

*Full Length Research Paper*

# **Determination of economic value of Göreme Historical National Park via contingent valuation method**

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**The Göreme National Historical Park with its natural and cultural values is one of the distinguished potential areas where recreation and tourism activities can be carried out. This study has been undertaken with the aims of determining the recreational and tourism use value of Göreme Historical National Park with the contingent valuation method, examining effective factors of users' willingness to pay. After completing preliminary works to achieve the objectives, a survey was conducted in the Göreme Historical National Park. Then, the data was entered into the computer using SPSS (Statistical Package for the Social Sciences) 15.0 statistical program to create a database for the statistical analysis. After that, the recreational and tourism use values (willingness to pay) for the National Park were calculated by doing necessary statistical analysis for Contingent Valuation Methods. As a result of the study, according to survey results which conducted in Göreme Historical National Park, annual willingness to pay value for current situation \$ 8.672.788 and according to survey results which conducted out of Göreme Historical National Park, annual willingness to pay value for current situation \$ 7.347.404 were calculated by using Contingent Valuation Method.**

**Key words:** Tourism, recreation, göreme national park, contingent valuation method.

## **INTRODUCTION**

Environmental resources are used intensively since they have a wide range of functions. At this point, continuity of products and services, which are offered for resources and communities to derive benefit, became important. Indeed, in recent years, the concept of sustainable development has attracted attention as a concept that keeps environmental quality, in an acceptable level and highlights the need for protection environmental resources. However, according to the traditional economic perspective, in the essence of sustainability idea, market failure and resource evaluation through the elimination of this failure is concerned. With this result, it's desired to create a strategy to make rational use of environmental resources depending on individual preference value of

the realized price corrections (Bateman and Turner, 1993).

Nowadays, in order to ensure sustainability of recreation and tourism, alternatives are being developed in line with rational planning and management studies. These alternatives and planning-management approaches are determined according to the area capabilities and user preferences.

The purpose of this study is to determine the value added to the area by use types, changes, planning and management approaches. In the last 30 years, some methods are developed to determine economic value to some natural and cultural areas and resources which has a non-monetary value. These methods can be classified as direct and indirect methods. Indirect methods are based on, to determine the value with following the trend of economic indicators as expressed in terms of various environmental factors. However, direct methods avoid potential market assumptions and provide individuals to

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express their preference for environmental commodities through mutual consultations and surveys. The most widely used indirect methods are Travel Cost Method and Hedonic Pricing Method, also the most common used direct method is Contingent Valuation Method (Ortaçesme, 1999).

Contingent Valuation Method was introduced by Davis in 1963. In the 1970s and 1980s, particularly in the United States, after the developments occurred both in theory and in practice, today natural resources economists displayed great demand for this method (Pak and Türker, 2004). Even though, Contingent Valuation Method, especially in high-industrialized economy, is used to measure the natural resources value, in recent years, method has been used to measure the demand for safe drinking water and sanitation products and services. Despite the Contingent Valuation Method used for determination the value of the products in markets. This method often used to provide water or air quality, for evaluating the national parks or for reducing the death risk (Gürlük, 2002).

The method mainly base on questions on willingness to pay for a good (willingness to pay-WTP) or the amount of money that is accepted to pay for a specific charge through participation (willingness to accept-WTA) (Holvad, 2006). A total value of the goods which is estimated by persons can be calculated by multiplying the average WTP with the population size which was taken from the number of individuals who enjoy these environments. Determined value with Contingent Valuation Method is widely used for social benefit / cost analysis and evaluation of activities environmental impacts. Any Contingent Valuation Method application can be divided into five phases. These phases consist of theoretical market creation, data collection, determination of the average payment trend and / or accept tendency, estimation of value function and calculating the total value phase (Hanley, 1997).

