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Winter Tourism, Development of Mountainous Areas and the Visitors' Attitudes on the Landscape Protection: The Case of the Pertouli Ski-center

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ABSTRACT

The main objective of this investigation is the evaluation of the mountain tourism demand in Pertouli ski-center and in the surrounding communities of the municipality of Aethikes. The research showed that the contribution of the ski-center's operation is of significant importance for the development of the surrounding mountainous area and the from time to time evolution of the factors that affect the demand, varies according to some factors (income, job) and is stable according to some other factors (skiing or visiting, distance). The visitors are willing to contribute to the landscape conservation even by finance or/and active participation. Keywords: winter tourism, development, ski areas, mountainous region, environmental protection, visitors attitudes.

INTRODUCTION

The outdoor recreation has become the major factor in contemporary life, with direct benefits for the human brain and soul and indirect benefits for the local and national economy (Condell and Hartmann 1982). It is well known that outdoor activities can be evaluated as a factor in order to play an important role in the development of the area, supposing that the respect of the environment is essential. The knowledge of the tendencies and the characteristics of the users of the ski-center are of significant importance for further organization and increase of the demand, so the developing role in the area will be reinforced (Christopoulou 1991; Brown *et al.* 1976; Kassios 1979; Roggenbuck and Lucas 1987; Warren 1980).

The main objective of this investigation is the evaluation of the mountain tourism demand in Pertouli ski-center and in the surrounding communities of the municipality of Aethikes. In particular, the investigation includes: a) the definition of the preferences, attitudes and characteristics of the visitors in the Pertouli ski-center in order to improve management and environmental protection; b) the definition of the factors influencing the frequency of visits and the length of stay at the ski-center, which was achieved via linear models; c) the estimation of the benefit for the area surrounding the ski-center; and d) the from time to time estimation of the alteration of the factors that affect the recreation demand of the ski-center with local-regional sphere of influence within a decade.

STUDY AREA

Pertouli ski-center is part of the University Forest of Pertouli. It is located in the Southeast of Pindus Mountain at 1,150-1,320 meters altitude with a land slope of 5-60%. It is a part of the municipality of Aethikes and of the prefecture of Trikala. It has a racetrack of 1,000 meters length with an electric elevator first used in 1999 and has the capacity of carrying 700 persons per hour. There is, also, a beginners' racetrack of 300 meters length with a hauling elevator, used since 1984.

During the last years, Pertouli ski-center, as well as other Greek ski-centers, has contributed to the development of skiing as an outdoor leisure activity and the development of mountain tourism. Today, it is the basic financial source during winter for the municipality of Aethikes. This ski-center is well known as the cell of development that is related to the resources and the mountainous area. Its operation can result in new jobs multiplying the development of the area and the prefecture of Trikala in general.

METHODOLOGY

A questionnaire including 26 closed questions and 1 open question was developed. The questionnaire included questions related to the time and frequency of visits to the ski-center, the way of transport, the location of residence, the reasons for not visiting the ski-center at a more regular basis, as well as the reasons for visiting it. Also, there were questions about the ways of landscape protection, questions related to the willingness to pay or to participate for the protection etc. Then, there were questions about being skiers or not, the reasons they like skiing, their length of stay, the visits and the reasons of visiting other ski-centers and some general questions about visitor's age, sex, job, education, family size, car ownership and income.

Questionnaires were distributed according to the principles of the random sampling, applying to the following formula (Christopoulou and Papastavrou 1997; Wonnacott and Wonnacott 1984):

$n = (z/a)^2 * p(1-p)$
n = the size of the sample
p = the percentage of the skiers (equal to 40%)[1]
a = the error of the mean (equal to 0,05)
z = 1.96 for probability level 95%.

Following the above formula, the size of the sample has been calculated at 370 questionnaires distributed during the winter 1999-2000. For the statistical test of the relation between the various variables the statistics of the frequencies, the crosstabs and the regression were used (Norusis 1997; Papadopoulos 1997).

