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## **AN EVALUATION OF WEBSITES QUALITY FACTORS IN AGRO TRAVEL AND ECOTOURISM**

**Petros Lathiras  
Anastasia Zopidou  
John Mylonakis  
Panayiotis Tahinakis  
Nikolaos Protogeros  
Ioannis Valachis**

**Abstract:** Tourism is an information intensive industry and as a service industry, information is the most significant quality factor for the industry. E-tourism is part of electronic trade that includes the fastest developing technologies that assist to the hospitality and tourism strategic planning and management. The aim of this paper is to analyze and compare the quality of 3 Internet sites and detecting their strong and weak points by analyzing quality into its constituent dimensions. Research was carried out by personal interviews and via electronic mails to a sample of 413 persons and internet users, out of which 157 responded. Statistical analysis included simple and multiple comparisons ANOVA and t-tests. Research detected some medium quality ratings, as well as, some more positive evaluations of certain individual factors. The Internet sites that collected the highest ratings are Agrotavel (5.32), Guest inn (5.08) and Ecotourism (4.26). Elements considered important in all three web portals are the lack of interaction facilities and conversation sections and personalized options with user personal accounts. Emphasis must be paid on the design, information, interaction and overall quality of a web site.

*Key words:* Tourism, E-Tourism, Ecotourism, Agrotourism, Tourism Intelligence, Web Portals, Tourism Internet Services.

### **INTRODUCTION**

The World Tourism Organization (WTO) defines tourism as the entirety of activities performed by those people who travel and stay in places other than their usual environment for no more than one consecutive year, for entertainment, business and other purposes (Mak, 2004).

Already during the 90s, mass tourism, combined with the “sun & sea” style, had already lost ground, as tourists – consumers become tired of the traditional touristic products and resorts (Poon, 1994). Tourists are now more well-informed, more demanding, and they seek personalized and more “personal” services. In many instances, tourist satisfaction originates from touristic experiences gained, which are in turn based on complexity, innovation and variety (Haywood, 1990). This turn of the

sector of tourism is characterized by flexibility, segmentation and more original touristic experiences (Poon, 1994). The various choices that become available to potential consumers of touristic products make them more selective and strict with regard to the value for money invested. In this context, the Internet becomes a dynamic tool to obtain information in the hands of consumers as well as an alternative means of communication and sales promotion both for travel agencies and individual businesses.

Tourism forms an integral part of the Greek reality and has a great importance for the Greek economy. The product of tourism constitutes a mixture of material and non-material elements, and has been placed in the center of research during the latest years. The quality of touristic services may be considered as a diversification factor, as tourism is part of a highly competitive environment. Within this dynamic environment, a transformation has taken place, as a great deal of importance is now paid on the Internet, and a large number of users chose it in order to obtain information on travel destinations, resorts and offered services. With the spread of the Internet and broadband, the ability of exposing and promoting touristic services has adopted new and different forms and dimensions.

The scope of this paper is to analyze and compare the electronic quality of three Internet sites, by using quality measurement models for Internet services. The purpose of Internet sites - that may be characterized as web portals - is to provide touristic information. The research aims at comparing the quality of Internet sites and detecting their strong and weak points by analyzing quality into its constituent dimensions.

## **1. PAST LITERATURE IN E-TOURISM, ECOTOURISM AND AGROTOURISM**

The Web is a mean for change, providing the chance for flexibility, cooperation, rapidity and it could be an ideal platform for the tourism and hospitality industry to share information about supply and demand around the world in a straight, time effective and costless manner. According to Sheldon (1997) and Inkpen (1998) tourism is an information intensive industry and as a service industry, information is the most significant quality factor for the industry. The administration of information is an important daily process for the tourism industry, where the Web facilitates reconfiguring the whole distribution system in the tourism industry that raise competence, decrease costs and improve tourist service (Werthner and Klein, 1999, Alford, 2000, WTO, 2001). The most important trait is that alters the relations and value chains of the industry by enabling intermediation and disintermediation at the same time. With the development of the Internet, many changes have been made to the structure of the industry with the provision to the tourism and hospitality stakeholders the prospect for direct transactions.

Electronic tourism or e-tourism is part of electronic trade that includes the fastest developing technologies that assist to the hospitality and tourism strategic planning and management. The precise activities of e-tourism should count on tourism operators, tourism agencies and supplementary organizations that directly deal with

virtual tourism by using a particular website. A tourism portal offers the environment to promote tourism business and offers the most varied services. E-tourism, apart from e-payment, e-booking and e-information, by employing Internet, Intranet and Extranet, according to Buhalis (1998), some destination management organizations (DMOs) have successfully integrated this utility in promoting their destination; in providing the proper information to the tourists; and, in supporting small and medium-sized tourist enterprises (SMTEs) to promote their products and services.

The significance of electronic tourism in the travel and tourism industry has increased enormously over the past few years. E-tourism is of great benefit also for ecotourism where it can efficiently support the promotion of Agrotourism sites and can provide interactive forms of information gathering that can be exclusively adjusted to the tourism industry.

Ecotourism is the fastest growing tourism sector, with an estimated growth rate of 10-15% (Panos, 1997). Ecotourism is defined as an environmentally responsible sector that, according to Ceballos-Lascurain (1996), fostering travel and visitation to relatively untouched natural areas with the intention of enjoying and appreciating nature that encourages conservation, has low visitor contact and active socioeconomic beneficial participation of the local community. Ecotourism is a multivariable phenomenon that has come out rapidly the last two decades and the use of the term correspond to the example of sustainable development and publication of the World Commission on the Environment and Development's report *Our Common Future* (Brundtland, 1987). Hawkins and Maun (2007) stated that ecotourism, since deals with economic, social, and environmental sustainability in tourism, became a great opportunity for the conservation and development agencies. As a result, there was a huge development in the sector in the 90's that continues till these days (Watkin, 2003, Nyaupane and Thapa, 2004).

