Estimation of Recreation Value and Determining the Factors Effective in Visitors' WTP for Saint Stepanus Church Using the Heckman Two-stage and CV Methods

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Abstract: Tourism with its special characteristics is considered as a dynamic industry with a shining future. Investment is continuously increasing in this industry in touristic countries. Tourism potentially income creating tool for historical countries such as Iran providing that there is a comprehensive and foresighted regulation and planning for such attractions. Aiming at helping the proper planning in this field, the current research studies recreation value of Saint Stepanus Church, one of the famous churches on the north-west of Iran, located on the edge of Aras River. Estimating the recreation value of this church can be effective in foreseeing the needs, eliminating the shortages and developing the tourism in the region. The main aims of this article are separation of influential factors on visitors' willingness to pay (WTP) for Saint Stepanus Church visiting costs using Heckman two-stage Method and Contingent Valuation Method (CVM). Required data was gathered through questionnaires and face-to-face interviews with 317 visitors of the church. Results showed that 68% of the visitors were willing to pay money for visiting the church. Variables of income, education levels, family size and the dummy variable of sexuality were effective in visitors' WTP for visiting and variables of income, family size, education level, age and the service satisfaction rate of visitors were effective in the rates of WTP. The average of WTP, using the CVM and Heckman method were estimated at 4034 and 4800 rials and the annual recreation value was estimated at about 322 and 384 million rials, respectively.

Key words: Contingent valuation · recreation value · saint stepanus church · two-stage heckman · willingness to pay

INTRODUCTION

Tourism with its special characteristics is considered as a dynamic industry with a shining future. Investment is continuously increasing in this industry in touristic countries. Nowadays, attraction of tourists has been changed into an increasing competition between the institutions involved in tourism industry, because it not only plays a role in moving the national economy and exchange incomes forward, but also it is a neat industry that does not make pollution and at the same time creates new employments opportunities. In fact, tourism takes the third position in the world after oil and automobile industries and plays an important role in producing income for countries. Tourism is among the income distributing industries, because when a tourist enters a country, he/she should pay expenses for services and this payment will be of the exchange nature. Therefor, this industry can be helpful in a single-product economy such as Iran.

Regarding the historical and cultural heritage, Iran is among the top ten countries and concerning the ecotourism attraction and climatic differences it is among the five superior countries of the world. Despite the existing capabilities and potentials in the country, factors such as lack of suitable substructures for nature-touring, deficiency of knowledge about ecotourism, shortages of ecotourism specialists and weaknesses of specific culture for nature-touring that sometimes causes destruction in natural landscapes are the main problems facing ecotourism attraction in Iran. This is while, touristy countries with their natural landscapes can increase incomes. Also, ecotourism often inclines toward environment being able to play important roles in refining and protection of environment and the development of environmental culture among people of their societies. Ecotourism attraction thereby is an important affair to which all countries with tourism attractions should pay special attention. In this regard, environmental efficiency

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valuation for correcting the economic decisions, that often view the environmental resources as free of charge goods and services, is considered as an important action. Other means of environmental valuation include: enjoying knowledge and understanding about the environmental benefits, clarification of environmental problems of the country and informing planners for suitable decision making, measuring the role and importance of environmental resources in support for human welfare and sustainable development, preventing many of environment-threatening activities, adjusting and correcting the national accounts such as gross national product and preventing the destruction and irregular use of natural resources [1-3]. It should be taken into the account that although some of environmental resources are considered as worthless at present time, they can be of more use and value in future [4]. The existence of exclusive natural resources, different climates and many archeological sites in Iran have created more suitable conditions for development of tourism and ecotourism industries in the country. Based on tourism activities and the consideration of their high potentials, it would be possible to help the public sector income be increased and developed, while taking necessary steps to protect environment and consequently, moving within the framework of sustainable development. Meanwhile, creating a safe and generative society with economic development requires protection and development of touristy regions to be responsive for ever increasing demands of people. Saint Stepanus Church is one of the famous churches on the north-west of the country and one of the important tourism regions of Azerbaijan Province, located on the edge of Aras River, 19 kilometers from the west of the Jolfa city. it has been a center for religious ceremonies of Christians for many decades. The construction of this church belong to IX, X century and has nationally been registered as one of the tourism locations of the country in 1962 (No 429) [5]. According to the available statistics, about 80,000 people have visited this church in summer 2007 proving its tourism attraction potentials.