Construction of linear regression models for the determination of the factors that affect the demand (frequency of visits and length of stay) in the ski-center as well as the study of the changes in the factors that affect the demand, within a decade which was carried out by comparing the specific linear models and others used in similar surveys in other ski-centers with local – regional sphere of influence. The linear models have been structured by using the procedure "Regression Stepwise" of the statistical program for Social Sciences SPSSWIN ver 8.0 with the use of 18 independent variables (cost, age, income, education, day-return to residence or not, etc).

The financial contribution of the ski-center in the development of the surrounding area was analyzed by using financial factors.

RESULTS

Research about visitors' preferences for management actions have been carried out by other scientists (Munson 1974; Goeldner and Standley 1980; Knopp et al. 1980; Newby and Lilley 1980; Anderson and Manfredo 1985; Stankey 1985) aiming not only improving decisions or management strategy, but safeguarding that decisions will be adopted by visitors.

[1] This percentage has been calculated by the pre-survey that has taken place for the confirmation of the questionnaires with sample size n = 50.

The analysis of the questionnaires in Pertouli ski-center showed that the majority of the visitors are men (56% for all visitors and 65% for skiers) (X^2=7.23, a<0.005) and young people (average: 32 years old, mode: 25 years old) with a relatively high level of education (60% of the skiers and 46% of the visitors are graduates of university and polytechnic) and is probable the absence of farmers, breeders, workers and craftsmen (1.1%). (Table 1).

Table 1 here

The majority of the visitors in Pertouli ski-center are not skiers (60%) and visit it about 10 times annually during winter, while skiers (73.3%) visit it about 13 times annually during the winter season. Nowadays, the visitors prefer the Bank Holidays and the weekends (38.7% of the visitors and 48.8% of the skiers) and only a minority of them (9.7%) prefers to spend the normal weekdays there. Normally, the visitors spend 4 hours in the ski-center while the skiers spend there 5 hours.

The visitors come mainly from the town of Trikala (30.2 %). The reason for this is the short distance from the ski-center to their permanent residence. As a consequence, the distance zone between 0 – 100 kilometers occupy the largest percentage (Figure 1).
The main reason for going there is for sightseeing (45.8%) as well as for skiing (35.2%) and snowballing (27.9%).

Figure 1 here

Ninety three percent of the respondents stated that they would like to visit the ski-center more often but for some reasons they are not able to make it a reality (Table 2). The lack of free time was the most important reason for not visiting it so often (48.4%).

Table 2 here

A vast amount of visitors go there for just one-day excursion (53.4% of the visitors and 60.7% of the skiers). Visitors' decision to stay overnight does not depend on the location of their residence and its distance from the ski resort (X^2=160.06, a=.0001) (Figure 2).

Figure 2 here

The average of the time, that visitors who do not return to their residence on the same day spend on the ski-center, is 65 hours. About thirty four per cent (33.8%) of the tourists stay there for at least 48 hours while 39.3% of the skiers stay there for about 3 days. In this case, it is clear that we cannot talk about winter holidays, but for winter tourism of a limited period.

The high cost (including the travel cost) for the visitors who stay there overnight is another factor which discourages the visitors to stay overnight, according to the visitors' answers.

Visitors of the ski-center are interested in the area's environmental protection. According to the Table 3, the strict supervision-protection is the most effective way for the landscape conservation (22%), while a significant portion of propositions (17%) concern improvement of livestock. The majority of interviewed people (86%) is willing to contribute to the environmental protection and conservation by finance (27%), active participation (43%) or both (30%). It is noticeable that to the question "would you like to paid for the conservation of the landscape?" 71% of interviewed visitors answered positively and 64% of them are willing to pay up to 10000 drachmas per year, 27% 10000-100000 drs and 9% more than 100000 drs per year. This attitude shows that for visitors, winter tourism activities and nature conservation are compatible. Moreover, a well conserved landscape is an attractive parameter for the visitors stimulating their participation in its protection.

