

ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΙΑΣ

ΤΜΗΜΑ ΜΗΧΑΝΙΚΩΝ ΧΩΡΟΤΑΞΙΑΣ ΚΑΙ ΠΕΡΙΦΕΡΕΙΑΚΗΣ ΑΝΑΠΤΥΞΗΣ

ΣΕΙΡΑ ΕΡΕΥΝΗΤΙΚΩΝ ΕΡΓΑΣΙΩΝ

**SKI-RESORT CONTRIBUTION TO THE ECONOMIC DEVELOPMENT
OF THE REGION (CASE STUDY: PARNASSOS- GREECE)**

96 - 07

Olga G.Christopoulou* Anastassios K. Papastavrou**



DISCUSSION PAPER SERIES

**UNIVERSITY OF THESSALY
DEPARTMENT OF PLANNING AND REGIONAL DEVELOPMENT**

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Abstract : At the Parnassos ski-resort 400 questionnaires have been distributed and economic data have been collected concerning operation for:

- 1) The definition of the visitor's preferences and features.
- 2) The definition of the factors which restrict more frequent visits and longer staying at the ski-resort aiming at its most effective management, according to the visitor's needs and preferences.
- 3) The evaluation of the amount which is of profit to the neighbouring mountainous region, deriving from the ski-resort.

Keywords: Ski-resort, Visitors' preferences, questionnaire, development of mountainous areas.

INTRODUCTION

Parnassos ski-resort is situated at Central Greece (fig.1) at an altitude of 1500-1600 m. and a distance of 191 Km away from Athens the capital of the country.

According to the existing outlines (Ministry of National Economy, 1987) is a ski resort of a national level and it serves visitors from all the country.

It works from 15 December to 30 April every day during 8.5 hours. On a daily basis, the number of visitors is about 1500, but at the weekends it increases to 4500.

METHODOLOGY

For the research of : a) the existing tourist demand at the Parnassos ski-resort, b) the visitor's preferences towards increasing touristic flow and c) the ski-resort contribution to the regional economy, have been decided the following methodology :

ADMINISTRATION OF THE QUESTIONNAIRES

400 questionnaires were distributed among equal visitors (skiers or not). The questionnaire consists of 26 questions (64 variables in total) with «closed» answers, although some questions can be answered freely. The questions concerned :

- a) Visits to the ski-resort (if they have visited it again, number of times per year, reasons for not visiting more frequently, naming the days of visit, duration of their stay there etc.)
- b) Ski: if they practice the sport or not, for what reasons.

- c) Region the visitors' starting point, the area where they spent the night, time of stay, travel cost per person.
- d) Other ski-resorts: which ski-resorts they prefer and visit frequently and for what reasons.
- e) Individual features: age, sex, profession, level of education, number of family members and income.

LINEAR MODELS

Two linear models have been constructed for the definition of the factors which affect the duration of the visitor's stay and the frequency of visits. «Stepwise regression» was selected as a method for the structure of the models. As soon as the structure of the models was completed, have been selected two of them, on the basis of criteria-controls (Papastavrou et al., 1979). Linear models for the estimation of the socio-economic factors that affect the recreation demand have been used by many scientists (Clawson and Knetsch, 1966, Cichetti et al., 1976 and McClaskie et al., 1986).

ECONOMIC ANALYSIS

The ski areas economic analysis is based on a) the questionnaires, b) the information provided by the National Organization of Tourism who manage the ski-resort and the visitor's answers. The information concerned :

- a) The number of permanent or seasonal staff.
- b) The income deriving from ski-lifts, bars, restaurants, hostelrys, ski- schools etc.
- c) All the expenses : operational, repairing, conservational, staff salaries, food drinks etc.
- d) Funds, year and the body which provide them.
- e) Date of purchase and value of the mechanical equipment.
- f) The today value of the buildings. These are stated with reference to the constant prices of 1988.

DISCUSSION OF RESULTS

81,8 of the respondents at the Parnassos ski-resort, did not visit the place for the first time, but they come there during the winter period about 14 times (mainly week-ends and holidays) and they stay for about 6 hours.

Most visitors live in Athens (77,6%) because Parnassos is the nearest centre to capital, except for the Parnitha ski-resort, which appears to have many problems. Table 1 shows clearly that the visitor's aim is to practice the ski.