Studying the opinions and desires of people involving tourism regions and their available facilities can considerably help fullfil the needs and shortages existing in these regions. One of the indicative indexes of peoples' outlook on a tourism region, is the value made by visitors to visit and enjoy these regions. This value belongs to direct benefits from tourism regions and people may declare it by expressing the amounts of WTP. Many investigations have been made to study the factors effective in visitors' willingness to pay and the amount of benefits from visiting the touristy regions

using different valuation methods. Using economic valuation techniques for cultural heritage is somehow a new phenomenon. In comparison with environmental valuation on which many investigations have been made, the number of studies made about historical heritage valuation is less, mostly being made on historical and archeological heritage valuation [6]. Using CVM Willis [7] estimated the annual average WTP by each visitor from Durham Church located in the UK at 31.5 pounds. Pollicino and Maddison [8] calculated the average WTP of native and non-native families for the purpose of cleaning the appearance of Lincoln Church at 49.8 and 27.7 pounds, respectively. Pagiola [9] applied the same technique to estimate the amount of WTP for each native resident and each tourist to repair and renew the Roman Palace located in historical city of Split resulting in $170 and $45 per year for each visit, respectively. Mourato et al. [10] estimated the average WTP per year to be $0.6-1 for each family to protect 164 monasteries belonging to the Orthodox Christians in Bulgaria. Using CVM and Tobit, linear, semi-logarithm and Heckman two-stage models, Amigues et al. [11] calculated protective value of habitat of Garon River Bank in France to be as 67, 66, 13 and FF133, respectively. Whitehead and Finney [12] applied CVM for North Carolina Bank (America), which includes the remains of about 5000 drowned ships. The average WTP for each visitor and the annual profit due to the historical park management of the drowned ships were estimated at $36 and $1.75 million. Pollicino and Maddison [13] adapted CVM for estimating WTP of native residents to protect, clean and repair the central square of Oxford city at 32, 23 and £ 22.5. Del Saz Salazar and Marques [14] calculated WTP of families interested in cultural goods to completely renew Arab Castle in Valencia, Spain, at £ 53-58 and of other families at £ 33-38. Similary, Amirnejad et al. [15] estimated the annual existence value of Iran's North jungles for each family to be about $30.12. Togridou et al. [16] estimated WTP of visitors from Marrian Rakintoz National Park, Greece to be BWP 120 and 30. Using CVM, Gurluk [17] estimated annual value of ecosystem services in Barsay State, Turkey, $67.44 for each family. Reynisdottir et al. [18] showed that the average WTP of individuals as an entrance fee for national park of Eskaftafel and Goolfus waterfall, Iceland, were 508 and 133 million ISk, respectively. Investigations made in Iran show that a few number of studies have been made about estimating protective and recreational value of promenades and factors effective in the amount of WTP of families. Using CVM, Asgari and Mehrgan [19] estimated the amount of WTP of families for historical work "Ganj Naameh-e-Hamadan" as 1560 Rials for each visit.

Amirnejad *et al.* [20] used the same method and estimated yearly protective and recreational values of Noshahr's Seesanghan forest reserve at 5.8 and 2.5 million Rials/ha. Applying CVM, Khorshiddoust [21] calculated the amount of WTP of Tabriz people for the purpose of civic environment protection and pollution reduction at about 41140 Rials per month.

This research attempts to study the factors effective in acceptance or refusal of WTP as well as factors effective in the rate of WTP of visitors from Saint Stepanus Church and finally to estimate its recreational value.

MATERIALS AND METHODS

This research has used contingent valuation and Heckman two-stage methods to estimate the recreational value of Saint Stepanus Church. Contingent valuation method attempts to identify willingness to pay of people, under the certain assumed maket scenarios. In double-bounded choice method, it is assumed that people bear utility functions, shown in relation 1 [20]:

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

where U is indirect utility function, Y is individual's income and S is a vector of other eco-social factors of individuals. Each visitor is ready to pay some amount of his income to enjoy the environmental resources titled as proposed amount *(A) and* this enjoyment causes utility to be created for him/her. The amount of created utility due to the usage of environmental resources is more than the case in which he doesn't use environmental resources and relation 2 shows it [22]:

$$U(1, Y - A; S) + \varepsilon_1 \geq U(0, Y; S) + \varepsilon_0 \qquad (2)$$

where ε_0 and ε_1 are random variables with average 0 that have been distributed randomly independent of each other. Created difference in utility (ΔU) due to the effect of using environmental resource is calculated from relation 3:

$$\Delta U = U(1, Y - A; S) - U(0, Y; S) + (\varepsilon_1 - \varepsilon_0) \qquad (3)$$