Table 3 here

The ski-center's contribution to the economic development of the region is very important. The data related to the financial contribution of the ski-center in the development of the region, are based on the questionnaire (average cost of the visit, proportion of overnight stay or not) as well as on the financial data of the ski-center (ticket revenues, bar – restaurants, equipment expenses, staff wages). The income benefit of the area-as presented in Table 4- has been calculated in relation to the following conditions (taking grated): a) staff wages is an expense for the ski-center business, but it is also a benefit for the region as all the 12 members of the staff are residents of the area, b) the petrol needed for the travel is bought in the area, c) in the calculation of the benefit, we do not take into consideration the existing equipment or the newly bought equipment - cost 18600000 drachmas - since the advisability of the ski-center's establishment or the viability of it, is not subject of this study, but ski-center's contribution to the economic development of the area, d) only the visitors who have used the elevator for skiing or for experience or even just for a "walk" were counted for the survey.

Although there is a deficit of about 4 million drachmas in the ski-center business (Table 4), there is an income benefit for the region about 350 million drachmas. The multiplied positive effect of tourism and the indirect social – cultural benefits are also of significant importance (Tsartas *et al.* 1995).

Table 4 here

Finally, as it was be described in methodology, the estimation and confirmation of various models resulted in the selection of the most suitable ones, that show the factors which affect the demand in Pertouli ski-center and three others with local-regional sphere of influence.

Data concerning the other ski-centers than Pertouli, are referred to the period 1987-1990 (Christopoulou 1991).

Pertouli ski-center

i) $V_8 = 42.197 - 2.006V_{64} - 1.152V_{60} - 6.975V_{31} - 2.048V_{10}$
(5.844) (0.832) (0.360) (1.954) (0.870)

$R^2 = 0.43$[2], S.E. = 8.52, F = 9.33, SigF = 0.000, D.W. = 1.68

ii) $V_{24} = 0.136 + 3.681V_{10}$

$R^2 = 0.49$, S.E. = 0.38, F = 6.98, SigF = 0.02, D.W. = 1.22

Pelion ski-center

i) $V_8 = 64.36 - 21.25\ V_{85} + 6{,}33\ V_{31} - 18.31\ V_{86} - 4.75\ V_{12} - 0.05\ V_{10}$
(10.34) (5.5) (1.54) (4.56) (1.74) (0.02)

$R^2 = 0.30$, T.S. = 10.90, D.W. = 1.81

[2] The rate of the adjusted coefficient of the determination (R^2) for all the models is considered sufficient for surveys of this type (social) (Walsh and Davitt 1983, McClaskie *et al.* 1986), while the confirmation of Durbin – Watson in all models excludes the existence of autocorrelation between the disturbance terms of the model (Papastavrou *et al.* 1979).

ii) $V_{24} = 6.003 + 1.66\ V_{31} + 3.66\ V_{89} + 0.39\ V_{88}$
(1.02) (0.23) (1.04) (0.17)

$R^2 = 0.21$, T.S. 1.60, D.W. 1.67

Karpenissi ski-center

i) $V_8 = 28.63 + 6.85\ V_{31} - 5.12\ V_{80}$
(3.03) (2.34) (0.49)

$R^2 = 0.43$, T.S. = 9.11, D.W. = 1.44

ii) $V_{24} = 0.46\ V_{90} + 1.57\ V_{31} + 0.41\ V_9 + 0.0025\ V_{10}$
(0.04) (0.27) (0.11) (0.00086)

$R^2 = 0.92$, T.S. = 1.70, D.W. = 1.69

Pissoderi ski-center

i) $V_8 = 23.32 + 8.25\ V_{31} - 4.18\ V_{80} - 7.02\ V_{20} + 4.25\ V_{63}$
(3.76) (1.29) (0.69) (2.54) (0.45)

