

ROLE AND EVOLUTION OF WINTER TOURISM DEMAND IN THE DEVELOPMENT OF GREEK MOUNTAIN AREAS: THE CASE OF PERTOULI SKI-CENTER

by

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1. SUMMARY

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 Aethikon. In particular, the investigation included: a) The definition of the preferences and the characteristics of the visitors in the Pertouli ski-center for the most proper and effective management of the area according to the needs and the preferences of the visitors b) the definition of the factors influencing the frequency of visits and the length of stay at the ski-center, which was achieved via a linear model, c) the benefit estimation in the area surrounding the ski-center and d) the time to time estimation of the alteration of the factors that affect the recreation demand of the ski-center in local – regional rate within a decade. The research showed that skiers were not the main proportions of visitors - tourists in the ski-center. The frequency of visits is up to their ability to ski, their profession and their income. The contribution of the ski-center's operation is of significant importance for the development of the surrounding mountainous area and the 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).

2. INTRODUCTION

Stress, air-pollution and lack of free time dominate the contemporary way of every-day life. As a result, the few ways of entertainment lead to a pessimistic attitude of life and the factor "recreation" becomes the first ever-human right.

In particular, 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 1982) It is well known that activities which are possible to be called

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 awareness of the tendencies and the characteristics of the users of the ski-center are of significant importance for the further organization and demand so the developing role in the area will be reinforced. (Brown et al 1976, Kassios 1976, Warren 1980, Roggenbuck & Lucas 1987, Christopoulou 1991).

During the last years, Pertouli ski-center, as well as other Greek ski-centers, has taken a very important part in 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.

The ski-center is well known as the center of development that is related to the resources and the mountainous area. Its operation can result to new jobs multiplying the developing of the area and the municipality of Trikala in general (Stamou & Papadopoulos 2000).

3. AREA OF SURVEY

Pertouli ski-center is part of the University Forest of Pertouli. It is located in the Southeast of Pindos Mountain on a height of 1,150 – 1,320 meters and a land inclination of 5 – 60 %. It is a part of the municipality of Aethikes and of the prefecture of Trikala. It dispose 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 beginner's racetrack of 300 meters length with a drawling elevator, used since 1984.

4. METHODOLOGY

The methodology that has been used in this survey is the following:

a) Gallop poll. Questionnaires were given according to the principles of the random sampling, applying to the following formula: (Wonnacott & Wonnacott 1984, Karameris 1987, Christopoulou & Papastavrou 1997):

$$n = (z/a)^2 * p (1-p)$$

n = the size of the sample

p = the percentage of the skiers (equals to 40%)¹

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.

$a =$ the error of the mean (equal to 0,05)

$z = 1.96$ for confidence level 95%

Following the above formula, the size of the sample has been counted in 370 questionnaires (including 26 close formula questions and 1 open formula with 64 variables) distributed during the winter 1999 – 2000.

The questionnaire was including questions related to the time and frequency of visits to the ski-center, the way of transport, the place of residence, the reasons for not visiting, ski-center at a more regular basis as well as the reasons for visiting it. Then, there were questions about being skiers or not, the reasons like skiing, their sojourn, the visits and the reasons of visiting other ski-centers and some general questions about visitor's age, sex, job, education, members of family, car ownership and income).

The concentration of the questionnaires was realised by interviews. The method of the questionnaires was used, regardless the disadvantage of the high cost and the personal work of the investigators, due to the fact that in this way there was higher reliability of the results. For the statistical test of the relation between the various variables, the statistics of the frequencies, the crosstabs and the regression were used (Norusis 1992, Papadopoulos 1997, Papadopoulos et al., 2000).

b) 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 with a comparison between the specific linear models and others used in similar surveys in other ski-centers in local – regional level. 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).

c) Analysis and determination of the financial contribution of the ski-center as a business in the development of the surrounding area by using the financial factors.

5. RESULTS

5.1. Statistical elements

a) By analyzing the different social characteristics of the visitors in Pertouli ski-center (Table 1), it is noticeable that the majority of them is male (56 % for all visitors and 65 % for skiers) and the young people (average: 32 years old, mode: 25 years old).