It is useful to evaluate the factors that determine the payment trend when calculating the total value and evaluating the validity of Contingent Valuation Method. For the Contingent Valuation Method, in order to investigate value bids, the bid curve can be estimated through payment trends taken up as the dependent variable and some socio-economic and demographic variables related to subjects as the independent. On the other hand, for the continuous question format, usually Ordinary Least Square decision techniques are used. In general, payment curve function which was developed in the contingent valuation method studies as shown below (Pak and Türker, 2004).

$$PT = f(Q, Y, S, X, E)$$

In the formula, individuals pay trend to (PT) consist of; number of trips (Q), individual's income status (Y), and other social variables such as education (S) and other socio-economic variables (X). At the same time, in this

*scenario*, the environmental quality parameters of such area (E) can also be included. Contingent Valuation Method has been widely used by several researchers. Kuriyama (1998), tried to identify payment trends for preservation of Kushiro Wetland Area within the "Determination of the value of the Kushiro Wetland ecosystem" named study. Schultz (1998) mentions the importance of determining admission fee in his study which name is "Determination of Opportunities and Limits of National Park entrance fee in Costa Rica with contingent valuation method". Tyrväinen and Väänänen (1998) determined the effectiveness of Contingent Valuation Method for determination of the value of the urban forest area. The capital of North Carelia, Joensuu, in Finland selected as the research area. Hörnstein and Fredman (2000) used Contingent Valuation Method to determine the participants' payment trends according to the recreational forests distance to houses.

The research conducted by Gürlük (2002), created to demonstrate the rural development project which was prepared for Misi residential area and environmental impacts of the project and to throw light for the local government. Environmental assessment has been made by using Contingent Valuation Method. Pak and Türker (2004) estimated the recreational use value of Kapıçam Forest Resting Place which was under the control of Kahramanmaraş National Parks and Hunting-Wildlife Chief Engineer using Contingent Valuation Method. Within the context of this paper, Nevşehir Göreme Historical National Park recreational and touristic use economic value which has been determined by using Contingent Valuation Method.

### The study area

Göreme Historical National Park<sup>1</sup> covers 40 square kilometers area between Nevşehir province and Avanos and Ürgüp district in the Central Anatolia. Göreme Valley is a worn plateau which is on the formerly active volcanic areas in the region. "Cappadocia General Protection Project" put into effect in 1976 by the Monument Supreme Council and then, in 1985, UNESCO World Heritage List included Göreme Valley (Anonymous, 2005). Göreme Historical National Park is the only national park that Turkey has declared outside the forest regime.

Ministry of Forests intended National Parks Act only for the forest regime, but the Council of Ministers modified the relevant provisions of law with the 30.10.1986 dated and 86 / 11135 numbered decision and so, Göreme have been included in the national park system. Göreme Historical National Park exposed to permanent settlement from 4th century to 13th century and quite compatible that rural view has emerged from the area. Especially,

<sup>1</sup> Scientificly and aesthetically National Park; is part of the nature which has conservation values, recreation and tourism areas with national and international rare natural and cultural values

conical mounds and rock surfaces called "fairy chimneys" is formatted for churches, chapels and places used for various functions. This carves has been used for sheltering, housing and worshipping in The Christian religion prohibited period.

Culture and Tourism, Agriculture and Forestry Ministries protect this region natural structure and historical monuments. In this context, construction has been restricted and to protect existing structures regulations were produced. Despite all protection and improvement cautions, water, natural erosion and earthquakes remains a big threat on the church and chapels wall paintings. Especially, destruction is more remarkable on the difficult reached areas (Anonymous, 2007).

## MATERIALS AND METHODS

In this study, Contingent Valuation method has been used to determine the recreational and tourism use value of the study area. Study method consists of six phases. These phases' are:

1. Displaying the theoretical information on the study area and subject,
2. Composing the *scenarios* on utilizations that can be applied to the area in the light of visitor preferences and conservation area planning criteria,
3. Applying surveys in the context of Contingent Valuation Method,
4. Evaluation of survey results,
5. Determining the economic value depending on the utilizations that can be applied to the study area and willingness to pay.