$R^2 = 0.26$, T.S. = 9.84, D.W. = 1.71

ii) $V_{24} = -0.47\ V_{85} + 0.86\ V_{31} + 0.48\ V_8 + 0.101\ V_{60}$
(0.03) (0.20) (0.13) (0.03)

$R^2 = 0.93$, T.S. = 1.48, D.W. = 1.74

Where:

V_8 = the variable that expresses the frequency of visits to Pertouli ski-center
V_{64} = the variable that expresses the monthly income
V_{60}= the variable that expresses the profession
V_{31}= the variable that expresses the tendency to skiing or not in Perouli ski-center (1 = skiing, 2 = not skiing)
V_{10}= the variable that expresses the group of kilometric distance between the visitors' residence and Pertouli ski-center (1 = < 100 km, 2 = 101 – 200 km, 3 = 201 – 300 km, & 4 = > 300 km)
V_{86} = the variable that expresses the decimal logarithm of the age of the visitors [lg_{10} (V_{85})]
V_{12} = the variable that expresses the insufficient organization of the ski-center
V_{24} = the variable that expresses the duration of stay at the ski-resort
V_{89} = the variable that expresses the square root of the family monthly income √V64
V_{88} = the variable that expresses the neperian logarithm of the personal cost per visit (ln V_{48})
V_{80} = the variable that expresses the neperian logarithm of the distance in Kilometers between the visitors' residence and the ski-center (ln V_{10})
V_{90} = the variable that expresses the square root of the cost of the visit per person √V48
V_{20} = the variable that expresses the insufficient snow quantity
V_{63} = the variable that expresses the car ownership

V_{85} = the variable that expresses the decimal logarithm of the journey time [lg(10) V11]
V_9 = the variable that expresses the mean of transportation.

According to the models represented above, the distance between the visitors' residence and the ski-center (which can be characterized as the journey time[3], even after a decade it remains the major factor that affects the demand. Is obvious that short distances are easily accessible, so more frequently visited, while long ones demand a higher budget. The distance is an important factor that determines all ways of entertainment (Lucas 1985; Roggenbuck and Lucas 1987).

Another stable factor remains the tendency to skiing or not. This is the main reason for frequent visits in any ski-center. This is a consequence of the fact that the desire to skiing results in visiting the place where the sport can be practiced, more often.

The two new factors that seem to affect the frequency of visits are the monthly income and the profession of the visitors. Table 1 shows that the majority of the visitors and the skiers have high income, while the civil servants count for 34.6% of the skiers, the businessmen 21.5 % and the pupils – students 13.1 %. The vast participation of the professions mentioned above, can be attributed to the greater availability of free time (e.g. pupils – students, civil servants) and to higher income (e.g. businessmen).

The duration of stay at the ski-resort seems to vary significantly, as important factors which determined the time of stay in the past (cost of the visit, income, profession, skiing), do not appear in the model that expresses the factors which determine the duration of stay in Pertouli ski-resort, nowadays. The only factor, which affects it in a positive way, seems to be the kilometric distance. In a similar survey (Uysal *et al*. 1988) was concluded that there was a negative correlation between the two variables since that people who are closer to the ski-center spend more time on entertainment in the ski-center. In contrast, Silberman (1985) and Walsh and Davitt (1988) found that there is a positive correlation between these variables. This is attributed to the fact that people who come from far away have to stay overnight in the region, so they are able to spend more time at the ski-center.

CONCLUSION

As it was analysed above, skiers are not the majority of the visitors in Pertouli ski-center and this is an exception in comparison to other greek ski-centers and an important advantage of the area in order to utilize its natural resources. For them, the distance between their residence and the ski-center is a very important factor that affects their frequency of visits. For this reason, the promotion of the sport is necessary in the areas close to Pertouli.

In general, there is a low number of overnight visits, as the most of the visitors return to their residence on the same day. However, the total annual benefit for the municipality of Aethikes is very high.

[3] The variable that shows the journey time between the residence and the ski-center, includes also the conditions of the journey (road condition, difficulties in approaching the ski-center, etc).