The small amount of visitors over the age of 50 (4%) is due to the fact that the height, the low temperature as well as the significant energy that skiing and snowballing demand, prevent them from visiting the ski-center.

The visitors' level of education is also an important factor. 60 % of the skiers and 46 % of the visitors was Universities and Polytechnics graduates (Table 1). This percentage was the same with the one that came out as a result of a previous survey related to the visitors of the area. (Ispikoudis et al. 1999)

The very low percentage (1.1) of the farmers and the stock-farmers, as well as the workers and the craftsmen (Table 1), is possibly related with their level of education and perhaps some prejudices against winter tourism. In particular, it is believed that these holidays are for the upper classes. It is also possible to be related with the real financial weakness that the lower classes have declared (rated between 50,000 – 100,000 drachmas monthly. (Christopoulou 1991)

Without supporting that winter holidays represent a particular class, it is noticeable that the upper classes are well represented while the lower ones are hardly represented (Table 1).

The majority of the visitors in Pertouli ski-center (60.5 %) has visited the ski – center before. Actually, they visit it about 10 times annually during winter while the majority of the skiers (73.3 %) visit it about 13 time annually during wintertime. 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 their days-off work there.

Normally, the visitors spend 4 hours in the ski-center while the skier spend there 5 hours.

The fact that most of the visitors (59.7 %) are not skiers but they are just keen on the landscape and nature is an advantage for Pertouli ski-center compared with other Greek ski centers. It does not only attract the skiers but all the "nature lovers"

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 residential area. As a consequence, the distance zone between 0 – 100 kilometers occupied the largest percentage (Fig. 1).

The best and most popular choice for the residents of the Municipality of Trikala seems to be the Pertouli ski-center as it is the nearest one with less that 1 hour driving. In addition to this, it is a place of high interest and an alternative not only for the Municipality of Trikala but for other Greek areas as well. Pertouli ski-center is a center not only for skiers but also for "lovers of the nature" and mountain tourism.

The most common way of transport for the visitors is their car (95.3 %). A very small percentage (2.4 %) prefers the coach as a lot of tourist agencies organize excursions in the area of Elati and Pertouli at very affordable prices.

The main reason for going there is for sightseeing (45.8 %) as well as for skiing (35.2 %). Snowballing (27.9 %) is also one of the main reasons for going there.

93 % of the persons who were questioned supported 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 %). Anyway, it is a fact that the contemporary way of living and working does not allow people to go outdoors, to entertain their family, to do their favorite sport or just to get a rest during the week so the weekend is their only opportunity for this. (Christopoulou 1991)

Elati attracts most of the tourists (61.3 %). It is only 7 kilometers away from the ski-center on a height of 900 meters and the capital of the municipality of Aethikes. It is a small traditional town with quite a lot of facilities for the tourists both for accommodation and entertainment. Pertouli, which is 6 kilometers away from the ski-center, attracts only the 11.7 % of the tourists and 21.3 % of the skiers as Elati has not the possibility to accommodate all of the tourists. It does not have the facilities that Elati provides although during the last 2 years some luxury hotels have been built together with many traditional restaurants that serve local food.

A vast amount of visitors go there for just a one-day excursion (53.4 % of the visitors and 60.7 % of the skiers). The sojourn or not depends on the distance of the visitors residence. ($\alpha < 0.0001$, $X^2 = 160.06$) (Figure 2)

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. 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 can not talk about winter holidays but for winter tourism of a limited period.

The cost (including the travel cost) of stay for the visitors who stay there overnight is quite high (26,971 drachmas per day) while the cost of a day-return trip is 9.657 drachmas. It is obvious that the high cost is another factor which discourages the visitors to stay overnight.

Pertouli ski-center is not the only area where mountain tourism and skiing are popular. 54 % of the visitors of this ski-center visit other ski-centers as well.