As part of the Contingent Valuation Method, within the surveys, the *scenario* was formed on the protection of the area due to area's that have unique natural and cultural value. Peoples' knowledge level and protection approaches determined with the surveys. Photographs that related to current and absence protection situation of the area that have been displayed to people who answer the survey questions and asked which conditions would be preferred. The highest willingness to pay value tried to determine for protection and transfer the natural and cultural heritage of the area to the future generations. Bidding game method used to determine the highest willingness to pay value. The entry fee for the area used as a starting point for the survey and willingness to pay value has been determined accordingly. At the end of the survey with an open-ended question, the highest willingness to pay value has been determined.

For determining the function of willingness to pay multiple regression analysis made between willingness to pay value which is the dependent variable of Contingent Valuation Method and visitors' socio-economic, cultural and demographic characteristics which are the independent variables. Surveys applied to persons who already had visited the area and to persons who don't know the area, so differences has been formed in function. Because of this, independent variables for two groups showed differences. For the group who visit the area;

$$PT = f(Y_b, S_b, M_b, X_b, C_b, K_b) \quad (1)$$

$Y_b$ : income status of b individual,

$S_b$ : age of b individual,

$M_b$ : education status of b individual,

$X_b$ : visit number of b individual,

$C_b$ : accommodation expenditures in the area of the b individual,

$K_b$ : expenditures except accommodation in the area of the b

individual.

Firstly, function tests for the group who visit the area made to modify the variables. In terms of these function tests, travel costs (accommodation and except accommodation), age, visit number are not considered significant for F and t values and the model did not include these variables. Income and educational status variables have taken to the model as "independent variables".

$$PT = f(Y_b, M_b) \quad (2)$$

PT: the highest entry fee payment trend of b individual,

$Y_b$ : income status of b individual,

$M_b$ : education status of b individual.

For the group who didn't visit the area;

$$PT = f(Y_b, S_b, M_b, X_b, C_b, K_b) \quad (3)$$

PT: the highest entry fee payment trend of b individual,

$Y_b$ : income status of b individual,

$S_b$ : age of b individual,

$M_b$ : education status of b individual,

$X_b$ : visit number of b individual.

Function tests for the group who did not visit the area made to modify the variables. In terms of these function tests, age, visit number and education are not considered significant for F and t values and the model did not include these variables. Income status variable has taken to the model as "independent variables".

$$PT = f(Y_b) \quad (4)$$

PT: the highest entry fee payment trend of b individual,

$Y_b$ : income status of b individual.

Göreme Historical National Park was the research area. The main material of the study established from the face to face surveys that applied to the selected visitors through simple random sampling method. The pictures that designed to provide better detection of the work in the context of the Contingent Valuation Method were the material of the study. 500 surveys applied between 05 - 08 June 2008 for determining the recreational and tourism use value of the study area.

The languages and number of surveys were determined according to the national and foreign tourists who visited the province of Nevşehir in 2005. Surveys were applied in 5 different languages (Turkish, English, German, Japanese, and French).

## RESULTS

Surveys applied in the area and outside the area to determine the recreational and tourism use value of Göreme Historical National Park in the context of Contingent Valuation Method. In the multiple regression analyze which made according to the survey results conducted in the field, linear function type is chosen to determine the willingness to pay value function because this function type give better results in terms of significance level and when the variables number was too much. This function found significant at the level of 0. 01 (Table 1). F test results which were done for Significance of the model for all, model found statistically significant at the level of 14% (Table 1). Equation (2), numbered function have occurred according to survey that applied to the group who "knew-know-saw" study area and

**Table 1.** Variance analysis of the survey results conducted in the field.

Model		Sum of squares	df	Mean square	F value	Sig.
1	Regression	2151.453	2	1075.727	13.799**	0.000(a)
	Residual	14967.265	192	77.955		
	Total	17118.718	194			

\*\* Significant at the level of 0.01.