A significant increase of the number of tourists in the area is possible to happen, supposed that the landscape can be maintained and the present infrastructures are improved. This includes the expansion of buildings providing accommodation and food for the tourists. Also, the fact that ages between 20-35 years monopolize skiing shows that more attraction of young people can be achieved by the organization of some "happenings", like skiing in the night or by special contract with schools, in order to ensure the ski-center's operation even during the normal week days.

As the income affects the frequency of visits in the ski center, the fees (ticket, accommodation) should be stabilized at low levels. In that way the income spectrum will be enlarged and the present frequency will increase.

Visitors are willing to contribute to the maintaining of the landscape and they should be activated through the municipality and the directorship of University Forest of Pertouli. The proposed ways for the protection of the environment should be examined and it is probable that some of them as supervision-protection, cleanliness, maintaining of livestock numbers at carrying capacity level, public awareness, sustainable logging, involving visitors and officials should be the main management objectives.

The results of the demand for Pertouli ski-center and the specific characteristics of the visitors of the area can be considered as an information bank for the establishment of the new ski-center in the area of Marosa at Neraidochori at the same municipality.

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Table 1: Personal characteristics of visitors and skiers in Pertouli ski-center.

CHARACTERISTICS		TOTAL VISITORS	SKIERS
Sex	Men	56%	65%
	Women	44%	35%
Age	< 20 years old	9%	10%
	21 – 30 years old	44%	41%
	31 – 40 years old	30%	34%
	41 – 50 years old	13%	12%
	> 51 years old	4%	3%
Education	Uneducated	1%	2%
	Primary School	4%	2%
	Secondary School	9%	4%
	Lyceum	40%	33%
	Polytechnic	16%	14%
	University	30%	46%
Profession	Farmers – Breeders	1.1%	0.0%
	Workers – Craftsmen	1.1%	0.9%
	Civil servants	26.6%	34.6%
	Private clerks	21.5%	17.8%
	Merchants	4.7%	1.9%
	Manufacturers – Tradesmen	0.7%	0.9%
	Businessmen	19.0%	21.5%
	Pensioners	1.8%	1.9%
	Pupils – Students	13.9%	13.1%
	Housewives	8.0%	4.7%
	Unemployed	1.5%	2.8%
Family Monthly Income	< 100,000	6.5%	5.4%
	100,000 – 200,000	11.6%	12.6%
	200,000 – 300,000	25.1%	27.9%
	> 300,000	56.7%	54.1%

Figure 1. The origin of visitors in Pertouli ski-center according to kilometric zones.

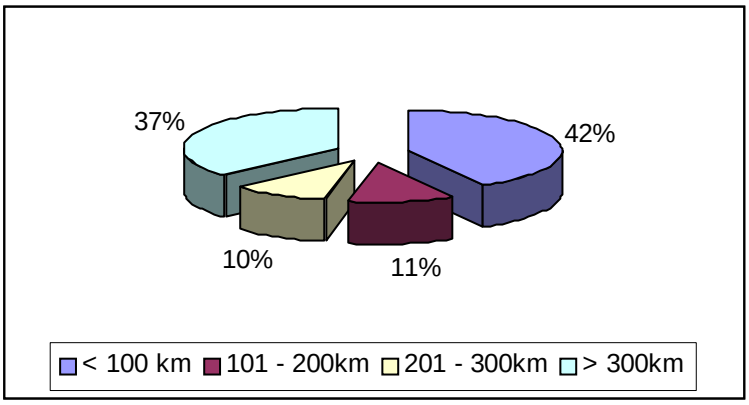

Table 2. Restrictive reasons for frequent visits to Pertouli ski-center.

Reasons	%
Lack of time	48.4
Distance	18.7
Insufficient organization	7.7
Financial reasons	7.0
Lack of willing for more frequent visits	6.2
Lack of family car	5.5
Insufficient snow quantity	5.5
Family reasons	5.1
Other reasons	4.8
Road conditions	4.4
Health reasons	0.7

Figure 2. Relation of the kilometric distance between visitors permanent residence and Pertouli ski-center, with reference to the overnight stay or day-return trips.