The more remote, less developed tourism areas that Ecotourists seek are most vulnerable to cultural disturbance and environmental degradation (Cater, 1993). There is a number of beneficial impacts emerged from ecotourism for host communities and tourists and environments, including conservation, sustainable development opportunities, education and revenue for governments to put into operation management and protection systems and boosting transformations in ecological awareness that has created a noteworthy tourist niche. Nevertheless, with the ecotourism development and the proposal that it can alter the ecological responsiveness of people, become obvious the potential synergies between indigenous aspects and ecotourism objectives (Weaver, 2001).

There is an argument between authors (Hvenegaard, 1994) that some of them give emphasis to the potential for ecotourism to promote the well being of both local community and its environment, and others, like Cater and Lowman (1994) alert for the uncritically acceptance of ecotourism as a general common good. Hall and Butler (1995) suggest that even though ecotourism is perceived as a panacea and ethically superior, in fact, ecotourism tourism terms and conditions often being used as marketing tools and business is everything behind ecotourism. It seems that it is

necessary to approach ecotourism dealing with the needs, concerns and welfare of the local community.

Within the context that mass tourists seek consumable goods and services to consume them and the local community that regards tourism activities, and more specifically mass tourism, as both a threat and an opportunity, alternative tourism offers qualitative products and service and emphasize on the local character by providing true experiences and personal contact between the tourist and the local community (Williams, 1997, Tsartas, 2003).

One of the forms of alternative tourism is rural tourism and particularly Agrotourism. Apart from local orientation to production, consumption that kept local, Marsden (1999) argues that Agrotourism refers to specific places and its activities are linked with certain local traditions and environments. Consequently, although expenditures per capita coming from Agrotourism activities are less than those of other tourism sectors, the local nature of supply and demand proposes greater added value to the local community (Van der Ploeg, Renting, Brunori, Knickel, Mannion, Marsden, De Roest, Sevilla-Guzma'n, and Ventura 2000) and networks and synergies between farms and other businesses in the area (Irvine and Anderson 2003). Nevertheless, it is not logical for Agrotourism to be regarded as the unique solution for rural development problems, since in most cases; it is a seasonal and complementary activity.

According to Van der Ploeg and Renting (2004), Agrotourism is regarded as a valuable and significant mean for maintaining agricultural activities, promoting diversification of economic activities and introducing new ones in the countryside while at the same time assisting in the conservation of cultural landscapes. Agrotourism, as Iakovidou (1997) asserts, is part of the rural tourism concept that is commonly defined as tourism going on in the countryside. This spatial definition deals with various types of tourism for instance trekking, culinary, leisure, nature, sports and outdoor activities tourism. As a result, Agrotourism is one of these types dealing with activities related to agriculture. Regarding the Agrotourist profile, this has to do with people with urban life styles who search for experiences of rural culture, rural life styles and 'authenticity' experiences (Marsden 1999) and the common attributes of these activities, according to Iakovidou (1997), are diversification; consumption of local natural and cultural resources and development of personal relationships between visitors and local people.

## **2. PAST LITERATURE IN THE EVALUATION OF WEB-SITES IN TOURISM**

It is common known that there is ever growing dependence on the Internet and Web sites for promotion of tourism. Evaluation of Web site effectiveness is essential due to the considerable costs for setup, advertising, and maintenance (Tierney, 2000). Research suggests that there is an immense need for evaluations to go beyond hits and page viewings. There is growing reliance on the Internet for the promotion and sales of tourism and most products and services. Almost all companies and tourism promotional organizations now have Web sites.

Various researches have studied the relationship between tourism and e-commerce. For example, Rita in 2000 examined how ten European websites promoted and managed tourism destinations using a web-based destination marketing system while Palkoska, Pühretmair, Wagner, and Wöß (2003) identified significant functions like data integration and flexible electronic data interchange mechanisms, powerful visualization possibilities and advanced search features as the vital strategies that can accomplish tourists' internet services. Schonland and Williams (1996) were one of the first studies to employ Web-based survey techniques to evaluate apply of the Internet for travel services. Also, some researchers have studied the changes in the travel and tourism industry due to the development of Information and Communication Technologies and produced a structure for identifying the competitive advantages in e-tourism (Gratzer, Werthner, and Winitwarer, 2004; McLemore and Mitchell, 2000). Larson and Ankomah (2004) used an extended Model of Internet Commerce Adoption to evaluate the accuracy of the tourism organization websites in 20 states of the USA and Douglas and Mills (2004) used structural equation modeling techniques to evaluate national tourism organization websites in the Caribbean.

Extensive study research has been done on the evaluation of the effectiveness of tourism promotions as well (Burke and Lindblom 1989; Tierney 1992; Van Hoof and Hobson 1997). The issue of website quality and developed of different methods for website evaluation have been explored either from industry where some organizations' have used their own website evaluation indices to evaluate websites or academic-research point of view, where Kapoun (1998) produced an index system that allows a number of functions to evaluate a website like the veracity, the authority, the objectivity, the usage, and the coverage of the information. Palmer (2002) evaluated websites based on their usability, design, and performance metrics such as download delay, navigability, site content, interactivity, and responsiveness.

Tourism e-commerce websites are more transaction-oriented than general e-commerce websites (Tierney, 2000). Furthermore, they require more powerful search features for related tourism products and services, as a result, there are number of methods and criteria to evaluate a website. According to the research, these could be:

- perceived usefulness, ease of use, and trust (Schubert, 2002),
- the website design and customer expectation into consideration (Marsico and Levialdi, 2004),
- serious methodological problems such as a lack of information about motive for seeking tourist information, if the promotional material had any impact on their visit or buy decision, difficulty in quantifying the link between advertising and tourist spending, and sample size and precision problems (Davidson and Wiethaupt 1989; Burke and Gitelson 1990),
- accessibility, speed, navigation, and content (González and Palacios, 2004),
- user friendliness, site attractiveness, marketing effectiveness, and technical aspects (Kline, Morrison, and John, 2004),
- website design including organization, presentation, and interactivity (Nielsen, 2000; Shneiderman, 1998),

- website interfaces based on graphic design principles, graphic and multimedia, style and text, flexibility, and compatibility (Merwe and Bekker, 2003),
- page loading, business content, navigation efficiency, security, and marketing/consumer focus need to be considered when designing a commercial website (Gehrke and Turban, 1999), and
- visual layout - colour, font size and type, the layout of the pages, and graphics (Heimlich and Wang, 1999).

