of educating	13.79	5	22	3.19
Family members	4.9	2	8	1.4
Monthly income(Hezar rials)	11819	4500	28000	36073

Table3: The distribution of visitors' job frequency

Occupation	Government employee	free	student	others	total
quantity	77	52	11	20	160
percent	48.13	32.5	6.87	12.5	100

Table 4: The distribution of visitors 'educational level

education	Under diploma	diploma	college	BA	MA and more	total
Quantity	21	41	29	52	17	160
percent	13.13	25.62	18.12	32.5	10.63	100

Table 5: The distribution of visitors 'satisfaction of social safety

	Completely unsatisfied	unsatisfied	Satisfied partly	satisfied	Completely satisfied	total
quantity	3	4	41	111	1	160
percent	1.87	2.5	25.63	69.37	0.63	100

Table 6: The distribution of visitors 'satisfaction of the area entertaining and health amenities

	Completely unsatisfied	unsatisfied	Satisfied partly	satisfied	Completely satisfied	total
quantity	94	63	3	0	0	160
percent	58.7	39.37	1.87	0	0	100

The results of the people's tendency to pay in this table shows that the 13 people (8%) of those questioned have no desire to pay for visiting this tourist area. Between the other respondents, 24 people (16 per cent) did not accept the first offer and were not willing to pay 3000 Rials as the price of entry for the Mogarmon tourist area for each of their family members, on the other hand, 84% have accepted the offer. When the lower price of 2000 Rials was offered, 16 percent accepted that. The respondents who accepted the first offer (3000 Rials) were placed in group of higher offer of 4000 Rials that all respondents have accepted the offered price.

As previously noted, for checking the influence of the independent variables on the visitors 'tending to pay and determining the value of Mogarmon recreational tourist area in order to determine the value of the Logit model mogarmon, Logit model using Eviews software and (MLE) method have been used. The model results have been delivered in table No.7.

Table 7: Logit model results for Mogarmon tourist area

variable	coefficient	T statistic	Possibility (significant level)	Final impact
c	65.991	1635	0.104	11.44
age	-0.52	-0.348	0.784	-0.0901
gender	0.034	0.303	0.641	0.0059
education	0.764	1.95	0.052	0.1324
household	-0.655	-3.358	0.000	-0.1135
Individual income	0.704	2.53	0.000	0.1220
proposal	-0.0032	-1.99	0.038	-0.00055
Health and recreational	0.448	2.074	0.004	0.0777

facilities				
Social safely	0.178	2.197	0.001	0.0308
Factor for the calculation of marginafect = 0.1733				
Log likelihood: -867.0800				
Goodness of fit: 0.92				
Confidence distance 90 percent- Confidence distance 95percent- Confidence distance 99 percent-				

Resource: Research findings

The amount of the utility model fitting (Goodness of fit) is 0.92, which reflects the suitability of the model to explain the behavior of variables. Also the final effect factor in this model is obtained 0.1733, the product of this factor, calculates the amount of the final effect. The ultimate effect shows the likelihood of change in tendency to pay per change in an independent variable unit that's about imaginary variables, this likelihood percentage is achieved to return for change from zero to one.

The results of model estimation shows, there was no significant effect by age-and gender variables on the tendency to pay. Other model variables that are the level of education, household, individual income, social security and the level of satisfaction of amenities and health services are significant. In a way that the individual income household, the amount of social security and the level of satisfaction with the consent of the hygienic amenities variables with 99% of confidence, offer variable with 95% of confidence and levels of education variables with 90% confidence are significant. Also the variables, as well as household and offer have a negative effect and other variables have coefficients and positive effects.

Checking the influential amount shows that the education variable has significant and positive impact with 90 percent of confidence on people tending to pay also this variable has the ultimate effect equivalent with 0.1324. That is likely the increase in level of education of people increases 13.24 percent the people tendency to pay for the use of the area's tourist which is because of people awareness of the environmental benefits and maintaining them that this is an indirect results of increasing levels of education and consciousness. The household variable has negative and significant impact with 99% of confidence on people's tendency to pay. The final impact amount is -0.1135 that means that per increasing one person to family members, the probability of tending to pay reduces about 11.35 percent. Individuals' income variable is the other studied variables that have the positive and significant impact with the 99% of confidence on the tendency to pay. This variable's final impact amount is 0.1220 that shows in case of the increase in people's income, the tendency to pay will increase 12.2 percent. The most important variable is the variable factor model proposal that is negative and significant with 95% of confidence and shows that under the hypothetical market scenarios, if the proposal variable increases, the probability of tendency to pay reduces. The final impact of proposal variable is -0.00055 and shows that with increasing more amount to the area's recreational

value, people's tendency to pay, decreases about 0.05 percent. The variable of the consent of the health and amenities satisfaction level has a significant and positive impact with 99% confidence on people's tendency to pay. The amount of variable's final impact is 0.0777 so in case of development and furnishing amenities and health facilities the possibility of tendency to pay will increase 7.77%. Finally the variable of people's satisfaction of social security has a positive and significant impact with 99% of confidence and has the ultimate effect equivalent with 0.0308. That is, if the area benefits suitable social security, people's tendency to pay will increase about 3.08 percent.

In General, the greatest impact on the possibility of tendency to pay relates to variables such as the level of education, household, income, the amount of individuals' satisfaction of the amenities _ social security, health facilities of this tourist area.

The expected average amount of WTP that provides Mogarmon recreational tourist area value, after estimating Logit model parameters using the method of maximum directing method, by making integral numeric in the zero range to the maximum bid, is calculated through following relationship:

$$WTP = \int_0^{\max 4000} \frac{1}{1 + \exp\{-(6.934 + 0.0032A)\}} dA = 2835$$

So the WTP average for using Mogarmon tourist area is calculated 2835 Rials for each visitor. To calculate the annual recreational value average of this tourist area for every family, also it can be practiced as follows:

The average annual recreational value of Mogarmon tourist area= average tendency to pay × family size average × 12 months

2838×4.09×12=139141.8 Rials, the average annual recreational value of Mogarmon tourist area so the average annual recreational value of each family to visit the Mogarmon tourist area is estimated to be almost 139141.8 Rials.

5. Conclusion

In this study, using the contingent valuation method, the recreational value of Mogarmon tourist area in lende city has been estimated. In this study, 92 percent of visitors are satisfied to pay for visiting the area. This entry represents the high importance of this region for the tourists. The WTP average for the entrance fee per visitor is calculated about 2835 Rials. Either the entrance fee for each family has been estimated 139141.8 Rials per year. These results indicate that the city officials need determination and their will to establish a regulated tourism structures in this location and improve their

efforts in this regard. Mogarmon tourist area has a high tourism potential and value, so this issue can encourage the tourism and related organizations for more investment and in continue guide the area economic benefit from its tourism for future developments.

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