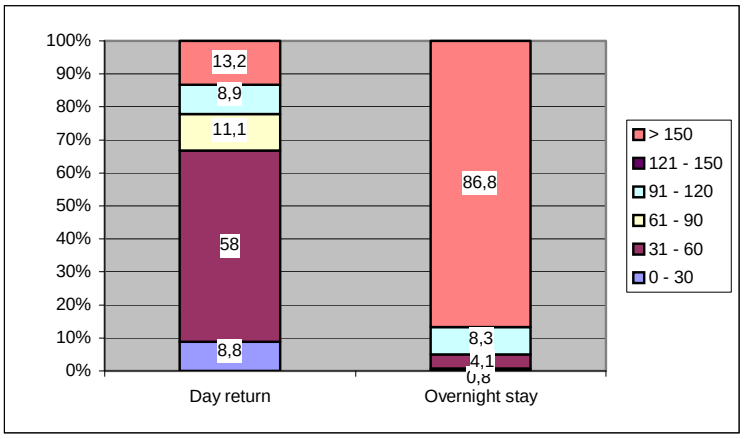

Figure 3. Other ski-centers which visitors of Pertouli ski-center prefer Visiting.

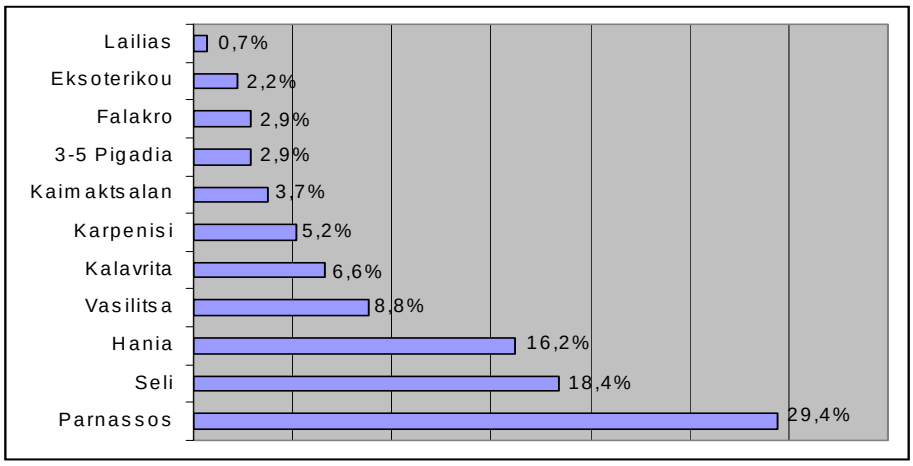

Table 3: Visitors' propositions about the landscape conservation.
(free answer to the question: " What measures do you think are necessary for the landscape conservation? ")

Propositions	Percentage (%)
Strict supervision –protection	24
Reforestation	9
Financing	8
Cleaness	8
Forest roads closing	8
Visitors and Autorities participation	6
No human intervention	5
Livestock numbers at carrying capacity level *	5
Improvement of livestock management *	5
Public awareness	4
National Park establishement	4
Tradional livestock raising *	3
Sustainable logging	3
Restriction of pasture area *	2
Forest improvement	2
Active participation	2
No other buildings	2
Good collaboration between municipality-shepherds *	2

* propositions related to livestock raising

Table 4. Income Benefit Estimation of the Region due to the ski-center's operation.

1	2	3	4	5	(4) X (5) = 6	7	(6) – (1) = 8	(7) + (8) = 9
Revenues	Expenses	Profit or Loss	Number of Tickets	Average Cost per visit per person	Amount Spend on the Region	Cost of Wages	Region's Benefit	Total Benefit for the Area
42,702,562	47,055,023	-4,352,461	20,650	17,725,324	366,027,941	22,878,562	323,325,379	346,203,941