Skiers practice the sport, because they like it and most of them find it as an opportunity for corporal examination (35,4%) and contact with the nature (20,9%), as these opportunities are rare in towns.

Skiers visit the ski-resort about once a week, that is more times than normal visitors (2 times per month), so there is a relation between ski and recreation demand at the Parnassos ski-resort ($a < 0,001$, $\chi^2 = 62,88$, Cramer's $V = 0,45$).

The visitors who do not practice ski have many reasons for it, as Table 2 shows. The most serious reasons are: economic, lack of leisure time - as ski is a sport which requires a great deal of time - and consideration of ski as a dangerous sport. The latter is answered by women (87,5%).

Knowing the reasons for which visitors are inhibited from coming more frequently is precious for the skilful management of the ski-resort.

97,2% of the respondents, intend to come more often, but for various reasons they do not succeed in this. According to Table 3, lack of time is considered to be the principal dissuasive reason for more frequent visits, by the 61% of the visitors.

Bad organization is also a considerable dissuasive reason, and is related to lack of lodging at the ski-resort, lack of sufficient stamping and control of the traffic on the road leading to the ski-resort, insufficient lighting of the ski-tracks, ineffective precautions from avalanches and landslides, lack of a radio-station feeding the visitors with information.

Frequent ski practice is inhibited by economic reasons, as the cost is considerable, especially for families, not for single individuals. The mean cost per person for a daily excursion is 3.492 drs., (1\$ = 250 drs) but for tourism for one or more nights, the mean cost per person is 10.527 drs., so most of the visitors (52%) return home on the same day. However, it is found that the visitors stay at the wide area for one or more days is related to their economic situation ($a < 0,001$, $\chi^2 = 17,63$) (fig. 2).

The Parnassos ski-resort does not dispose lodging for the night. Thus, a very small number of persons (6,7%) spend the night there in trolleys.

Among those who spend the night at the wide area (Arahova 27 km, Amphiklia 17 km, Delphi etc.) 72% stay there for two days. In total sample, that is 400 people, only two people stayed for six days and another two, for 10 days.

Therefore, it is obvious that we can speak about tourism with limited duration, and not for winter vacation.

The Parnassos ski-resort is not the only place to ski and tourism for the respondents, because 37% of them also visit other ski-resorts, keeping Parnassos at the first place of their preference.

This preference is due mainly to three reasons : a) the resort is situated near the place of residence for 69% of the visitors, b) its establishment exceeds in size and quality in relation to the other Greek ski-resorts, c) given that the research year (1990) snowfalls were not satisfactory in amount (in relation to other Greek ski-resorts).

As for the visitor's sociological features, most of the visitors are men (55,8%) and young (mean age : 27 years old). This is expected, as the high altimeter and the low temperature at the ski-resorts along, with the strong corporal exercise which the sport demands , are not suitable for older ages.

We cannot claim that winter-tourism is a feature of a certain income level. Higher income seems to be well represented, while lower income (<30.000 and 30-60.000 drs) is poorly represented (Table 4).

As expected, it was found that the income relates to the possibility for staying overnight or not at the wide area ($a < 0,001$, $x^2 = 17,63$), as the cost of staying is very different for each one of the cases.

Referring to the growth of the demand at the ski-resorts and the decision making about the development of mountain areas, it was pursued to determine and evaluate the features which affect : a) the frequency of winter-tourists visits and b) the duration of stay at the ski-resort by the aid of the following (final) linear models:

$$V8 = 29,78 + 1,31 V60 - 0,0000326 V48 - 0,059 V10 - 4,99 V11$$

(6,03) (0,47) (0,0000128) (0,027) (1,55)²

$$R^2 = 0,34 \quad T.\Sigma. = 10,56 \quad D.W. = 1,74$$

V8 = The variable which expresses the frequency of visits at the Parnassos ski-resort.

V60=The variable which expresses the profession.

V48=The variable which expresses the cost of visit per person.

V10=The variable which expresses the distance in kms (visitor's permanent residence ski-resort).

V11= The variable which expresses the travel time to the ski-resort.

The signs of the models are in total harmony with the economic theory and the adjusted coefficient of determination has an accepted price for similar research. (Gum and Martin 1975, Walsh and Davitt 1983 and McClaskie et al. 1986). The typical errors of the dependent variable are significantly smaller than the average of the observed prices. The typical errors of the intercept and the independent variables are small, as the prices in parenthesis indicate, and as the intercept as the coefficient are statistically considerable. The Durbin-Watson control excludes the autocorrelation between the residuals of the models.