As we can see in Figure 3 the first choice of the visitors is the ski-center of Parnassos (29.4 %) and Seli comes second with (18.4 %). The reason for these preferences are: 1) These are closer to their residential areas (32.4 %) 2) They provide better facilities (11.4 %) 3) Visitors can meet their friends (8.4 %) and 4). There is more snow (6.4 %).

The main reasons for which visitors of Pertouli ski-center spend time only on skiing, are the followings: 1) They are keen on the sport (60.3 %) 2) They want to be fit (29.3 %) 3) They like enjoying the nature (17.2 %) and 4) They enjoy their friends company (9.5%).

The comparison of skiing as a sport regarding the skiers sex came to the conclusion that there is a clear correlation between them ($\alpha < 0.005$, $X^2 = 7.23$)

In contrast, the main reasons the visitors of the ski-center do not spend time on skiing are: 1) The lack of free time (16.4 %) 2) The fact that they find this sport very dangerous (14 %) 3) They do not like this sport (11.7 %).

5.2. Linear Models

After estimating and confirming the various models, as the most suitable one that shows the demand of the ski-center was considering the following:

$$Z = 42.197 - 2.006X_1 - 1.152X_2 - 6.975X_3 - 2.048X_4$$

(5.844) (0.832) (0.360) (1.954) (0.870)

With:

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

Where:

Z = the variable that shows the frequency of visits to Pertouli ski-center

X_1 = the variable that shows the monthly income

X_2 = the variable that shows the job status (Table 1)

X_3 = the variable that shows the tendency to skiing or not in Perouli ski-center

(1 = skiing, 2 = not skiing)

X_4 = the variable that shows the group of kilometric distance between the visitors' residence and Pertouli ski-center (1 = < 100 km, 2 = 101 – 200 km, 3 = 201 – 300km, & 4 = > 300 km)

From the above the factors that determine the frequency of the visits to Pertouli ski-center are obvious.

In a similar way, the most suitable model that shows the factors that affect the duration of sojourn in the ski-center (in hours) has been considered (after the calculation and the confirmation of other models) the following:

$$\Pi = 0.136 + 3.681X_4$$

With:

$$R^2 = 0.49, S.E. = 0.38, F = 6.98, \text{Sig}F = 0.02, D.W. = 1.22$$

Where:

Π = the variable that shows the sojourn in Pertouli ski-center (in hours)

X_4 = the variable that shows the groups of the kilometric distance between the visitors residence and Pertouli ski-center

(1 = < 100km, 2 = 101 – 200 km, 3 = 201 – 300 km, & 4 = >300 km)

The above model shows, (as it has been proved from the procedures of "Frequencies" and "Crosstabs"), that the kilometric distance between the visitor's residence and Pertouli ski-center is the major factor that determines the duration of their sojourn in the area.

A similar survey has been carried out during the years 1987 – 1990 in various Greek ski-centers. In particular, the following ski-centers were elected for the survey: Pilion, Karpenisi and Pisoderi (Florina), which are of local – regional rate. The linear models, which are used for the determination of the demand (frequency of visits) and the duration of the sojourn for each of the above ski-centers, are the following: (The construction of the linear models was based on different variables like: cost, age, income, car ownership, insufficient organization of the ski-center, insufficient road condition, insufficient snow quantity, profession, education, preference of another ski-center, the combination of the above as well as the square and the square root, the logarithm of the variables that show the distance, the journey time and the age).

1) Pilion 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)

With:

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

Where:

V_8 = the variable that shows the frequency of the visits to the ski-center

V_{85} = the variable that shows the decimal logarithm of the time of the journey to the ski-center [$\lg_{10}(V_{11})$]

V_{31} = the variable that shows the tendency of skiing or not

V_{86} = the variable that shows the decimal logarithm of the age of the visitors [$\lg_{10}(V_{85})$]

V_{12} = the variable that shows the insufficient organization of the ski-center

V_{10} = the variable that shows the kilometric distance between the visitors' residence and Pilion ski-center

$$\text{ii) } V_{24} = 6.003 + 1.66 V_{31} + 3.66 V_{89} + 0.39 V_{88}$$

(1.02) (0.23) (1.04) (0.17)