Regarding the factors that are affecting tourism website functions, like the production of a new product to market positioning, these are.

- the institutional context in tourism website,
- the power situation in the tourism sector, and
- the development strategy in tourism sector.

Moreover, the function analysis on tourism site can be found in the following two aspects:

1. Completeness in information, and
2. Integration in content and services.

Even though online sales is a good way to evaluate Website effectiveness, many tourism sites, for instance destination marketing organizations, do not have this attribute since they produce little or no revenues (Tierney, 2000). Website evaluations are needed to facilitate continuous improvements in addition to evaluate site performance alongside competitors and industry peers. Organizations may also wish to track the performance of their Websites over successive time periods. A range of approaches have been discussed or used to evaluate the effectiveness of tourism and hospitality Websites.

### 3. RESEARCH METHODOLOGY

The main purpose of this research is to evaluate and compare the quality of three Internet sites. The first ([www.agrotravel.gr](http://www.agrotravel.gr)) and the third ([www.guestinn.com](http://www.guestinn.com)) are information portals dedicated to agrotourism, while the content of the second ([www.greek-ecotourism.gr](http://www.greek-ecotourism.gr)) relates to ecotourism.

The comparison of the three portals and the respective factors will take place by applying the following assumptions: defining the Internet sites as [www.agrotravel.gr](http://www.agrotravel.gr) = agro, [www.greek-ecotourism.gr](http://www.greek-ecotourism.gr) = eco, [www.guestinn.com](http://www.guestinn.com) = guest inn and the factors: usability = 1, information = 2, interaction of services = 3. The eleven assumptions that our research has laid down for examination and validation are:

*Assumption 1:*

H<sub>0</sub>: the means are equal, agro = eco = guest,

H<sub>1</sub>: The means are not equal, agro ≠ eco ≠ guest.

*Assumption 2:*

If differences exist among the mean values of the three Internet sites, then between which sites are these detected?

*Assumptions 3-11:*

$H_0$ : The means are equal,  $agro_1 = eco_1$ ,  $agro_1 = guest_1$ ,  $eco_1 = guest_1$ ,  
 $H_1$ : The means are not equal,  $agro_1 \neq eco_1$ ,  $agro_1 \neq guest_1$ ,  $eco_1 \neq guest_1$ .  
The assumptions for the other two factors are defined accordingly. } where 1 = usability

Moreover, Internet sites will be referred to as:

[www.agrotravel.gr](http://www.agrotravel.gr) = agrotravel, [www.greek-ecotourism.gr](http://www.greek-ecotourism.gr) = ecotourism, and  
[www.guestinn.com](http://www.guestinn.com) = guest inn.

The techniques used to test the above assumptions are simple correlated Analysis of Variance (ANOVA), multiple comparisons in ANOVA and t-test. Simple correlated ANOVA examines the first assumption, while the method of multiple comparisons in ANOVA was used to examine the second assumption, while remaining assumptions were subject to the t-test.

Simple correlated ANOVA examines whether two (or more) value groups differ significantly with regard to the distribution of their mean values. It also assumes that the values of the two groups originate from the same sample of people and that the correlation coefficients among the two groups are high. The reason that correlated ANOVA was selected on top of uncorrelated is that the data come from the same sample. Yet this method can detect the general tendency and not the points in which differences exist.

For this reason, the multiple comparisons method in ANOVA was applied, with which an attempt was made to detect the statistically significant differences among the mean values of Internet sites. This technique is used when the examined means are over two, and it detects which specific pairs of distribution means differ significantly in the variance analysis. The level of significance for both analyses mentioned above is 0.05 ( $\alpha = 0.05$ ).

The t-test is used to examine the differences in mean values of the factors that determine Internet quality. These factors, as mentioned above, are usability, information and interaction of services.

However, apart from the evaluation of the three portals, the factors that compose the quality of each portal are also assessed and compared. The overall evaluation of the Internet sites examined is performed with statistical tools with means, based on the scale used in the research questionnaire. To assess and compare the individual quality factors, other inductive-statistical tools, such as ANOVA and t-test were used.

In practice, the research was conducted towards two directions: a part of the sample was approached through personal interviews. Participants came in voluntarily and, while exploring the examined Internet sites, they voluntarily answered the

questionnaires handed to them in hard copy. The remaining participants were approached via electronic mail, after having been asked if they would be willing to accept the electronic message. The cover letter itself contained clear information and instructions on the purpose and way to complete the questionnaire. All questionnaires were answered in a unanimous manner.

### 3.1. Research Sample

The research sample consisted of a convenience sample, namely a population of people who had access to the Internet and a relevant experience in using it. The sample of participants consisted of 157 people, while the questionnaire was sent or handed to over 413 persons (rate of response was approximately 38%).

The response of the research involved Internet users, who either had the possibility for a personal interview, or they owned a personal computer (PC) with Internet access, and they wished to participate in the research. For this reason, results reflect the corresponding populations and may not be indicative for larger populations. However, Gosling et al (2004) in their research argued that Internet users may in fact be a more indicative sample than those collected using traditional sampling, as they can be more varied in terms of geography and demographics. Also, according to Ritter et al (2004), most Internet studies are conducted based on convenience samples instead of random ones. In addition, the restrictions of our research called for the use of such a sample in order to save on time and costs.

Out of the total sample (n=157) 65% consisted of men and 35% of women. Almost half (45.6 %) of participants were below 26 years of age, while 47.4% belonged to the age group of 26 to 35 (Table 1).

<b>TABLE 1: DEMOGRAPHIC DATA</b>		
	Frequency	Percentage (%)
Gender		
Men	102	64.9 %
Women	55	35.1 %
Total	157	100.0 %
Age		
- 26	72	45.6 %
26 - 35	74	47.4 %
36 - 45	8	5.3 %
56 +	3	1.7 %
Total	157	100.0 %

Table 2 shows the participants' rate of familiarity with Internet use, where the largest part (63.2 %) responded that they use the Internet many times every day.

