

Article

Attitudes and Views of Citizens Regarding the Contribution of the Trail Paths in Protection and Promotion of Natural Environment

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Abstract: In recent decades, large sections of trail paths throughout Greece have been maintained, revived, and marked, creating a wide network with a total length of approximately 3500 km. The trail paths are one of the main levers of tourism development as they contribute to the preservation, protection, and promotion of the countryside, cultural heritage, and tradition, to the more effective protection and management of areas of exceptional natural beauty and sensitive ecosystems with wildlife. This paper investigates the view of the citizens of the regional unit of Evros, Greece, on the contribution of the trail paths to the protection and promotion of the cultural and natural environment. The research was conducted with the use of a structured questionnaire and through personal interviews. The data were collected and analyzed with the use of descriptive statistical methods as well as multivariate analysis techniques. The results of the research show that the attitudes of citizens to the contribution of paths in the protection and promotion of the cultural and natural environment are directly or indirectly influenced by various factors. In particular, age directly affects the view of citizens towards the trail paths, with the younger ones having more positive views. Other important predictors of citizens' views were the type of activity in the trail path, with citizens using them for leisure activities or using the easy routes having more positive views towards them.

Keywords: trail paths; structural equation model; natural environment; cultural environment



Citation: Kantartzis, A.; Lemonakis, P.; Malesios, C.; Daoutis, C.; Galatsidas, S.; Arabatzis, G. Attitudes and Views of Citizens Regarding the Contribution of the Trail Paths in Protection and Promotion of Natural Environment. *Land* **2022**, *11*, 1585. <https://doi.org/10.3390/land11091585>

Academic Editor: Brian D. Fath

Received: 26 August 2022

Accepted: 13 September 2022

Published: 16 September 2022

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1. Introduction

In recent decades, there has been an increased demand for access to trail paths, which has led many governments to fund actions to create or develop new trail paths [1].

Mountaineering hiking trails are a key driver in the development of forest recreation, the tourist development of mountainous areas, and ecotourism development [2]. They also contribute to approaching inaccessible areas or points in the countryside [3] and traditional settlements, highlighting and promoting natural and cultural heritage, and raising awareness among citizens for their better protection [2]. Especially in recent decades, the demand for hiking on trail paths has developed into a global recreational activity [4]. Ancient paths are, even today, routes of special cultural and touristic importance [5].

In Europe, there is a fairly developed network of trail paths and this is due to that hiking has developed into a way of life. The European trail paths are a network of long-distance footpaths that cross Europe, passing through many different European countries and passing through diverse ecosystems and areas of special cultural interest [2]. In particular, hiking on trails contributes to people's physical and mental health [6].

Greece is a country with many paths because it is mountainous, large areas are geographically isolated, and the road network is relatively underdeveloped [2,7].

The European requirements and compliance with the existing legislations led Greece to use various financings and from various bodies (municipalities, mountaineering clubs, private individuals, etc.) to maintain, revive and mark large sections of paths and routes throughout Greece, creating a wide network with a total length of approximately 3500 km [2].

The purpose of this research is to investigate the opinion and attitudes of citizens based on their socio-demographic profile on the role of paths in the protection of the environment and the development process of the Evros regional unit in Greece. Moreover, the purpose of this work is to highlight the role and contribution of trail paths in outdoor recreation, mountain tourism, and in general, the integrated development of the countryside. Based on the findings of the current investigation, various proposals could be suggested to improve the current state of hiking trails as well as new policy directions for policymakers to promote and further develop trail paths in the investigated area or in a wider focus.

The rest of the paper is organized as follows. Section 2 presents a literature review on the topic. Section 3 provides information on the material and methods, such as the study area, data collection method, and statistical analysis methodology. Section 4 demonstrates in detail the results of the analysis regarding the quality of the analysis and the detailed results of SEM and summarizes the whole work of the article.

