

Applying a Travel Cost Method to Evaluate the Thermal Tourism in Greece: Case Study of Loutraki Arideas Springs

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Abstract. The Travel Cost Method employed in the present research comprises one of the most important methods belonging to the wider category of Revealed Preference Methods. The present study focused on the Pozar Thermal Springs area, located in the prefecture of Pella, Central Macedonia, Greece due to the fact that the organized thermal spa tourism in the Spa Center of Loutraki, Pozar contributes to a great extent on recreation. The purpose of the present study was to record and analyze the conditions of demand for thermal tourism regarding the operation of spas located in the area of Loutraki, in Aridea. The survey was conducted using an Individual TCM employing a face-to-face questionnaire survey (n = 323 guests). The results are expected to be used to sustainable tourism management in wider area.

Keywords: Economic Valuation, TCM, Environmental Economics, Regression Analysis.

1 Introduction

It needs hardly be argued that the natural environment offers multiple benefits for people and their quality of life (Costanza et al. 1997). Among them, an important service offered by the environment is that it can provide recreational services to people, having a pivotal role in shaping the tourism development of a region and the potential for guest satisfaction in the area (Arabatzis and Grigoroudis, 2010). For the future spatial organization of alternative tourism in Greece, regions with "growth potential for special and alternative tourism" regarded as "poles of intensive growth of special forms of tourism" are defined along the lines of the particular spatial framework for tourism in the country (Greek Ministry of Environment, 2013).

The study offers opportunities for the rational exploitation and management of tourism in areas that can become poles of special forms of tourism since it provides a potential for the design and implementation scenarios as well as interventions and policies with a specific developmental objective. In particular, through the application of TCM, the tourist recreational value and demand for recreation will emerge. This demand function is critical to the design of the tourist development of a region, as it may be used in order to assess the value of various ecosystem services -

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Proceedings of the 8th International Conference on Information and Communication Technologies in Agriculture, Food and Environment (HAICTA 2017), Chania, Greece, 21-24 September, 2017.

such as the aesthetic value of the landscape, as well as the tourist and recreational value of the study area (Baseline Scenario). The final objective of this survey was to estimate the recreational demand function (i.e. the recreational value) for the site under consideration. Investigating the relevant literature showed that the application of TCM is deficient in areas of hot springs and thermal natural resources. Therefore, the present research is expected to provide the principle and basis for the reconstruction and application of the method to thermal springs and natural resources of other areas. The results are expected to be used (a) to achieve optimal organization of the tourism in the study area, based on the principles of sustainable tourism development and the directions of spatial planning (the Special Framework for Spatial Planning and Sustainable Development-SFSPSD for tourism) and (b) to promote the development of appropriate management techniques along with modes for the protection of the natural environment.

2 Sampling and Statistical Methodology

Questionnaires aimed at the population of visitors to the Pozar Thermal Springs during the winter period of 2015-2016 were used to conduct the present research. A valuation study based on primary field research (questionnaires, surveys) was used to explore the views of visitors to the research area under consideration. More specifically, the Travel Cost Method (TCM) individual modeling was used. A face to face questionnaire survey was conducted during the period January 2016 - March 2016. Furthermore, pre-sampling was employed in December 2015.

The Haphazard Sampling Method was used and the definition of the total sample size is provided by the following formula (Humphry, 2004; Thrusfield, 2005):

$$n = \frac{Z^2 \times P(1-P)}{e^2} \quad (1)$$

where: Z=value from standard distribution corresponding to desired confidence level (Z=1.96 for 95% CI), P=estimated true proportion (prevalence)=0.3 and e=desired precision=0.05. Therefore, the Total Sample Size calculated was: n= 323 participants.

The processing of the results and the analysis of the data were realized by using the statistic program IBM SPSS v.20. The tool used in this research is a structured questionnaire, which comprised a combination of questions.