**Table 2.** Coefficients according to the survey results conducted in the field.

Model	Coefficients		t value	Sig.
	$\beta$	Std. error		
Constant	9.926	2.825	3.514	0.001
Income status	0.001	0.000	3.883	0.000
Education status	0.510	0.151	3.378	0.001

**Table 3.** The results of regression models table according to the survey conducted in the field.

Model	R	R square	Adjusted R square	Std error	Durbin-Watson
1	0.355(a)	0.126	0.117	8.829	1.800

**Table 4.** Variance analysis of the survey results conducted out of the field.

Model		Sum of squares	df	Mean square	F value	Sig.
1	Regression	453.099	1	453.099	8.218**	0.004(a)
	Residual	16705.589	303	55.134		
	Total	17158.689	304			

\*\* Significant at the level of 0.01.

income and education level found significant which were the independent variables in this function. Income and education level affect positively the payment trend. Payment trend is gathering if the income and/or education level increase. Income and education level variables that entered the model have seen important at the level of 0.01 (Table 2). Income and education level variables can only explain 13% of the payment trend changes for the current situation of the Göreme Historical National Park (Table 3).

In the multiple regression analyze which made according to the survey results conducted out of the field, linear function type is chosen to determine the willingness to pay value function because this function type give better results in terms of significance level and when the variables number was too much. This function was found significant at the level of 0.01 (Table 4). Equation (4), Numbered function has occurred according to survey that applied to the group who did not "know-see" the study area. Age, number of visits, education level could not enter to model in a meaningful way. Only income status enters to model. Payment trend was affected positively

by the income variable. Payment trend is gathering if the income level increase. Income variable that entered the model, have seen important at the level of 0.01 (Table 5). Income level variable can only explain 3% of the payment trend changes for the current situation of the Göreme Historical National Park. Results of the F test show that model is statistically significant at the level of 8%. Durbin-Watson is equal to 2.100 (Table 6). There is no auto-correlation problem in the model. Average payment trend was found with the help of the following formula:

$$APT = \frac{\sum_{b=1}^n PT_b}{n} \quad (5)$$

APT: average payment trend,  
 $PT_b$ : the highest entry fee payment trend of b individual,  
 n: total visitor number (survey applied).

Multiplying average payment trend with the total visit number per a year give the total payment trend result

**Table 5.** Coefficients according to the survey results conducted out of the field.

Model	Coefficients		t value	Sig.
	B	Std. error		
Constant	17.529	0.684	25.617	0.000
Income status	0.001	0.000	2.867	0.004

**Table 6.** The results of regression models table according to the survey conducted out of the field.

Model	R	R square	Adjusted R square	Std error	Durbin-Watson
1	0.163(a)	0.026	0.023	7.425	2.100

**Table 7.** Average payment trend values for Göreme historical national park (according to the survey conducted in the area).

Alternative situations	Average payment trend (\$)	Total payment trend (\$)
Current Situation	15.00	8.672.788.00
Developed Situation	19.75	11.412.171.38

**Table 8.** Average payment trend values for Göreme Historical National Park (according to the survey conducted outside the area).

Alternative situations	Average payment trend (\$)	Total payment trend (\$)
Current situation	12.71	7.347.404.00
Developed situation	13.58	7.848.276.00

which represents the recreational and tourism use value of the study area.

$$TPT = APT \times VN \quad (6)$$

In the formula,

TPT: Total payment trend,

APT: Average payment trend,

VN: Number of visit per year.

According to the results of field surveys, average entrance fee willingness to pay of visitors is 15.00 \$. In case the development of the current situation by maintaining, average willingness to pay value of the visitors increased to \$ 19.75. In 2007, 577.929 people visited Göreme Historical National Park in one year according to Nevşehir Museum director's office data'. According to this data, when Table 1 was examined, Göreme Historical National Park tourism and recreational use value for the current situation calculated as \$ 8.672.788.00. In the context of conservation and development status of the area, total payment trend increase depending on the average payment trend increased (Table 7). When Table 8 was examined, according to the

survey conducted outside the area, average entrance fee willingness to pay of people is \$ 12.71. In case the development of the current situation by maintaining, average willingness to pay value increased to \$ 13.58.