Internet use	Frequency	Percentage (%)
Never	3	1.8 %
Less than once a week	6	3.5 %
Once a week	11	7.0 %
Many times a week	22	14.0 %
Once a day	16	10.5 %
Many times a day	99	63.2 %
Total	157	100.0 %

In the question regarding the participants' interest in Agrotourism, a rather high percentage (61.4%) had a positive reaction, a fact that is consistent with the general swift towards alternative tourism that has occurred in the latest years (Table 3).

Interest for Agrotourism	Frequency	Percentage (%)
Yes	96	61,4%
No	51	38,6%
Total	157	100,0%

### **3.2. Research Questionnaire**

The questionnaire used was the WEBQUAL 4.0 model, as found in previous literature studies. From this model, the following three questions have been excluded: "17. It is safe to carry out transactions through the website", "18. My personal data are secure" and "22. I am confident that the goods/ services will be delivered as promised". This modification was made because the above questions did not correspond to elements within the examined Agrotourism portals. A respective research by the creators of this questionnaire justifies such a modification (Barnes & Vidgen, 2002). The techniques used were the Exploratory Factor Analysis (Principal Components method with Varimax Rotation, Barnes & Vidgen, 2002).

With respect to the ability to generalize the findings of the research (generalizability), it cannot be supported due to the small size of the sample. Despite this and since our sample is over 30, the distributions may be statistically used and it is also possible to apply inferential statistics (Jargowsky & Yang, 2005).

### 3.3. Reliability Check

The Cronbach's Alpha statistic by Barnes & Vidgen (2001a,b,c) was used to check internal reliability of the three model factors; researchers have defined these factors and validated their existence.

Despite these, a reliability check was performed in the context of our research. During this check, the option of *I don't know/ No reply* was replaced with the numeral zero (0), therefore mean values were subsequently affected. In spite of the above, the check produced satisfactory results, except for the factor "interaction of services", which had the lowest values for all three web portals. Yet these low values can be partially justified. Questions 16 to 19, especially question 16 regarding the reputation of web portals, had the most zero values, because most respondents were not previously familiar with the web portals and therefore chose the *I don't know/ No reply* option. At this point, it should be mentioned that the amount of data is small, as the "interaction of services" factor only consists of four questions. However, the questionnaire in its entirety produced high values in Cronbach's Alpha reliability check (Table 4), which exceeded 0.7 (Barnes & Vidgen, 2002).

Reliability coefficient	Cronbach's Alpha			
Factors	Questions	Agrotravel	Ecotourism	Guest inn
Usability:	1 – 8	0,91	0,86	0,88
Quality of information	9 – 15	0,69	0,76	0,77
Interaction of services	16 – 19	0,49	0,66	0,34
Total	1 – 19	0,87	0,89	0,88

## 4. RESEARCH RESULTS

The results of the simple correlated analysis of variance (ANOVA) showed significant differences of mean values for all web portals. This is confirmed by the value of the statistic  $F = 209.46$ , which at a significance level of 0.05 is higher than the respective value determined in the distribution table ( $F_{(2, 2164)} = 3.00$ ) and presented in Annex I. The alternative assumption is thus accepted over the zero assumption. By accepting the alternative assumption, it is generally concluded that the differences in mean values are statistically significant.

However, the above-mentioned analysis does not provide information on which Internet site strongly differs from which. Such information is provided by the multiple comparisons in ANOVA, and the results are presented in the following Tables 5 and 6, as well as, in Annex II.

TABLE 5: ANOVA MULTIPLE COMPARISONS		
Statistic F	Table value	sig level
82.74	$F_{(2, 3246)} = 3.00$	0.05

Tables 5 and 6 confirm the former analysis (simple ANOVA). Table 6 shows the Tukey HSD and Scheffe statistics, which detect whether there significant differences exist in the means distributions of the web portals, a fact that is confirmed. This conclusion is drawn by the significance values, where the highest value presented was lower than the critical level of significance ( $\text{sig.} = 0.023 < \alpha = 0.5$ ). In other words, the mean value of the agrotravel web portal differs from the mean values of the other two web portals, and these differences are considered as statistically significant. Respectively, the mean values of ecotourism and guest inn differ from each other and from the mean value of agrotravel.

TABLE 6: TUKEY SCHEFFE TESTS					
Test	Condition (I)	Condition (J)	Mean difference	Standard error	Significance (sig.)
Tukey HSD	agrotravel	Ecotourism	1.062(*)	.087	.000
		guest inn	.238(*)	.087	.017
	ecotourism	Agrotravel	-1.062(*)	.087	.000
		guest inn	-.824(*)	.087	.000
	guest inn	Agrotravel	-.238(*)	.087	.017
		Ecotourism	.824(*)	.087	.000
Scheffe	agro	Ecotourism	1.062(*)	.087	.000
		guest inn	.238(*)	.087	.023
	ecotourism	Agrotravel	-1.062(*)	.087	.000
		guest inn	-.824(*)	.087	.000
	guest inn	Agrotravel	-.238(*)	.087	.023
		Ecotourism	.824(*)	.087	.000
Confidence interval 95%*, the average difference is significant at a level of 0.05.					

The Tukey HSD, Duncan and Scheffe tests attempt to detect any existing classifications in the mean values (Table 7). In case certain mean values belong to the same sub-group, the zero assumption is examined, i.e. the possibility that the mean values do not differ significantly. This is the case when the level of significance is below 0.05. However, in the table that follows the sub-groups that have been detected were equal in number with the Internet sites, thus the mean values of the three sites form separate sub-groups with remarks.

Tests	Internet sites	N	Sub-groups for $\alpha = 0.05$		
			1	2	3
Tukey HSD(a)	ecotourism	1083	4.26		
	guest inn	1083		5.08	
	agrotavel	1083			5,32
level of significance			1,000	1.000	1.000
Duncan(a)	ecotourism	1083	4.26		
	guest inn	1083		5.08	
	agrotavel	1083			5,32
level of significance			1,000	1.000	1.000
Scheffe(a)	ecotourism	1083	4.26		
	guest inn	1083		5.08	
	agrotavel	1083			5,32
level of significance			1,000	1.000	1.000
The mean values of homogeneous sub-groups are shown "a" uses a homogenous sample of mean value (Harmonic Mean Sample) of size 1083.					