2. Literature Review

Hiking is considered an activity chosen by travelers when visiting other places [8] and is an area development option because it can combine services such as accommodation and food facilities [9]. Usually, hiking is accompanied by contact with nature in areas where there are monuments and natural attractions, by the exploration of new areas [10], and by visiting protected areas [11]. According to Acevedo-Duque et al. [12], hiking is considered an aerobic exercise that prevents cardiovascular diseases and represents up to 20% of the global income of mountain tourism. Moreover, hiking can contribute, combined with physical exercise, positively to the reduction of blood pressure and weight loss; mentally, it can help to reduce depression and bring well-being and social contact [6,13], and that is why it has become a popular form of tourism [14]. It helps to maintain physical condition [15] as well as to escape from everyday life by discovering new places and reducing the stress created by everyday obligations [16]. The benefit of hiking, in addition to the health and improvement of human life, can reduce the costs governments intend to be spent on public health [17]. For this reason, many European countries consider hiking to contribute to tourism development and the entertainment of hikers [18].

Trail paths often are an important feature for choosing a visiting location; they are considered tourist infrastructure [19–21] and they can help the local development of an area [22]. Ancient paths are routes of special importance [5]. Trail paths serve functions with a recreational, economic, social, and economic impact on humans and society [23]. In recent decades, both the demand and contact that people have with hiking trails have increased, which has evolved into a global recreational activity [4,24,25] with health benefits for the hikers [26]. They also bring the public who use them as a form of recreation into contact with attractions, with the exploration and learning of new cultures of countries, as well as with the development of environmental awareness [27].

They combine sports activities with the value of nature and with the heritage of an area, thus, having a high symbolic value for these paths [28]. They also contribute to the protection and continuation of the cultural heritage of the region [29]. While hiking on the trails, the public has the opportunity to come into contact with wildlife through recreational observation [30]. First-time hikers seek different experiences. Some want to explore nature, interact with the world, and buy souvenirs from the area as well as for educational purposes [31]. Trail paths attract visitors to rural and mountainous areas; they can come into contact with the area's heritage, thus, extending their stay and turning these areas into more attractive places for visitors [32]. Further, they are considered infrastructures that provide access to natural areas that are protected and, thus, should provide access to these areas for recreation while not disturbing these areas [3] and offer aesthetic comfort

and safety [33]. According to Muntasib et al. [34], the paths are also used for running, as a result of which they become a pole of attraction for athletes from other countries, increasing tourist traffic, in the development of the marketing of the area as well as the promotion of the latter [35].

In particular, the paths located in the peri-urban forest are chosen by people of all ages for walking, running, and cycling [36] and are chosen according to their habits and proximity to visitors' homes [37]. The main reasons for choosing to walk on the trail paths were the daily stress caused by living in the city as well as exercise [38]. Before starting the hike, one should know some characteristics of the path, such as the degree of difficulty [39].

The demand for trail path access has motivated local governments to invest money in the creation or development of new trail paths [1] because informal trail paths created by hikers can damage vegetation, habitats, the natural environment, and aesthetics [40,41]. A well-developed trail path should have information signs and markings, infrastructure for litter and easy access to it, clearing and pruning of trees along the trail, and provide safety for hikers [42]. Kabil et al. [43] classified the trails in their research area to identify the economic services they offer from tourism activity due to the high demand they have had in recent years. Raya et al. [44], with careful calculations, proved that the use of land earmarked for investment to build hiking trails brings economic development at little cost. They could still contribute to communication and social cohesion with other countries by increasing cooperation for the development of such projects of tourist interest [45]. For this reason, the rational regeneration and construction of existing paths, as well as new ones, will lead to the reduction of construction costs and, at the same time, will ensure the visibility of the area [46]. The placement of walking sensors can help for reducing the maintenance time of the trail path and the number of users visiting it, and thus, in this way, the local community can know the future trends of the public and adapt accordingly [47]. However, for the people who visit the areas with tourist trail paths to be able to access them, the transportation, the routes, the bus stops as well as the parking of the vehicles should be located close to the starting point of the trail paths, meeting the need of easy transition [48]. Digital mapping of the path trails can help an area to be visited by tourists [49]. Knowing the reasons the paths are chosen can contribute to financing the construction of new paths and the promotion of existing ones to increase hiking in the area [50]. On the other hand, the increase of people on paths due to easy access can increase the risks of their degradation [51]. Hence, managers and designers of recreational trail paths should consider all of the above, as well as the service they can offer to the public so that there is no risk of their degradation and, at the same time, the pleasure of the world [52].