Double-bounded questionnaire structure in studying the WTP of individuals has a dependent variable with dual selection. Hence, logit model for studying the effect of different descriptive variables on the amount of WTP of visitors was used to determine the recreational value. According to the logit model, probability of acceptance of the proposed amount by a visitor is expressed as relation 4 [23]:

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

where $F_\eta(\Delta U)$ is accumulative distribution function with a standard logistic difference and in this paper it includes some eco-social variables such as income, proposed amount, age, sexuality, family size and education. β, γ and θ are coefficients that can be estimated and it is expected that $\beta \leq 0$, $\gamma > 0$ and $\theta > 0$. In order to calculate WTP a method known as truncated mean WTP is used, because this method protects the stability and compatibility of limitations with theory, statistical effectiveness and aggregation. The expected amount of WTP in this method is calculated from relation 5 by numerical integration within the range of 0 to maximum proposal (A) [23]:

$$E(WTP) = \int_0^{MaxA} F_\eta(\Delta U) dA = \int_0^{MaxA} \left(\frac{1}{1 + \exp\left[-(\alpha^* + \beta A)\right]}\right) dA,$$
$$\alpha^* = (\alpha + \gamma Y + \theta S) \qquad (5)$$

In the above relation, E (WTP) is the expected value of WTP and α^* is the adjusted intercept which was added by the socio-economic term to the original intercept term of (α). Logit models may be estimated as linear or logarithmic functions and the linear function form can be easily used to calculate the WTP mean, so it has been used in most studies. Logit model parameters were estimated using the maximum likelihood method. Elasticity of the kth (X_k) descriptive variable in logit model can be calculated using the relation 6 [24]:

$$E = \frac{\partial(B'X_k)}{\partial X_k} \cdot \frac{X_k}{(B'X_k)} = \frac{e^{B'X}}{(1 + e^{B'X})^2} \cdot B_k \cdot \frac{X_k}{(B'X_k)} \qquad (6)$$

Each descriptive variable's elasticity stated that a 1% change in (X_k) causes a few percent changes in success probability of dependent variable ($Y_i = 1$). The second method is used for valuation of Saint Stepanus Church and determining the effective factors in WTP of visitors of Heckman two-stage method. This method is used to estimate models that have limited dependent variables. This method has had different applications in studies with different subjects. For example, Gorbani [25], Salami and Ein-Allahi [26], Tambia *et al.* [27] and Pattanayak and Mercer [28] used Heckman two-stage method to separate factors effective in investment by farmers on agricultural machines and its amount and to study factors effective in decision making by farmers

on beet plantation and also the amount of its under cultivation area in Khorasan Province, to analyze demand for veterinary services of private sector by farm animal producers in Kenya and to study factors effective in soil protection operations and also soil quality respectively. Heckman two-stage method is based on the assumption that a series of variables can influence decisions making on about taking part in under consideration activity and another series of them can influence the amount of under consideration activity after making primary decisions. Therefore, two different series of variables can enter this model. And if, this method is ignored and consequently, variable separation lacking into two groups, the aggregate effect of variables on the amount of WTP is measured. Then we would encounter the problem of error in estimation. This is why Heckman has offered the two-stage method to solve the problem. In this method, factors that can have effects on decisions made by visitors about the acceptance of WTP, enter Probit model in the form of independent variables and factors that can have effects on the amount of WTP of visitors, take places in the set of independent variables in a linear regression model and of course, these two groups of variables are not necessarily exclusive. Probit and linear regression models resulted from the separation of Heckman two-stage model are shown as relations 7 and 8, respectively [28]

Probit model

$$Z_i = BX_i + u_i \quad \begin{aligned} Z_i = 1 &\quad \text{if} \quad Y_i^* > 0 \\ i = 1,2,3,...,N \quad Z_i = 0 &\quad \text{if} \quad Y_i^* \le 0 \end{aligned} \quad (7)$$