The results of the t-test 9 assumptions, which were presented in the methodology section, are shown in the following table (Table 8).

<b>Factor: Usability</b>		$t_{\alpha}$		$t_{\pi}$	
Assumption 1:	agrotavel - ecotourism	7.27	>	1.96	$H_0$ rejected
Assumption 2:	agrotavel - guestInn	3.49	>	1.96	$H_0$ rejected
Assumption 3:	ecotourism – guestInn	-4.96	>	-1.96	$H_0$ rejected
<b>Factor: Quality of information</b>					
Assumption 4:	agrotavel - ecotourism	6.77	>	1.96	$H_0$ rejected
Assumption 5:	agrotavel - guestInn	2.05	>	1.96	$H_0$ rejected
Assumption 6:	ecotourism – guestInn	-5.41	>	-1.96	$H_0$ rejected
<b>Factor: Interaction</b>					
Assumption 7:	agrotavel - ecotourism	3.66	>	1.96	$H_0$ rejected
Assumption 8:	agrotavel - guestInn	-0.63	<	-1.96	<b><math>H_0</math> accepted</b>
Assumption 9:	ecotourism – guestInn	-4.31	>	-1.96	$H_0$ rejected
$t_{\alpha}$ = observed value, $t_{\pi}$ = table value					

8 out of 9 assumptions were rejected against the alternative, while in one of these the zero assumption was accepted. The zero assumption is the assumption according to which the mean values of the factors are equal and therefore there are no significant differences. This assumption was rejected, except for the interaction factor for the agrotravel and guest inn portals (Assumption 8), in which case the zero assumption was accepted. The test detected that the agrotravel and guest inn sites have mean values with the same distribution, i.e. the factor of interaction for the two sites was considered to be of the same quality and rating by participating users. As was mentioned in paragraph 4.6 (descriptive statistical elements of the sample), the mean value of the interaction factor for agrotravel was 3.8 and for guest inn 3.9; these may be regarded as an indifferent or medium assessment of this factor, as the values approach 4.

## 5. RESEARCH FINDINGS

An overall review of the results of our research has detected some medium quality ratings, as well as some more positive evaluations of certain individual factors. The Internet site that has collected the highest ratings, both overall as well as for each separate factor, is agrotravel (5.32). Guest inn follows with a small rating difference (5.08), while ecotourism is almost one unit behind (4.26). Therefore, the evaluation of the overall quality was above average (i.e. 4) and without any spectacular increasing deviation. As far as the factors are concerned, usability has the highest ratings for each Internet site. This is followed by the quality of information, while interaction with users comes last. Factor scoring varied between 3 (thought as “almost poor” to approximately 6 (i.e. “good”).

An element considered important is the lack of all three web portals in interaction, a characteristic that should be strengthened with the addition of tools. These tools may be the incorporation of a conversation section (forum), where users will be able to exchange views and travel experiences; personalized options with user personal accounts, in which personalized and potentially interesting information will be offered to individual users, based on visit history; the incorporation of search engines.

The aim of each Internet site is to “maintain” its users and form their primary tool for obtaining information and their starting point for searching information for more than once. To achieve this goal, users must feel that the site satisfies them, by providing them with the information and services they want in an easy and accurate manner. In order to establish such relationships, Internet sites must constantly improve and not just rely on an attractive environment design or a load of information. In many instances, the above conditions are considered enough to satisfy users, while user needs and personal characteristics are neglected, as the Internet itself is encountered as an impersonal environment.

It is in the human nature to seek the creation of bonds and personal service, even within a virtual environment such as the Internet. For this reason, the opinion of users should play a determinative role, as users are after all the end receivers of these services and of the manner in which these services are offered.

## CONCLUSIONS

It is apparent that the efforts made and continue to be made by researchers in order to determine models and establish quality dimensions, both in the real world and the Internet, are strong.

By examining international bibliography, the dimensions that seem to prevail are the following: web site design, fulfillment/ reliability, efficiency, reliability and privacy, usability, quality of information and service interactivity. It is worth to mention the Servqual model, which when transferred to web environment converts to e – servqual (e – SQ). The dimensions included in e – SQ are efficiency, which may be described as the easiness of using a web site, reliability, which refers to the proper operation of web sites in technical terms, fulfillment, which includes the fulfillment of promises, and privacy, namely the securing of personal data. According to the definition of Zeithaml et al (2000), the electronic quality of services e – servqual (e – SQ) is the level to which a web site enables market, transactions, delivery and distribution of goods and services in a satisfactory and efficient manner.

The above definition requires experience in Internet transactions, which is not a requirement with the Webqual model. For this, the Webqual model was adopted in our research. Additional reasons that contributed to the selection of the Webqual model were its usability and ability to adapt (with the proper modifications – removal of certain answers) to the needs of our research. Webqual 4.0 was used as the model of the questionnaire. The research was conducted with two methods: personal interview and sending questionnaires via electronic mail. The assumptions put forward involved the statistical significance of the differences between the total mean values and the mean values of the quality factors for each one of the Internet sites examined. To test these assumptions, the simple correlated ANOVA, multiple comparisons in ANOVA and t-test were used. The results that emerged from the use of the ANOVA and t-test statistical tools included statistical significant differences among the examined means. The Internet sites [www.agrotravel.gr](http://www.agrotravel.gr) and [www.guestinn.com](http://www.guestinn.com) were rated as “almost good” by users, with the former presenting a slightly higher mean value. The Internet site [www.greek-ecotourism.gr](http://www.greek-ecotourism.gr) lacked by almost one unit and was rated as slightly above average. The interaction factor received the lowest evaluation for all three Internet sites, and varied a bit below the scale average. The mean values for the interaction of services factor were: 3.79 for [www.agrotravel.gr](http://www.agrotravel.gr), 3.88 for [www.guestinn.com](http://www.guestinn.com) and 3.11 for [www.greek-ecotourism.gr](http://www.greek-ecotourism.gr), with the difference between the first two sites found to be statistically non-significant (where, 3 = almost poor quality).