According to the linear model, the frequency of visits to the Parnassos ski-resort depends on the following factors which are met in the model in proportion to their importance and their role in the frequency of visits (beta prices) (Uysal et al. 1982) :

1) Visitors profession : Some professions or occupations (for example students, teachers etc.) provide people with more leisure time or income, thus, offering them the possibility of more frequent visits (Douglass, 1975).

2) Cost of visits : The correction is probable (Morey, 1984 and Martin and Witt, 1988), so higher the cost (because of the distance, staying overnight etc.) as more frequent excursions are limited.

3) Distance in kilometers between the ski-resort and the visitor's place of residence. It's obvious that small distances are easier to travel more frequently, though the long one's call for increased expenses. For this reason, the opportunities and the possibilities for frequent visits to the ski-resort are limited. The distance is a substantial factor which affects the demand for every kind of recreation (Mansfield, 1969, Malamud, 1973, Lukas, 1985 and Roggenbuck and Lukas, 1987).

4) Required time for travel : The variable which expresses travel time is being included in the model, although the variable which expresses distance is also included. The variable of travel time also includes travelling conditions (turnings, difficulty of proximity because of the snow etc.). These are factors which produces a different travel time for equal distances (in km).

For some researchers this is considered to be very considerable factor which affects the demand, as it contains the sense of cost (time of cost) (Knetsch and Cesario,1976). A negative correlation is expected, as possibilities for long travels are limited.

The final linear model which expresses the demand in hours of stay at the Parnassos ski-resort is the following :

$$V24=6,81 - 0,298 V11$$

(0,34) (0,112)

$R^2=0,41$ T.Σ.=1,3 D.W.=1,81

V24= is the variable which expresses duration of stay (in hours) at the ski- resort.

V11= the variable which expresses required travel time.

As it results from the model, the duration of stay at the Parnassos ski-resort, depends only on the travel time. In fact, long travels are reasonable so as to restrict the time of stay at any recreation area.

Economic Analysis of ski-resorts

From the analysis of economic data, it results that ski-resorts (as enterprises) function with liabilities. The total liability for 6 years of operation (1983-1988) is 479 million drachmas (stables prices of 1988) or an average of 6 years, approximately 80 million drachmas. This phenomenon, broadly-known as the operation of a ski-resort with a liability is common. For example, in N. America among the 121 ski-areas there are gains only for 55 (46%) (Goeldner and Farwell, 1981).

On the other hand, the visitors are about 137.494 per year and the average cost per person is 6.868 drs. Therefore, the total amount which is being spent by the visitors at the neighbouring area is 944.342.474 dr.

The average economic benefit of the region near the ski-resort which results from its operation (including the employee's salaries for 6 years, that is 1983-1988, as the employees are inhabitants of the region) (Table 5). Therefore, with a liability of 80 million drachmas an amount of approximately 960 million drachmas comes up as a result which profits the region without estimating the indirect social and civilizational benefits, which are incalculable. (Horvath,1970 and Driver et al., 1985).

During the 6 years 1983-1989, 42 people (permanent staff) and about 94 people (seasonal staff) have stayed at the region.

The amount of approximately 960 million drachmas which profits the region, is enough to offer a monthly income of about 87.000 dr. for 1.100 active people (able to work) insuring work to the inhabitants of a small town.

Note : 1)The prices at the columns are averages of a period of 6 years, that is 1983-1988 and to stable prices of the year 1988.

2)The mean annual subsidization for the years 1983-1988 arises to 75.365.352 drs.

3)The expenses for the buildings and machine purchase were not used towards the upper estimates, because it is not the aim of this research the control of ski-resort establishment expediency, but the control of the expediency of it's operation continuation. The criterion of this is the contribution of the ski-resort to the development and economic reinforcement of the neighbouring area.

CONCLUSION - SUGGESTIONS

Almost all the Parnassos visitors, desire to visit it more frequently, but they cannot because of the limited free time they dispose, as well as their restricted economic potential.

The main reason for winter tourism is that ski is being released at the Parnassos ski-resort by people who belong to a high income class.