Linear regression model

$$i = 1,2,3,...,N \quad Y_i = BX_i + \sigma\lambda_i + v_i \quad (8)$$

In the above modes Z_i is dependent that includes binomial variables bearing the amounts of 0 and 1 which represent lack of WTP and WTP of the ith visitor. Y_i^* is the latent variable of the model, Y_i is the amount of WTP of the ith visitor, B and σ are model's parameters that should be estimated and X_i is descriptive variables of the model and include visitor's income, family size, level of education, visitor's age, sexuality and the amount of visitor's satisfaction of the state of welfare facilities and servives of Saint Stepanus Church. u_i and v_i are error terms in the above said models independent of descriptive variables and given the normal distribution with average 0 and variance δ^2, they should be constant. λ_i is inverse of Mill's Ratio and calculated using the relation 9 [30]:

$$\lambda_i = \frac{\phi(\beta'X_i)}{1 - \phi(\beta'X_i)} \quad (9)$$

In the above relation $\phi(\beta'X_i)$ and $1-\phi(\beta'X_i)$ are density function and standard normal variable distribution function, respectively. At the first stage of Heckman two-stage method, probit model is estimated using the maximum likelihood method. The second model (linear regression) is estimated by entering a new independent variable named Inverse of Mill's Ratio that is the estimated parameters of the first model (Probit) and Ordinary Least Squares (OLS) for all of the $Y_i^* > 0$ observations. Greene has showed that the presence of inverse of Mill's Ratio in linear regression model, resolves the presence of model's inconsistency variance and makes the coefficients unbiased and consistent [31]. Whole elasticity is used to measure the effect of the changes in the variable X_i on Z_i. The whole effect of changes in the independent variable on expected amount of dependent variable Z_i is calculated using the relation 10 [32]:

$$\frac{\partial E(Z_i)}{\partial x_i} = B_j\phi(I) \quad (10)$$

In the above relation B_j is the estimated coefficient of variable X_i and $\phi(I)$ is the probability of the presence among visitors who are willing to pay. In order to select the suitable functional form at the second stage of Heckman's method, the model of relation 11 is estimated using the Mckinon non-nested testing:

$$\log y_t = b_0 + \sum_{i=1}^{n} b_i \log X_{it} + \theta v_t + e_t \quad (11)$$

After estimating the above model coefficient of v_t (1-at first, those logarithmic and linear models are estimated whose dependent variables is shown as $(\text{Log} y)$ and $(\bar{y}_t)$, respectively. After calculating anti-logarithm of dependent and regression model variable, v_t is defined as $\bar{y}_t - \hat{y}_t$) is tested using the Wald test. If the coefficient of this linear model is significant and the coefficient of this variable is non-significant, then logarithmic model is selected and is used for future analysis. Finally, by replacing the average amount of quantity variables and the mode amount of qualitative variables in selected regression model, the mean amount of WTP is calculated. Statistic and information required for identifying the amount of WTP of visitors from Saint Stepanus Church were collected using Heckman method through filling in the questionnaire and in person interview with visitors, taking the

advantages of simple random sampling method among 317 visitors from this church in winter 2008. The sample size was obtained through Cochran formula and pre test [33]. The questionnaire was designed in two sections. At the first section information related to personal, social and economic characteristics of the responsive individual and at the second part questions related to the WTP were put forward. That is to say after gaining knowledge about the WTP or lack of WTP of visitors, they were questioned about their maximum WTP amount. However, taking the advantages of CVM, Double-bounded Dichotomous Choice (DDC) was used to measure the amount of WTP of visitors, the method offered by Hanman and Carson [34], by correction and justification of double-bounded dichotomous choice (DDC). This model requires determination and selection of a more offer in comparison with the primary one. The more offering is referred to "Yes" and the less offering is referred to the "No" answers. The questionnaire was designed in two sections.

In the first section, information related to the personal, social and economic characteristics of the individual responsive and in the second section questions related to WTP of individuals were put forward. In this section three proposed prices of 3000, 4000 and 5000 rials were put forward in the form of dependent and bounded together questions. The said offered amounts were selected on the basis of pre-test. Limdep and Shazam softwares were used to estimate the logit and Heckman models, respectively.

DISCUSSION AND CONCLUSION

Table 1 shows some of the statistics about the variables of age, level of education, family size and monthly revenue of the under-question individuals. Also, frequency distribution of the variables are shown in the Table together with the frequency percentages.