With:

$$R^2 = 0.21, \text{ T.S. } 1.60, \text{ D.W. } 1.67$$

Where:

V_{24} = the variable that shows the duration of the sojourn in the ski-center

V_{31} = the variable that shows the tendency to skiing or not

V_{89} = the variable that shows the square root of the family monthly income $\sqrt{V_{64}}$

V_{88} = the variable that shows the napierian logarithm of the personal cost per visit ($\ln V_{48}$)

The construction of the linear models was based on different variables like: cost, age, income, car ownership, insufficient organization of the ski-center, insufficient road condition, insufficient snow quantity, profession, education, preference of another ski-center, the combination of the above as well as the square and the square root, the napierian and the decimal logarithm of the variables that show the distance, the journey time and the age.

2) Karpenisi (Velouchi) Ski-center

$$\text{i) } V_8 = 28.63 + 6.85 V_{31} - 5.12 V_{80}$$

(3.03) (2.34) (0.49)

With:

$$R^2 = 0.43, \text{ T.S. } = 9.11, \text{ D.W. } = 1.44$$

Where:

V_8 = the variable that shows the frequency of visits in the ski-center

V_{31} = the variable that shows skiing or not

V_{80} = the variable that shows the neperian logarithm of the distance in
Kilometers between the visitors residence and the ski-center ($\ln V_{10}$)

$$\text{ii) } V_{24} = 0.46 V_{90} + 1.57 V_{31} + 0.41 V_9 + 0.0025 V_{10}$$

(0.04) (0.27) (0.11) (0.00086)

With:

$$R^2 = 0.92, \text{ T.S.} = 1.70, \text{ D.W.} = 1.69^2$$

Where:

V_{24} = the variable that shows the duration of the sojourn in the ski-center in
hours at the weekends and the Bank Holidays

V_{90} = the variable that shows the square root of the cost of the visit per person $\sqrt{V_{48}}$

V_{31} = the variable that shows skiing or not

V_9 = the variable that shows the used mean of transport

V_{10} = the variable that shows the kilometric distance between the visitors'
residence and Karpenisi (Velouchi) ski-center

3) Pisoderi (Vigla) Ski-center

$$\text{i) } V_8 = 23.32 + 8.25 V_{31} - 4.18 V_{80} - 7.02 + V_{20} + 4.25 V_{63}$$

(3.76) (1.29) (0.69) (2.54) (0.45)

With:

$$R^2 = 0.26, \text{ T.S.} = 9.84, \text{ D.W.} = 1.71$$

Where:

² The rate of the adjusted coefficient of the determination (R^2) for all the models is considered as 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).

V_8 = the variable that shows the frequency of the visits in the ski-center

V_{31} = the variable that shows skiing or not

V_{80} = the variable that shows the neperian logarithm of the distance between the visitors residence and Pisoderi (Vigla) ski-center [$\ln(V_{10})$]

V_{20} = the variable that shows the insufficient snow quantity

V_{63} = the variable that shows the car ownership

$$\text{ii) } V_{24} = -0.47 V_{85} + 0.86 V_{31} + 0.48 V_8 + 0.101 V_{60}$$

(0.03) (0.20) (0.13) (0.03)

With:

$$R^2 = 0.93, \text{ T.S.} = 1.48, \text{ D.W.} = 1.74$$

Where:

V_{24} = the variable that shows the duration of the sojourn in the ski-center in hours

V_{85} = the variable that shows the decimal logarithm of the journey time [$\lg(10) V_{11}$]

V_{31} = the variable that shows skiing as a sport

V_9 = the variable that shows the used mean of transport

V_{60} = the variable that shows the profession

According to the above models the distance between the visitors' residence and the ski-center (which can be characterized as the journey time³, even after a decade it remains the major factor that affects the demand.

Another stable factor remains the tendence 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.