For funding to exist, the maintainers of trail paths should emphasize the benefits of hiking to the health of visitors and to the environment itself by developing environmental awareness [53]. Tomczyk and Ewertowski [54] proposed a methodology that combines designing and reactivating paths to ensure recreation and, at the same time, there is less degradation from the public that visits them. The length of the walking route, the fencing, the marking of the route, and the parking of their vehicles can help to change the behavior of the public [55]. During maintenance of trail paths, steep, high-altitude, and high-traffic trail paths should be improved first [56]. This is why long-distance trail paths are important to control to ensure the sustainability of this natural resource [57].

3. Methods

3.1. Study Area

The research was conducted in the regional unit of Evros of the region of Eastern Macedonia-Thrace. The regional unit of Evros (Figure 1) is the largest of the Regional Units as it gathers 24.3% of the total population of the Region. Accordingly, Alexandroupolis is the most populous city in the region, with 57,829 inhabitants. The ecosystems of the regional unit are characterized by a high level of conservation (due to the reduced intensity of anthropogenic activities), and some of them are governed by special protection regimes

(Dadias–Lefkimis–Soufliou Forest, Evros Delta) as well as a number of habitat protection areas and zones [58].



Figure 1. Study area.

The economy of the regional unit of Evros is based mainly on agriculture and secondarily on animal husbandry, while the industry is mainly based on the processing of agricultural products. Agriculture in the area is based on the cultivation of wheat, corn, cotton, sunflower, and sugar beet. The natural environment of the regional unit is suitable for the development of mild forms of tourism (ecotourism, mountain tourism, walking tourism, spa tourism, and cultural tourism).

In the research area, there is a significant network of paths with a total length of approximately 93 km and all levels of difficulty (easy, moderate, difficult, and very difficult) [59].

3.2. Questionnaire

For collecting information on the attitudes and views of the citizens of the regional unit of Evros, Greece, on the contribution of the trail paths to the protection and promotion of the cultural and natural environment, a structured questionnaire was constructed. The questionnaire design was based on:

- (a) Knowledge of the socio-economic and natural conditions of the research area,
- (b) The study of the literature relevant to the construction of questionnaires, data collection, and social surveys, as well as to the role of paths in rural development [7,60].

The questionnaire includes closed-form questions or pre-constructed answers. The above type of questions was chosen for the following reasons: (a) they do not require

much effort on the part of the respondents to formulate their answer, (b) they facilitate the interview and reduce its duration, and (c) they are suitable for numbering and coding.

At an initial stage, a pilot questionnaire was prepared on a limited scale. The questionnaire was distributed to 30 climbers and hikers to establish the validity of the questions and, thus, the questionnaire itself as well as the adequacy and appropriateness of the questions. After the questionnaires were completed, the relevant additions, corrections, and modifications were subsequently made. The final questionnaire was drafted to be applied to our research. Every effort was made to make a complete and functional questionnaire with the main criterion of ensuring reliability, smooth flow of the questions, and understanding by the respondents.

The questions were related to:

- (a) The individual and social characteristics of the respondents
- (b) The characteristics of the trail paths
- (c) Their attitudes regarding the trail paths

3.3. Sampling Method

The population under investigation is all citizens and the sample survey selected was Simple Random Sampling (SRS) due to its simplicity and the least possible knowledge required about the population by any other method. The SRS presupposes the existence of a complete list (sampling frame) of the population data without deficiencies or repetitions [60]. The municipal registers of the regional unit of Evros were used as a sampling frame.