In order to measure the satisfaction of visitors about the state of facilities and services available in the Saint Stepanus Church 11 sentences were designed in Likert measurement scale. Then the mean of 11 sentences was determined as satisfaction index of the visitors. On the basis of the mean and standard

deviation, the amount of satisfaction in visitors' opinion was classified in four groups of weak to excellent and the classifying method has been shown in relation 12 [35]. In this relation, Min, Max, Mean and Sd are maximum, minimum, mean and standard deviation of visitors' satisfaction, respectively. Table 2 shows the state levels, domain, frequency and the percent of each one of the state levels. As it is clear from Table 2, 42.9, 29.3, 16.4 and 11.4 percent of the whole visitors from the church have expressed that the state levels of available facilities in this church are weak, average, good and excellent, respectively. Results show that available facilities in this church for tourists are somehow suitable, however, regarding the high potential of this church in tourism attraction, in case of available welfare facility improvement in the church there will be increase in the number of tourists.

$$
\begin{aligned}
&1) \text{Min} \rightarrow \text{Min} + 1\text{sd} \\
&2) \text{Min} + 1\text{sd} \rightarrow \text{Mean} \\
&3) \text{Mean} \rightarrow \text{Mean} + 1\text{sd} \\
&4) \text{Mean} + 1\text{sd} \rightarrow \text{Max}
\end{aligned}
\tag{12}
$$

It is clear from Table 3 that results from estimating logit model have been shown in two steps

At the first step all of the independent variables and at the second step only significant variables at the first step i.e., age, sexuality, state of welfare facilities of Saint Stepanus Church and proposed price for fitting the logit model have been used and all of the aforesaid four variables are significant at 1% level. The amount of estimated coefficient for variables of age and proposed price show that together with one-unit increase in age and proposed price and assuming other factors as constant, the acceptance probability of WTP of visitors would be decreased to 0.036 and 0.0083 units, respectively. The amount of estimated coefficient of the church's welfare facility state variable shows that due to the improvement in church's welfare facilities and consequently, the increase in visitors' satisfaction the acceptance probability of WTP of visitor would be 2.11 units increased. The amount of estimated coefficient of sexuality dummy variable shows that in case of its change from 0 (femaleness) into 1 (maleness) the acceptance probability of WTP of visitor

Table 1: Descriptive statistics of some under study important variables in Saint Stepanus Church

Variables	Mean (Average)	Maximum	Minimum	Standard deviation	Frequency distribution of variables			
Age (year)	40.00	70	22	10.00	20-30 (23)*	30-45 (48)	45-60 (17)	60-70 (12)
Level of education (year)	10.00	18	1	4.60	1-5 (22)	5-8 (21)	8-12 (23)	12-18 (34)
Family size (number)	3.94	9	1	1.38	1-3 (13)	3-5 (57)	5-7 (25)	7-9 (5)
Monthly income (thousand Rials)	4398.60	12000	2000	1757.82	200-450 (40)	450-700 (46)	700-950 (9)	950-1200 (5)

*The numbers in the parenthesis are frequency percentages of each variable

Table 2: Welfare facility state of Saint Stepanus Church from the visitors point of view

State levels	Domain	Frequency	Percent	Accumulative percentage
Weak	0.07-0.22	136	42.9	42.9
Average	0.22-0.42	93	29.3	72.2
Good	0.42-0.57	52	16.4	88.6
Excellent	0.57-0.85	36	11.4	100.0
Total		317	100.0	-

SD = 0.15; Mean = 0.42; Max = 0.85; Min = 0.07

Table 3: Results from estimating logit model to determine recreational value of Saint Stepanus Church

Variables	First step			Second step		
	Amount of estimated coefficients	T statistics	Mean	Amount of estimated coefficients	T statistics	Mean
Y-intercept	3.40	3.08[*]	-	3.83	5.29[*]	
Age	-0.028	-2.3[**]	40.19	-0.036	-3.56[*]	40.19
Sexuality	0.618	2.93[*]	-	0.56	2.75[*]	-
Education level	0.027	1.16	10.18	-	-	-
Family size	-0.054	-0.65	3.94	-	-	-
Income	0.00084	1.35	439000	-	-	-
Proposed price	-0.008	-5.13[*]	331	-0.0083	-4.89[*]	331
Church's welfare facility state	2.15	9.3[*]	-	2.11	9.34[*]	-