Concerning the invariable factor "proximity of the ski-center" is obvious that short distances are easier and more frequent while long ones demand a higher budget. The distance is an important factor that determines all ways of entertainment (Mansfield 1969, Malamud 1973, Lucas 1985, Roggenbuck & Lucas 1987)

The two new factors that seem to affect the frequency of visits are the monthly income and the profession of the visitors. As we can see from Table 1 the majority of the visitors and the

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).

skiers belongs to the upper class according to their income, while the public clerks count for 34.6% of the skiers, the businessmen count for 21.5 % and the pupils – students count for the 13.1 %. The vast participation of the above professions can be understood by the contribution of more free time (for example: pupils – students, public clerks) or the higher incomes (for example: businessmen).

The duration of the sojourn in the ski-center seems to vary significantly, as important factors which determine the time of sojourn used in the past like: cost of the visit, income, profession, skiing, car ownership do not appear in the model that shows the factors which determine the duration of the sojourn in Pertouli ski-center, nowadays. The only factor, which affects it in a positive way, seems to be the kilometric distance, which was unexpected. Uysal et al. (1988) had reached the conclusion that there was a negative correlation between the two variables. The reason was that people who are closer to the ski-center spend more time on entertainment in the ski-center. But, Silberman (1985) and Walsh & Davitt (1988) reached another conclusion that there is a positive correlation between the variables. This happens due to the facts that people who come from faraway have to stay overnight in the region, so they have more time to spend on the ski-center.

5.3 Financial contribution of the ski-center

The data collection related to the financial contribution of the ski-center in the development of the region is based on the questionnaire (average cost of the visit, proportion of overnight stay or not) as well as on the financial data of the business (ticket revenues, bar – restaurants, maintenance of the ski-center, equipment expenses, staff wages). Pertouli ski-center does not receive any Subsidies from the Prefectural fund, the Greek Organization of Tourism, the Ministry of National Economy or other funds.

For the application of the benefit counting process of the region there are some acceptances like:

1. Staff wages is an expense for the ski-center as business but it is also a benefit for the region as all the 12 members of the staff are residents of the area.
2. The petrol needed for the travel is bought in the area, which is another benefit.
3. By calculating the benefit, no attention is paid on the equipment already existed or the value of the not even to the newly bought equipment at the value of 18,600,000 drachmas as we do not judge the advisability of the ski-center's establishment or the viability of it, but its contribution or not to the financial strengthening of the region.
4. Only the visitors who have used the elevator for skiing or for experience or even just for a "walk" were counted for the survey.

As we can see in Table 3, there is a liability in the business, about 4,000,000 drachmas although there is a benefit for the region, about 350,000,000 drachmas. The multiplied positive affection of tourism and the indirect social – cultural benefits are also of significant importance. (Tsartas et al. 1995)

6. CONCLUSION – SUGGESTIONS

1. Skiers are not the majority of the visitors in Pertouli ski-center. This fact does not happen in other Greek ski-centers and it is an important advantage of the area in order to evaluate its natural resources.
2. The distance between the visitors' residence and the ski-center is a very important factor that affects their frequency of visits them. For this reason, the promotion of the sport is necessary in the areas close to Pertouli.
3. In general, there are a low number of overnight visits as the most of the visitors return to their residence on the same day. Anyway, the total annual benefit of the municipality of Aethikes is very high.

4. The lack of free time is a factor that determines the visitors' tendencies to skiing or not.
5. Ages between 20 – 35 years old monopolize skiing while ages over 51 years old nearly abstain from the sport. In order to attract more young people, it is possible to organize some "happenings" like skiing in the night. Another possibility is a special contract with all the schools of the region which can ensure that the ski-center can be busy even during the week days (Wednesday, Friday)
6. A significant growth of the number of tourists in the area is possible to happen supposing the landscape can be maintained and the present infrastructures will be improved. This seems to be a general tension noticed in the area together with an increase of the number of buildings providing accommodation and food for the tourists
7. As the income affects the frequency of visits in the ski center, the prices (ticket, accomodation) should be stabilized at low levels. In that way the income spectrum will be enlarged and the present frequency will increase.
8. The results of the demand for Pertouli ski-center and the specific characteristics of the visitors of the area can be counted as an information bank for the establishment of the new ski-center in the area of Marosa in Neraidochori in the same municipality (This ski-center has been panned during the last 10 years).

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