3 Field of Research

The selected research area is the Mountain Arc of Almopia (Mount Voras). The mountainous region of Voras was selected because of its special environmental significance since vast areas of the region are protected by the network Natura 2000, while it also includes further protection areas, e.g., the game shelter (Greek Ministry of Physical Planning and Public Works, 1995). In addition, it presents particular scientific and research interest being a pole of intensive development of specific alternative forms of tourism (Mountain-Climbing Tourism, Rural, Cultural, Spa-therapeutic, and Wellness Tourism) being both a unique resort and a region with ski

facilities (Skiing tourism). Tourism is one of the leading local economic developmental pillars. Thus, the surrounding area becomes a tourist resort which according to Special Framework for Spatial Planning and Sustainable Development - SFSPSD for tourism can be considered as an intensive growth pole of special forms of tourism. In particular, the area on which the analysis focuses (evaluation research) is Pozar (Spa Natural Resource).

4 Results and Discussion

4.1 Sampling Descriptive Outcome

To assess the frequency of the visit, guests were asked if it is their first visit to the area of Loutra or not. All guests of the sample, that is, 100% responded to the question. However, of the total sample (n=323), 184 respondents, that is, 57%, reported having visited Loutra in the past while only 139 visitors, that is, 43%, stated that it is their first visit. Visitors in the sample, who did not come for the first time in the area, visited the Thermal Springs 127 times last year. The visit frequency to other Thermal Spas and regions was no visits for 281 respondents, 87% of the sample, while a total of 42 respondents i.e. 13% visited other medicinal natural resources in Greece and abroad, in Serres, Xanthi, Thessaloniki Greece, Turkey, Austria, etc. The weekends seem to be more preferred for their visits for 74.9% of the sample (n= 242) while the weekdays 25.1% (n=81). The origin and area of residence of the visitors in the sample includes areas of both Greece and abroad. The duration of the journey from the home area to the survey area ranged from 5minutes (minimum) and 1440minutes (maximum) with 167,60minutes (mean) and 184,087minutes (Std. Deviation). All the participants, i.e. 100%, answered the question concerning the investigation of the modes of transport used by the visitors to access the Thermal Springs of Pozar. The analysis of the results reveals that in their vast majority, 89.5% (n=289%) of the sample traveled to Pozar by car while 8.4% (n=27) used the bus, only 0.9% (n=3) used motorbikes and other means of transport e.g. airplane 1.2% (n=4). The people who traveled together with the individuals in the sample were in total 1588 people over 18 years old and 164 less than 18 years old, while the overnight stays in a village in the wider area were in total 501 for the whole sample. The settlement, which was chosen mostly, was Loutraki at a rate of 61.30%. The respondents were asked to reply whether the particular trip included overnights in other areas as well so as to investigate multiple and thematic trips relating the journey under consideration as well as the area to other destinations well. Following the above questions, 82.66% (n=267) answered no while 17.34% (n=56) responded positively. The areas they had decided to visit and stay overnight in combination with their particular trip to the Thermal Springs were mostly Thessaloniki and the settlement of Saint Athanasios in Kaimaktsalan as well as other parts of Greece, with the number rising to 136 overnight stays.

The response rate concerning the investigation of the reasons for visiting the Thermal Baths of Pozar reached 100%. The main reasons for visiting the area were identified in the following 6 categories, and the respondents had the option of