Estrella R^2 = 0.19; AIC= 0.98; log likelihood function= -298.61; McFadden = 0.17; SIC= 1.07 N=317; Estrella R^2 = 0.185; AIC= 0.97; log likelihood function=-302.81; McFadden = 0.16; SIC= 1.007 N=317; * and ** are being significant in 1% and 5% levels, respectively

about 0.56 units will be increased. Using logit model, the mean WTP of visitors was gained at 4030 Rials. The church's recreational total value was also obtained using the relation 13:

Recreational total value of Saint Stepanus Church = The number of annual visitors×WTP (13) mean recreational total value of Saint Stepanus Church = 80000 × 4030= 322400000 Rials

Results from the first stage of Heckman method (probit model) expresses factors effective in probability of WTP of visitor and results from the second stage of this method (linear regression method) shows factors effective in the amount of WTP of visitor. As it is clear from Table 4, independent variables used in probit model include visitors' income, education level, family size and sexuality. In order to study the collinearity or its lack in estimated models' variance decomposition analysis was used. Results showed that there weren't any collinearity among the descriptive variables used in models. In order to study the inconsistency variance or its lack in logit and probit models, David Sen and Mackinon [36] offered an statistic under the title of LM2 which is based upon the LM method. The amount of LM2 statistic in fitted model is 6.23 and since

probability value of this statistic is 0.57, assumption of existence of consistency variance in the model is accepted [37]. The amount of likelihood ratio statistic (LR) within the free degree of 4 is 14.97 and since this amount is higher than the amount of the offered probability value (P-Value), the whole estimated regression model is significant at 1% level. Percentage of right prediction of the estimated model is 71% and since the minimum acceptable amount of this statistic, for logit and probit models is 70%, percentage of right prediction obtained in this model shows a desirable figure. Therefore, the above model is reliable for the future analysis. The amounts of Estrella R^2, Maddala R^2, Cragg-Uhler R^2 and McFadden R^2 for estimated probit model stand at 0.47, 0.46, 0.64 and 0.37, respectively. Regarding the number of dependent variable observations, these amounts are desirable figures. Weighted aggregate elasticity for visitors' income descriptive variable shows that assuming other factors as constant, about 1% increase in visitors' income, causes 0.198% increase in acceptance probability of WTP. Also the marginal effect, related to this variable showed that in case of fixedness of other factors, one unit increase in visitors' income, leads to

Table 4: Results from estimation of Heckman two-stage method

Variables	Heckman two-stage			
	The first stage (Probit)			The second stage (linear regression)
	The amount of coefficient (statistic t)	Weighted aggregate elasticity	Marginal effect	The amount of coefficient (statistic t)
Y-intercept	0.47 (1.34)	-	-	779 (4.78)[*]
The amount of visitors' satisfaction	-	-	-	152.95 (2.26)[**]
Age (years)	-	-	-	-6.15 (-1.94)[***]
Education level (year)	-0.032 (-1.89)[***]	-0.168	-0.011	-13.045 (-2.12)[**]
Family size (number of family members)	0.081 (-1.75)[***]	-0.164	-0.028	-57.009 (-2.54)[*]
Income (rials)	-0.00091 (2.03)[**]	0.198	0.00032	0.00029 (1.89)[***]
Sexuality	0.439 (2.88)[*]	0.125	0.157	-
Inverse of Mill's Ratio	-	-	-	415.54 (11.90)[*]

Percentage of Right Prediction = 71%; Likelihood Ratio Test = 14.9781 P-value= 0.00475; Estrella R^2 =47% Maddala R^2 =46%; Cragg-Uhler R^2 = 64% Mcfadden R^2 = 37%; N=317; R^2 = 36%; F = 29.19; P-Value= 0.000; D.W = 2.18; N= 215; *, ** and *** are being significant at 1%, 5% and 10% levels