These evaluations have pointed the need for improvements, especially in the field of web site interaction with users. Such improvements may include more tools to activate user interaction with the web site, such as search engines, newsletters, forums, options to sign-up as site members, etc. With the easiness offered by the Internet and by pressing a few buttons, users can perform a small research on the tourism market. It is possible, if not already a fact that in the future Internet sites will form an integral part of the total touristic product. In other words, part of the competition that exists within the market of tourism will be transferred to the Internet, literally reflecting the

expectations of tourists from touristic products, namely the experiences gained by consuming touristic products. The Internet site can significantly affect user decisions in choosing their destinations. Therefore, emphasis must be paid on the design, information, interaction and overall quality of a web site.

Without seeking or demanding an overall interpretation of user perceptions, our research attempts to capture the beat of the Internet quality. By aiming at examining the concept of quality and how this was perceived by participating users, this research stresses the need to conduct relevant studies in most activity fields with a larger impression on the Greek Internet public. It has also attempted to contribute to a field that is relatively new in Greece, by inviting further studies to analyze this field in depth. Quality was interpreted as usability, quality of information provided, as well as quality in the interaction of users with the examined web sites. Further research will possibly either dispute the importance of these factors or enrich them by incorporating them into models measuring the quality of Internet services. The constantly changing and increasing use of the Internet calls for new quality measurement models, since web sites form a dynamic and flexible means of providing services.

With respect to the ability to generalize the findings of the research (generalizability), it cannot be supported due to the relatively small size of the sample. However, the distributions may be statistically used and it is also possible to apply inferential statistics (Jargowsky & Yang, 2005).

## REFERENCES

- Alford, P.(2000). *E-business in the travel industry*. Travel & Tourism Intelligence, U.K.
- Barnes, S.J. and Vidgen, R.T. (2001a). "An evaluation of cyberbookshops: the WebQual method". *International Journal of Electronic Commerce*, Vol. 6, No. 1, pp. 6-25.
- Barnes, S.J. and Vidgen, R.T. (2001b). "Assessing the Effect of a Web Site Redesign Initiative: an SME Case Study". *International Journal of Management Literature*, Vol. 1, pp.113-126.
- Barnes, S.J. and Vidgen, R.T. (2001c). "Assessing the Quality of Auction Web Sites", *Proceedings of the Thirty – Fourth Hawaii International Conference on System Science*. Maui, Hawaii, January, pp. 3-6.
- Barnes, S.J. and Vidgen, R.T. (2002). "An Integrative Approach to the Assessment of E-Commerce Quality". *Journal of Electronic Commerce Research*, Vol. 3, No. 3, pp. 114 – 127.
- Buhalis, D. (1998). "Strategic use of information technologies in the tourism industry". *Tourism Management*, Vol. 19, No. 5, pp. 409-421.
- Brundtland, G.H. (1987). *Report of the World Commission on Environment and Development: Our common future*. New York: United Nations.
- Burke, J., and L. Lindblom (1989). "Strategies for Evaluating Direct Response Tourism Marketing". *Journal of Travel Research*, Vol.28, No.2, pp. 33-37.
- Burke, J. and R. Gitelson (1990). "Conversion Studies: Assumptions, Applications, Accuracy and Abuse". *Journal of Travel Research*, Vol. 28, No.3, pp. 46-51.
- Cater, E. (1993). "Ecotourism in the Third World: Problems for sustainable tourism development". *Tourism Management*, Vol. 14, No. 2, pp. 85-90.
- Cater, E. and G. Lowman (Eds.). (1994). *Ecotourism: A sustainable option?*. Chichester: Wiley.
- Ceballos-Lascurain, H. (1996). *Tourism, ecotourism and protected areas*. IUCN (World Conservation Union), Switzerland: Gland.
- Davidson, T. L., and W. B. Weithaupt (1989). "Accountability Marketing Research: An Increasingly Vital Tool for Travel Marketers". *Journal of Travel Research*, Vol. 27, No.4, pp. 42-44.
- Douglas, A. and J.E. Mills (2004). "Staying afloat in the tropics: applying a structural equation model approach to evaluating national tourism organization websites in the Caribbean". *Journal of Travel and Tourism Marketing*, Vol. 17, Nos. 2–3, pp.269–293.