Dissuasive reasons for ski, are the economic factor, lack of time and the consideration of ski as a dangerous feat.

The increased cost that results from the staying overnight at the ski-area, interprets the relationship between staying overnight and income and is a serious reason for the restriction of winter vacations in the area.

The main reasons of preferences for a ski-resort are - according to the visitor's answers - it is the proximity to the visitor's residence, the quality of its establishments as well as the snow abundance (because recent years are characterised by lack of snow).

The frequency of visits is affected by the distance which the visitor or tourist may travel, the travel-time, the cost of visit, as well as his profession.

Although the ski-resort functions with liability if this would be considered as a enterprise, its offer to the region is very considerable.

This benefit is realised as by the work offer to the inhabitants of many regions, as by the function of coffee-bars, restaurants, taverns and room renting.

The spreading of the popular art and local production, for example Arachova's, textiles and wine, give a complementary income to the inhabitants of the region.

Also the spreading of the local civilization (Oracle of Delphi) is one of the most visible positive influences of the winter-mountain tourism at the Parnassos ski-area.

The propositions which aim towards a reinforcement of the winter tourism demand at the Parnassos ski-resort are as follows :

- 1) Diminution of travel time : This can be realised by continuous road supervision aiming at traffic control which insures both easy car circulation and the passengers' safety, as traffic rules are very often violated, provoke logjam and damages for other vehicles.
- 2) The ski-track lighting, the opening up for new ones and the receiving of suitable measures for skiers precautions from avalanches.
- 3) Operation of a radio station for the visitors' information.
- 4) The population of the congress-tourism at the neighbouring area which would provoke economic reinforcement, as it is probable that delegates in conventions belong to the upper class of income.
- 5) The development of internal tourism in the area with simultaneous advertisement and promotion of the winter sports healthful actions. A subsidization it could be coexist to some tourist offices to organise excursions to the mountainous regions in the winter.
- 6) Giving a «packet» of offers for vacations for several days at ski-areas, which can comprise staying expenses, use of ski-lifts and ski lessons.
- 7) Preservation of equilibrium between mountainous agriculture, existed industry and mountainous tourism.
- 8) Stimulus for the creation of family units with maintenance of the traditional character - according to Austrian models - so that minimum environmental consequences come up as results. The reinforcement can be an imprest with low compound interest and / or bounties as for the creation of small traditional handicrafts as for the creation of lodging.
- 9) Organization of anniversary manifestations, festivals etc. within the area, for reasons of advertisements.
- 10) Printing of advertising brochures with simultaneous projection of historic and aesthetics worth of the area.
- 11) Multimedia use for all the above mentioned reasons.

REFERENCES

- Cicchetti C.J. , A.C. Fisher and V.K. Smith. 1976. An Econometric Evaluation of a Generalised Consumer Surplus Measure :The Mineral King Controversy. *Econometrica* 44 : 1259-76.
- Clauson, M. and J.L. Knetsch. 1966. *Economics of Outdoor Recreation*. Baltimore. Md.: Johns Hopkins University Press.
- Douglass, R.W. 1975. *Forest Recreation*. Second Edition. Pergamon Press Inc. New York.
- Driver B.L., R. Nash and G. Haas. 1985. *Wilderness Benefits : A state - of - Knowledge Review Proceedings- National Wilderness Research. Conference : Issues, State - of - K K Knowledge, Future Directions*. Fort Collins, CO, July 23-26. pp.294-319.
- Goeldner, C.R. and T.Farwell. 1981.*Economic analysis of North American ski areas*. Business Research Division, Graduate School of Business Administration, Univ. of Colorado, Boulder, Colorado. 135 p.
- Gum R.L. and W.E. Martin. 1975. Problems and Solution in Estimating and Demand for and value of Rural Outdoor Recreation. *Amer. J. Agr. Econ.* 57. pp. 558-566.
- Horvath, J.C. 1970. The role of the private sector in providing recreational opportunities. In : Driver, B.L., ed. *Elements of Outdoor recreation planning*. Ann Arbor. MI: University of Michigan Press; pp 145-169
- Karameris, A. 1988. Demand and perspectives of the ski as main expression of winter tourism. *Geotechnics*. No2, December.
- Knetsch J.L. and F.J. Cesario. 1976. Some problems in estimating the demand for outdoor recreation. *Comment Amer. J. Agr. Econ.* 58 : 596-97.
- Lukas, R.C. 1985. Use patterns, visitors characteristics, and attitudes in the Bob Marshal Wilderness complex, 1970-82. Research Paper INT-345. Ogden,U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 32 p.
- McClaskie, S.L. ,T.L. Napier and Christensen 1986. Factors influencing outdoor recreation participation : a state study. *Journal of leisure Research*.Vol.18, No3, pp.190-205.
- Malamud, B. 1973. Gravity model calibration or tourist travel to Las Vegas. *Journal of Leisure Research*. Vol 5, No 4.