identifying more than one reasons for visiting: a) medical purposes b) relaxation-mental health c) getting to know the region d) potential for recreational activities e) sightseeing and tour f) other reasons. Data processing revealed that: 87.6% (n=283) of the sample visit the Thermal Springs of Pozar for relaxation-mental health purposes, 7.7% (n=25) for medical uses, 20.4% (n=66) to get to know the region, 16.7% (n=54) for recreational activities, 25.4% (n=82) for sightseeing and touring in wider area, while only 1.8% (n=6) for other reasons e.g. gatherings of dance clubs, entertainment-nightlife, seminars, sex. All the guests who participated in the research (n=326) were also asked to identify the reasons why they had chosen the Thermal Springs of Pozar (response rate 100%). An analysis of the results shows that 62.8% (n=203) of the visitors, chose the Thermal Springs of Pozar and not another region for the beauty of the natural surroundings, 27.6% (n=89) for the healing properties of thermal water in Pozar, 43.3% (n=140) because it is a short distance from their place of residence, 28.8% (n=93) for its organized and sufficient hospitality infrastructure (accommodation, food, entertainment), 15.8% (n=51) for recreational activities, 8% (n=26) for the climate conditions, and 29.7% (n=96) for the combination with other nearby travel destinations in the region (e.g. Kaimaktsalan Ski Resort, Agios Athanasios traditional settlement). The duration the respondents spend in the Spas facilities for Balneotherapy per trip reached 360minutes (maximum) and 0minutes (minimum) with 91.89minutes (mean), while the time for massage and spa ranged from 610minutes (maximum) and 0minutes (minimum) with 36.30minutes (mean). These results demonstrate that almost all visitors spend time in the thermal water for physical and mental therapy with massage therapy and spa comprising significant additional peace of mind and well-being factors for the visitors. Table 1 shows the financial investigation of the travel costs and daily consumer expenses in the region (e.g. fuel, purchases, stay).

Table 1. Descriptive Statistics of the Travel Cost Parameters

Cost of Travel	N	Range	Maximum	Sum	Mean	Std. Deviation	Variance
Fuel	323	399	400	15506	48.01	54.499	2970.143
Food/Drinks	322	300	300	13962	43.36	52.940	2802.667
Fuel (in area)	323	65	65	4213	13.04	12.719	161.768
Food/Drinks (in area)	322	150	150	13041	40.50	26.014	676.731
Balneotherapy / Massage / Spa	322	150	150	7002	21.75	20.500	420.234
Recreational Activities	321	140	140	3055	9.52	17.242	297.275
Further Expenses	322	110	110	9008	27.98	26.469	700.591

Last but not least, the social and economic characteristics of the visitor sample were recorded, concerning the age of visitors, their family status, their level of education, their occupation, their gender and their annual net income. Regarding gender as indicated, women outweigh men slightly, presenting 57.59% (n=186) of the population while men 42.41% (n=137). Considering an analysis of the results in terms of age, it appears that 45.8% (n = 148) of the sample is 18-30 years old, 29.7% (n=96) are 31- 40 years old, 18% (n = 58) is between 41 and 50 years old, 6.2% (n = 20) is 51 to 60 years old, and finally 0.3% (n=1) is > 60 years old. It is noteworthy,

that the census included only people older than 18 years. The variable concerning the family situation of the sample showed that 1/2 of the sample population, i.e. 49.5% (n=160) of the visitors are bachelors, 44.9% (n=145) are married, 5.3% (n=17) are divorced while 0.3% (n=1) are widowed. As shown by their family status, 32.8% (n=106) of the visitors surveyed have children < 18 years old while 67.2% (n=217) of them do not have children. As to the level of education of the sample, data processing shows that 21.3% (n=101) are university graduates (Higher Education Institution-AEI), 23.8% (n=77) are university graduates (Technological Education Institution-TEI), 14.9% (n=48) have a technical vocational school diploma, (Vocational Training Institutes), 15.8% (n=51) are senior high school graduates, 10.8% (n=35) hold a Master's Degree, 2.5% (n=8) are junior high school graduates while 3 respondents are at the lowest level of education with a percentage of 0.9%. The categories of professional status of the respondents received the following rates: farmer 4% (n=13), household chores 2.2% (n=7), employee 33.7% (n=109), a civil servant 17.3% (n=56), freelancer 22.3% (n=72), entrepreneur 5% (n=16), university student 7.7% (n=25), unemployed, 6.2% (n=20), pensioner 1.5% (n=5). Towards the end of the survey the respondents were asked to answer whether they are members of an environmental organization - body in order to record their environmental sensitization. The results revealed that 86.1% (n=278) of the sample do not belong to an environmental club, whereas only 13.9% (n=45) of the visitors in the sample are members of such an organization. Completing the anonymous research the respondents were asked whether they wished to sincerely indicate their personal net annual income. This question was not answered by 5.6% (n=18) however, a valid response was provided by the rest of the sample at a rate of 94.4% (n=305). Specifically, 18.9% (n=61) of the sample stated to have a personal net annual income <€ 5,000, 28.5% (n=92) 5,001-10,000 €, 24.8% (n=80) 10,001-15,000 €, 11.1% (n=36) 15,001-20,000 €, 4.3% (n=14) 20,001-25,000 €, 2.2% (n=7) 25,001-30,000€, and finally, 4.6% (n=15) > 30,000 €.