- Jargowsky, Paul A. and R. Yang (2005). *Descriptive and Inferential Statistics*. Elsevier Inc., Encyclopaedia of Social Measurement, Volume 1.
- González, F.J. and T.M. Palacios (2004). "Qualitative evaluation of commercial web sites: an empirical study of Spanish firms". *International Journal of Information Management*, Vol. 24, No. 4, pp.313–328.
- Gehrke, D. and E. Turban (1999). "Determinants of successful website design: relative importance and recommendations for exterior effect". *Proceedings of the 32nd Hawaii International Conference on System Science*, Hawaii, USA, Available at <http://ieeexplore.ieee.org/iel5/6293/16785/00772943.pdf>, accessed 24 September 2006
- Gosling, S.D, S. Vazire, S. Srivastava and O.P. John (2004). "Should we trust web-based studies? a comparative analysis of six preconceptions about internet questionnaires". *American Psychologist*, Vol. 59, No 2, pp. 93 – 104.
- Gratzer, M., H. Werthner, and W. Winitwarther, W. (2004). "Electronic business in tourism". *International Journal of Electronic Business*, Vol. 2, No. 5, pp.450–459.
- Hall, C. M., and R.W. Butler (1995). "In search of common ground: Reflection on sustainability, complexity and process in the tourism system. *Sustainable Tourism*, Vol. 3, No. 2, pp. 99-105.
- Hawkins, D.E. and S. Maun, S. (2007). "The World Bank's role in tourism development. *Annals of Tourism Research*, Vol. 34, No. 2, pp. 348–363.
- Haywood, K. M. (1990). "Revising and implementing the marketing concept as it applies to tourism". *Tourism Management*, Vol. 3, pp.195-204.
- Heimlich, J.E. and K. Wang, K. (1999). *Evaluating the Structure of Web Sites*. E.R. Library, the Ohio State University Extension, Columbus, Ohio.
- Hvenegaard, G. (1994). "Ecotourism: A status report and conceptual framework". *Journal of Tourism Studies*, Vol. 5, No. 2, pp. 24-35.
- Inkpen, G. (1998). *Information technology for travel and tourism*. (2<sup>nd</sup> ed.), London: Longman.
- Irvine, W. and A.R. Anderson (2003). "Small tourist firms in rural areas: agility, vulnerability and survival in the face of crisis". *International Journal of Entrepreneurial Behavior and Research*, Vol.10, No.4, pp.229–246.
- Iakovidou, O. (1997). "Agro-tourism in Greece: the case of women agro-tourism co-operatives of Ambelakia". *MEDIT*, Vol. 8, No. 1, pp. 44–47.
- Kapoun, J. (1998). "Teaching undergrads WEB evaluation: a guide for library instruction". *C&RL News*, July–August, pp.522–523.
- Kline, S., A. Morrison, and St. A. John (2004). "Exploring bed and breakfast websites: a balanced scorecard approach". *Journal of Travel and Tourism Marketing*, Vol. 17, Nos. 2–3, pp.253–267.
- Larson, T. and P. Ankomah (2004). "Evaluating tourism web site complexity: the case of international tourism in the US". *Services Marketing Quarterly*, Vol. 26, No. 2, pp. 23–37.
- McLemore, C. and N. Mitchell (2000). "The 1999 Arkansas Internet Conversion Study". *Newsletter of the Travel and Tourism Research Association*, Spring, Issue 4-5.
- Mak, J. (2004). *Tourism and the economy: understanding the economics of tourism*. Honolulu: University of Hawaii Press.
- Marsden, T. (1999). "Rural futures: the consumption countryside and its regulation". *Sociologia Ruralis*, Vol. 39, No. 4, pp. 501–520.
- Marsico, M.D. and S. Levialdi (2004). "Evaluating web sites: exploiting user's expectations". *International Journal of Human-Computer Studies*, Vol. 60, No. 3, pp.381–416.
- Merwe, R.V.D. and J. Bekker (2003). "A framework and methodology for evaluating e-commerce web sites". *Internet Research: Electronic Networking Applications and Policy*, Vol. 13, No. 5, pp.330–341.
- Nielsen, J. (2000). *Designing Web Usability: The Practice of Simplicity*. New Riders Publishing, Indianapolis.
- Nyaupane, G.P., and B. Thapa (2004). "Evaluation of ecotourism: a comparative assessment in the Annapurna conservation area project". Nepal, *Journal of Ecotourism*, 3(1), pp. 20–45.
- Palkoska, J., F. Pühretmair, R.R. Wagner and W. Wöß (2003). "Strategies for e-commerce applications in tourism". *EC-Web LNCS*, Vol. 2738, pp. 303–314.
- Palmer, J.W. (2002). "Web site usability, design, performance metrics". *Information Systems Research*, Vol. 13, No. 2, pp.151–167.
- Panos (1994). Ecotourism: Paradise gained, or paradise lost?  
Available at: <http://www.oneworld.org/panos/panosDeco2.html>.
- Poon, A. (1994). "The 'new tourism' revolution". *Tourism Management*, Vol. 15, No. 2, pp. 91 – 92.
- Rita, P. (2000). "Web marketing tourism destinations". *Proceedings of the Eighth European Conference on Information Systems*, Vienna, pp. 1096–1103.
- Ritter, P., K. Lorig, D. Laurent and M. Katy (2004). "Internet versus mailed questionnaires: a randomized comparison". *Journal of Medical Internet Research*. Sep 15, Vol. 6, No. 3, e29.

- Schubert, P. (2002). "Extended web assessment method (EWAM): evaluation of electronic commerce applications from the customer's viewpoint". *International Journal of Electronic Commerce*, Vol. 7, No. 2, pp. 51–80.
- Schonland, A. and P. W. Williams (1996). "Using the Internet for Travel and Tourism Survey Research: Experiences from the Net Traveler Survey". *Journal of Travel Research*, Vol. 35, No.2, pp.81-87.
- Sheldon, P., *Information technologies for Tourism*, CAB, Oxford, 1997.
- Shneiderman, B. (Ed.). (1998). *Designing the User Interface: Strategies for Effective Human-Computer Interaction*. Addison Wesley, CA.
- Tierney, P. (2000). "Internet-Based Evaluation of Tourism Web Site Effectiveness: Methodological Issues and Survey Results". *Journal of Travel Research*, Vol. 39, pp. 212-221.
- Tierney, P. T. (1992). "Developing and Testing of a Model and Method for Assessing Effectiveness of Tourism Promotional Literature". *Visions in Leisure and Business*, Vol.10, No.3, pp. 4-14.
- Tsartas, P. (2003). "Tourism development in Greek insular and coastal areas: sociocultural changes and crucial policy issues". *Journal of Sustainable Tourism*, Vol. 11, No. 2–3, pp. 116–132.
- Van der Ploeg, J. D. and H. Renting (2004). "Behind the redux: a rejoinder to David Goodman". *Sociologia Ruralis*, Vol. 44, No. 2, pp. 233–242.
- Van der Ploeg, J., H. Renting, G. Brunori, K. Knickel, J. Mannion, T. Marsden, K. De Roest, E. Sevilla-Guzma'n, and F. Ventura (2000). "Rural development: from practices and policies towards theory". *Sociologia Ruralis*, Vol. 40, No. 4, pp. 391–408.
- Watkin, J. (2003). *The evolution of ecotourism in East Africa: From an idea to an industry*. London, UK: International Institute for Environment and Development, IIED Wildlife and Development Series No. 15.
- Weaver, D. (2001). *Ecotourism*. Milton, Queensland: John Wiley & Sons.
- Werthner H. and S. Klein (1999). *Information Technology and Tourism: A Challenging Relationship*, Vienna, Springer Computer Science.
- Williams, A. (1997). *Tourism and uneven development in the Mediterranean'*, in *The Mediterranean: Environment and Society*". In R. King, L. Proudfoot and B. Smith, Arnold, London, pp. 208–225.
- WTO Business Council (2001). *E-Business for Tourism - Practical Guidelines for Destinations and Businesses*. Geneva.
- Van Hoof, H. B. and J. S. Hobson (1997). "Tourism Research Inquires: The Response of the State Office of Tourism". *Journal of Travel Research*, Vol.35, No.4, pp. 77-81.