0.00032% increase in probability of WTP of visitor. Total weighted elasticity of independent variables of education level and family size show 0.168% and 0.164% decrease in the amount of WTP and consequently, 1% increase in education level and family size-assuming the fixedness of other factors. Also marginal effect of these two variables shows that assuming the fixedness of other factors, one unit increase in the number of years of study and family size causes 0.011% and 0.028% reduction in the probability of WTP of visitors. Negative correlation between the amount of educations and the amount of WTP of visitors results from the weak state of facilities in this church (43 % of visitors expressed the weak state concerning the welfare facilities of the church), so that being aware of the church's welfare facility state, they are not willing to pay high prices. The amount of marginal effect of sexuality dummy variable shows that due to its change from 0 (femaleness) into 1 (maleness) the probability of WTP of visitors about 0.157 % increased. The amount of estimated coefficient for each one of the above said variables together with their significance levels are shown in Table 4 and it is clear from the Table that all of the four variables in probit model are significant. Independent variables used in the linear regression model include visitors' income, family size, level of education, age and the variable of amount of visitor satisfaction. Linear regression model was estimated in the forms of linear and logarithmic functions and results from the non-nested testing indicated that the model was linearly selected and results from estimation of this model are also shown in Table 3. Determination coefficient related to linear regression shows 36% of changes in mean amount of WTP by the set of independent variables.

The amount of statistic F is 29.19 which, regarding the probability value, shows total significance of fitted regression at 1% level. Also the amount of Durbin Watson (DW) statistic shows lack of autoregressive state in estimated regression. Therefore, considered model is reliable for analysis of the next results. The amount of estimated coefficient for income variable shows that one unit increase in average amount of visitors' income, assuming the fixedness of other factors, will cause 0.00029 unit increase in the mean WTP of visitors. The amount of estimated coefficient of visitors' satisfaction amount variable is 152.95 which indicates that due to the improvement in church's welfare facilities and increase in visitors' satisfaction, mean WTP of visitors will increase by 152.95. The amount of estimated coefficient of variables family size, age and education levels show that, in case of fixedness of other factors, one unit increase in the amount of mean of above said variables, will lead to 57, 6.15 and 13.4 units decrease in visitors' WTP mean respectively. That is inverse of Mill's ratio is significant at 1% level and shows that factors effective in decision making about WTP are not identical with factors determining the amount of WTP and this confirms using Heckman two-stage method. On the basis of results from linear regression model mean WTP of visitors of Saint Stepanus Church came from relation 14:

$$WTP = 779 - (6.15 \times 40) - (13.4 \times 10)$$
$$- (57 \times 3.94) + (0.00029 \times 4390000)$$
$$+ (152.95 \times 1.17) + (415 \times 0.00000014) \quad (14)$$
$$= 4800$$

Total recreational value of Saint Stepanus Church also comes from as stated above, relation 15:

Total recreational value of Saint Stepanus Church = number of annual visitors × mean WTP (15)
Total recreational value of Saint Stepanus Church = 80000 × 4800 = 384000000 Rials

Results from the research show that people are content to pay some amount for taking the advantages of this archeological site, so that, 68% of understudy visitors, are prepared to pay some amount for taking recreational advantages of Saint Stepanus Church.

CONCLUDING REMARKS

Results from the research show that available welfare facilities of Saint Stepanus Church for tourism attraction are somewhat appropriate, so that 68% of visitors are prepared to pay some amount to visit Saint Stepanus Church. mean WTP of visitors, using CVM and Heckman two-stage methods are 4030 and 4800 Rials, respectively and annual recreational value of Saint Stepanus Church, were estimated at about 322 and 384 million Rials. That is, inverse of Mill's ratio is significant in 1% level and shows that factors effective in making decisions about WTP are not identical with factors which determine the amount of WTP and this, in return for confirms using Heckman two-stage method. Regarding the high potential of this church in tourist attraction and high importance that tourists grant for visiting archeological sites such as churches, it can be concluded that in case of improving in available welfare facilities and services in this church, the number of tourists will considerably be increased. Therefore, it is necessary for planners and authorities to pay much attention to these archeological sites in order to develop the tourism and increase the number of tourists. The expanding and creating suitable welfare hygienic facilities for families in different tourism sites might help develop the visitors' welfare. Also it is necessary for related authorities to pay much attention to policies of tourism and promenade activities together with observing the environmental standards and creating some mechanisms for revenue creation from ecotourism. It is also considerable that, foreign tourist attraction without preparing the electronic tourism substructures is almost considered as impossible. Hence, in information communication dimension there is necessary offering of a complete map about each one of tourism regions with all details on a defined site. This site should be in such a condition that all of the service giving sites should be defined and the tourist could follow all tracks through the site and resolve his/her needs.

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