4.2 Econometric Outcome

In this section, the econometric models, which are used to compute the Consumer Surplus, are presented. The following tables present the econometric outcome of the Poisson & Neg. Bi. Models with Log Function. From the tables below, we can deduce that the intercept term is statistically significant at significance level $\alpha=0.05$. Furthermore, total cost, age, sex and the level of education variables are statistically significant in Poisson Model at significance level $\alpha=0.05$. The income is not statistically significant at a standard level of statistical significance $\alpha=0.05$. What is more, the total cost and the level of education variables is statistically significant (Neg. Bi. Model) at significance level $\alpha=0.05$ and no other variable is not statistically significant at standard levels of statistical significance. The information's from the two models exhibits a high sampling adequacy and appropriateness of the model.

Table 2. Poisson Model-Log Function

Variables	Parameter Estimates				
	β	Std. Error	Wald Chi-Square	Df	Sig.
(Intercept)	2.593	0.1927	181.016	1	0
Total Cost	-0.003	0.0003	55.509	1	0
Income	-0.015	0.0252	0.369	1	0.544
Age	-0.123	0.0402	9.271	1	0.002
Gender	-0.193	0.0678	8.126	1	0.004
Level of Education	-0.096	0.0246	15.437	1	0

Table 3. Negative Binomial Model-Log Function

Variables	Parameter Estimates				
	β	Std. Error	Wald Chi-Square	df	Sig.
(Intercept)	2.373	0.3734	40.398	1	0
Total Cost	-0.002	0.0006	12.065	1	0.001
Income	-0.028	0.0491	0.320	1	0.571
Age	-0.093	0.0730	1.609	1	0.205
Gender	-0.148	0.1374	1.156	1	0.282
Level of Education	-0.094	0.0515	3.308	1	0.001

Table 4. Information about the Poisson Model

Goodness of Fit Test	
Pearson Chi-Square	1288.694 (df=299)
Log Likelihood	-792.502
AIC	1597.004
AICC	1597.286
BIC	1619.326
CAIC	1625.326
Omnibus Test	
Likelihood Ratio Chi-Square	93.645
Df	5
Sig.	0

Table 5. Information about the Negative Binomial Model

Goodness of Fit Test	
Pearson Chi-Square	300.212 (df=299)
Log Likelihood	-670.802
AIC	1353.605
AICC	1353.887
BIC	1375.927
CAIC	1381.927
Omnibus Test	
Likelihood Ratio Chi-Square	20.047
Df	5
Sig.	0.001

5 Conclusions

According to the data emanated from this survey, the Consumer Surplus (CS) was estimated at 333.333€ (Poisson Model) and 500€ (Negative Binomial Model). These values are vital in order to calculate the total recreational demand for a tourism area. To estimate the willingness to pay (WTP) for a visit to the Thermal Springs of Pozar the actual cost of travel and accommodation at the Spa was used, which was analyzed into seven components. The Tourist Value of Pozar Thermal Springs was estimated at 85,650,666.67€ with the Poisson Model and 128,476,000€ with the Negative

Binomial Model. These estimations are based on the number of tickets per day during April 2015 to March 2016 according to official visitors' data provided by the Municipality of Almopia-Loutra Loutrakiou S.A. (Single Shareholder Municipal Property Development Public Company Limited). Estimating the tourist recreational value contributes to the better planning of sustainable tourism development with the role of economic valuation of environmental resources emerging as the core factor of management measures to monitor an area.

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