**Websites**

- www.agrotravel.gr  
www.guestinn.com  
www.greek-ecotourism.gr  
www.agrotravel.gr  
www.greek-ecotourism.gr

**Annex I: Simple Correlated ANOVA**

**General Linear Model**  
**Within-Subjects Factors**  
Measure: MEASURE\_1

factor1	Dependent Variable
1	Agro
2	Eco
3	Guest

**Descriptive Statistics**

	Mean	Std. Deviation	N
Agro	5,32	1,996	1083
Eco	4,26	2,103	1083
Guest	5,08	1,946	1083

**Multivariate Tests(b)**

Effect		Value	F	Hypothesis df	Error df	Sig.
factor1	Pillai's Trace	,232	163,494(a)	2,000	1081,000	,000
	Wilks' Lambda	,768	163,494(a)	2,000	1081,000	,000
	Hotelling's Trace	,302	163,494(a)	2,000	1081,000	,000
	Roy's Largest Root	,302	163,494(a)	2,000	1081,000	,000

a Exact statistic  
b Design: Intercept  
Within Subjects Design: factor1

**Mauchly's Test of Sphericity(b)**

Measure: MEASURE\_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon <sup>a</sup>		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
factor1	,905	107,443	2	,000	,914	,915	,500

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

b Design: Intercept  
Within Subjects Design: factor1

**Tests of Within-Subjects Effects**

Measure: MEASURE\_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
factor1	Sphericity Assumed	672,431	2	336,215	209,459	,000
	Greenhouse-Geisser	672,431	1,827	368,026	209,459	,000
	Huynh-Feldt	672,431	1,830	367,436	209,459	,000
	Lower-bound	672,431	1,000	672,431	209,459	,000
Error(factor1)	Sphericity Assumed	3473,569	2164	1,605		
	Greenhouse-Geisser	3473,569	1976,956	1,757		
	Huynh-Feldt	3473,569	1980,126	1,754		
	Lower-bound	3473,569	1082,000	3,210		

**Tests of Within-Subjects Contrasts**

Measure: MEASURE\_1

Source	factor1	Type III Sum of Squares	df	Mean Square	F	Sig.
factor1	Linear	30,731	1	30,731	27,565	,000
	Quadratic	641,700	1	641,700	306,232	,000
Error(factor1)	Linear	1206,269	1082	1,115		
	Quadratic	2267,300	1082	2,095		

**Tests of Between-Subjects Effects**

Measure: MEASURE\_1

Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	77625,781	1	77625,781	8643,532	,000
Error	9717,219	1082	8,981		

**Annex II: Multiple Comparisons ANOVA**

**Oneway ANOVA**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	672,431	2	336,215	82,736	,000
Within Groups	13190,789	3246	4,064		
Total	13863,219	3248			

**Post Hoc Tests**

**Multiple Comparisons**

Dependent Variable: sites

	(I) Condition	(J) Condition	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval		
						Lower Bound	Upper Bound	
Tukey HSD	agro	eco	1,062(*)	,087	,000	,86	1,26	
		guest	,238(*)	,087	,017	,04	,44	
	eco	agro	-1,062(*)	,087	,000	-1,26	-,86	
		guest	-,824(*)	,087	,000	-1,03	-,62	
	guest	agro	-,238(*)	,087	,017	-,44	-,04	
		eco	,824(*)	,087	,000	,62	1,03	
	Scheffe	agro	eco	1,062(*)	,087	,000	,85	1,27
			guest	,238(*)	,087	,023	,03	,45
eco		agro	-1,062(*)	,087	,000	-1,27	-,85	
		guest	-,824(*)	,087	,000	-1,04	-,61	
guest		agro	-,238(*)	,087	,023	-,45	-,03	
		eco	,824(*)	,087	,000	,61	1,04	

\* The mean difference is significant at the .05 level.

Homogeneous Subsets					
Condition		N	Subset for alpha = .05		
		1	2	3	1
Tukey HSD(a)	eco	1083	4,26		
	guest	1083		5,08	
	agro	1083			5,32
	Sig.		1,000	1,000	1,000
Duncan(a)	eco	1083	4,26		
	guest	1083		5,08	
	agro	1083			5,32
	Sig.		1,000	1,000	1,000
Scheffe(a)	eco	1083	4,26		
	guest	1083		5,08	
	agro	1083			5,32
	Sig.		1,000	1,000	1,000

Means for groups in homogeneous subsets are displayed.  
a Uses Harmonic Mean Sample Size = 1083,000.

**Petros Lathiras, PhD**  
**Anastasia Zopidou, MSc**  
Aristotle University of Thessaloniki  
Thessaloniki, Greece  
e-mail: azopidou@auth.gr

**John Mylonakis, PhD**  
Hellenic Open University (Tutor)  
10, Nikiforou str., Glyfada, 166 75, Athens, Greece  
e-mail: imylonakis@vodafone.net.gr

**Panayiotis Tahinakis, PhD, Assistant Professor**  
**Nikolaos Protogeros, PhD, Assistant Professor**  
University of Macedonia  
Department of Accounting and Finance  
156 Egnatia Str., 54006 Thessaloniki, Greece  
e-mail: tahi67@uom.gr

**Ioannis Valachis, PhD**  
Alexandrian Technological Educational Institute of Thessaloniki (ATEI)  
Department of Tourism Management  
Thessaloniki, Greece  
e-mail: i.valachis@chios.aegean.gr