According to the survey conducted outside the area, total payment trend calculated \$ 7.347.404.00 for the current situation of the study area, in the context of conservation and development status of the area, total payment trend increased to \$ 7.848.276.00 (Table 8). It is examined that payment trend of the people who did not visit the area is lower than the people who know the area according to the survey conducted in and outside the area. Same situation is seen between the current status and development of and conservation of area. Payment trends of the people who do not visit the area are very close to each other for the current situation and development and conservation of the area.

## Conclusions

Economic evaluation studies which aimed to determine value of the social benefits of the natural and cultural areas used for recreational purposes to the society are

performed in many countries for many years. The results obtained from these studies may be guiding the public managers for conservation of the areas, for the investment purposes or redirecting the investments managers. Natural areas values which were determining with economic evaluation methods, are not the exact values that must be taken into consideration in the benefit-cost analysis, they are just important for directing the decision makers. Studies that aimed these assets to value in economic meaning need to be increased and improved in our country. If the number of similar studies increased, rational and sustainable utilizations will be established. So, these utilizations provide to increase the visitor numbers consequently tourism income, to protect the natural and cultural structure of the area with drawing attention to these utilizations and to be transferred to the future generations. In addition, these studies will be a guide for local governments' investments to the areas which have high resource value and planned tourism centers. The goal of this study was; determining the Göreme Historical National Park recreational and tourism use value and emphasizing the necessity of protection of this area by guiding new investments. In this study, contingent valuation method, which is the most popular method to determine the natural resources use value, was used to determine the Göreme Historical National economic value. The models statistical test results obtained from this study is parallel to the research results obtained from other countries with using the same method. Surveys conducted, to evaluate the level of visitors' interest in conservation efforts and willingness to pay trends for the Göreme Historical National Park conservation.

In the context of the method, survey conducted to the people who visited the area and who did not visit the area. For determining the difference between the people willingness to pay value, surveys were conducted in and outside the area. People's reactions are positive to development and conservation proposals of the current situation and this is reflected to willingness to pay for the entry fee. People did not visit the area willing to pay \$ 0.86 more entry fee however, visitors willing to pay \$ 4.75 for the development and protection of the area. Conservation and development of the area do not affect the willingness to pay value of the people who did not visit the area. They are not willing to pay more entry fee though they do not use the area. The primary goal of these studies is to compare the average payment trend based on the entry fee. And so, it will be meaningful to compare the entry fee of the Göreme Open Air Museum which is determined by the Ministry of Culture and Tourism for the year 2007 with the average payment trend for the current situation of the study area. Entry fee per person which is determined by the Ministry is equal to \$ 6.66. But by applying Contingent Valuation Method, entry fee willingness to pay value is calculated as \$ 15.00 for visitors, \$ 12.71 for persons who did not visit the area. Willingness to pay value determined by Contingent Valuation Method is rather much than the entry fee that is

set by the Ministry. This result showed that visitors are willing to pay more entrance fee for the utilizations of the Göreme Historical National Park. When the variables that affect the payment trend examined to determine how to affect the willingness to pay trend, it is examined that visitors income level variable affect positively willingness to pay value. In other words, visitors who have high income level tend to pay more entry fee than visitors who have low-income level. Same situation is valid for the education level. Payment trend increases accordingly to education level. When the model variables that affect the payment trend was examined, 13% of the variables can explain the change of the payment trend according to survey results that conducted in the area, 3% of the variables can explain the change of the payment trend according to survey results that conducted outside the area. Especially, according to the survey conducted outside the area, it's observed that different variables affect the payment trend. Different variables must be found to increase the explanation rate.

As a result, protect - use balance must be established to increase the Göreme Historical National Park recreational and tourism use value and to satisfy well-deserved situation of the Cappadocia region. In addition, Göreme Historical National Park's are importance for the country tourism and country economy should be taking into account and the tourism and recreational use value of this area should not be ignored.

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