- Mansfield, N.W. 1969. Recreational trip generation. *Journal of Transport Economics and Policy*. Mai. Martin, C.A. and S.F. Witt, 1988. Substitute prices in models of tourism demand. *Annals of Tourism Research*. Vol.13. pp. 481-489.
- Morey, E.R. 1984. The choice of ski areas : estimation of a generalized CES preference ordering with characteristics. *The Review of Economics and Statistics*. March 13, pp. 584-590.
- Papastavrou, A.K. , N.A. Anagnos, K.I. Makris, 1979. Exercises of Forest Policy. No A'. Aristotelian University of Thessaloniki.
- Roggenbuck, J.W. and R.C. Lukas 1987. Wilderness Use and User Characteristics : A state - of - knowledge review. p. 204-245 in R.C. Lukas (ed). *National Wilderness Research Conference : Issues, State - of - knowledge, Future Directions*. Proceedings, Ogden U.T., U.S.D.A.
- Ministry of National Economy. 1987. Study of existed situation of Greek ski-centers. Athens.
- Uysal M. , C.D. McDonald and J.T. O' Leary 1988. Length of stay : A macro analysis of cross- country skiing trips. *Journal of Travel Research*, Winter, pp.29-31.
- Walsh, R.G. and G.J. Davitt, 1983. A demand Function for Length of Stay on Ski Trips to Aspen. *Journal of Travel Research*, Spring pp. 23-29.
- Wonnacot, I. and R. Wonnacot. 1984. *Introductory Statistics for Business and Economics*. Third edition. John Wiley and Sons. Inc.

Fig. 1: Study area



Table 1 : Reasons for visit to the Parnassos ski-resort

Reasons	%
Ski	75,6
Mountaineering	2,0
Playing	12,1
Nature Observation	19,6
Other reasons	6,3

Table 2 : Reasons for ski negation at the Parnassos ski-resort.

Reasons	%
I don't like it	7,4
I think that this is a sport for other social classes	4,3
Family reasons	2,1
Other reasons	12,8
I found it dangerous	25,5
Economic reasons	26,6
I don't have leisure time	26,6

Table 3 : Restrictive reasons for more frequent visits at the Parnassos ski-resort.

Reasons	%
Not satisfactory organization	11,5
Lack of automobile	4,9
Lack of time	61,0
Economic reasons	19,7
Family reasons	4,6
Health reasons	0,0
Distance reasons	12,3
Bad situation of roads	3,1
Limited snowfalls	8,2
Lack of desire for more visits	2,8
Other reasons	5,1

Table 4 : Visitors distribution according to the level of income concerning their social class.

Income	%
< 30.000	--
30.001-60.000	4,1
60.001-90.000	22,3
90.001-120.000	19,6
120.001-150.000	17,2
>150.000	36,8

Table 5 : Economic analysis for the Parnassos ski-resort

[all amounts in Greek Drachmas (drs), 1\$~250 drs]

(1) Revenues (R) : 96,052,528

(2) Expenses (E) : 172,656,768

(3) Liability (L) :79,937,572

(4) Number of Tickets: 137,494

(5) Cost of visit per person: 6,868

(6) Amount spent in the region = (4)X(5) : 944,342,474

(7) Cost of occupation: 110,626,229

(8) Economic profit for the region = (6)-(1) : 848,289,946

(9) Total economic profit for the region = (7)+(8) : 958,916,176

For the application of this method the following assumption have been made:

1. Personnel cost is at the same time an expeditive for the operation of the ski-resort and revenue for the region because the personnel are inhabitants of the neighbouring region.
2. The cost per person for the years 1983-88 follows changes in consumer price index (1982=100).
3. The cost of gazoline spent in the region.



ΠΑΝΕΠΙΣΤΗΜΙΟ
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