The sample size was estimated based on the types of SRS [61]. Although SRS was used without repetition, the finite population correction can be ignored because the sample size n is small relative to the size of the N population [62].

Due to the fact that the variables in our analysis refer to proportions, the determination of the total sample size is given by the formula:

$$n = \frac{t^2 p(1-p)}{e^2}, \quad (1)$$

where:

p = the ratio estimate

t = the value of the Student distribution for probability $(1 - \alpha) = 95\%$ and $n-1$ degrees of freedom.

e = the maximum permissible difference between the sampling medium and the unknown population medium. For our study, we accept that it is 0.05, i.e., 5%.

To calculate the sample size, we had to perform pre-sampling with a sample size of 50 people. Thus, for each variable, the population ratio (p) was calculated. The use of a questionnaire is not limited to estimating a single population variable but several variables. So we need to estimate the sample size for each of the variables. If the estimated sample sizes are approximate and the size of all is within the economic possibilities of sampling, then the maximum is selected as the sample size. In this way, the most variable item in the questionnaire is estimated with the desired accuracy while the others with greater accuracy than originally defined [61].

For the specific study and questionnaire, the demographic variable of gender has presented the largest sample size (no missing values), with $p = 0.527$; hence $1 - p = 0.473$, suggesting a sample size of 377 respondents. To ensure more robust results, we have chosen $p = 0.5$, and consequently, the selected sample size is estimated through:

$$n = \frac{t^2 p(1-p)}{e^2} = \frac{1.96^2 \cdot 0.5 \cdot (1-0.5)}{0.05^2} = 384.16$$

Thus, we accepted a sample size of 385 people. Therefore, the other variables with the specific sample size are calculated more accurately. The final selected sample was then accurately located (name and address) with the help of random numbers we obtained using

tables of random numbers. The selected individuals were interviewed in person. In case of not finding them at home or refusing them, we made two more attempts to get their opinion. In cases where this was not possible, we proceeded with the same procedure to select new sampling units.

3.4. Statistical Analysis

The current study utilizes both descriptive statistical analysis and statistical modeling through structural equation modeling methodology (SEM) [63]. Following a widespread trend in modeling complex nonlinear systems, we use SEM modeling methods/techniques to model and evaluate the relationships between the factors and the overall factor of positive attitudes of citizens towards mountaineering trail paths. SEM is a series of statistical methods that allow complex relationships between one or more independent variables and one or more dependent variables. SEM is considered the most appropriate method to derive causal relationships objectively [64].

The response variable (dependent) is the factor of attitudes which is created by the combination of the following measurable variables of the questionnaire (10 variables) (Please see Table 1 below):

Table 1. Questions of the survey measured the attitudes of citizens towards trail paths.

Questions	Measurement Scale
Do you think that the development of paths contributes to the improvement of the physical condition of the inhabitants of an area? (Q1)	1–5 Likert scale
Do you think that the development of paths contributes to the improvement of the quality of life? (Q2)	1–5 Likert scale
Do you believe that the development of paths contributes to the emergence of places of special interest (historical-cultural monuments) (Q3)	1–5 Likert scale
Do you think that the development of paths increases the value of land? (Q4)	1–5 Likert scale
Do you believe that the development of paths helps to prevent natural disasters (e.g., fires) (Q5)	1–5 Likert scale
Do you believe that the development of paths contributes to the promotion of sustainable urban mobility? (Q6)	1–5 Likert scale
Do you believe that the development of trail paths serves as a pole of attraction for tourist activity (Q7)	1–5 Likert scale
Do you believe that the development of paths contributes to the environmental awareness of the citizens (Q8)	1–5 Likert scale
Do you believe that the development of paths contributes to the cultural awareness of the citizens? (Q9)	1–5 Likert scale
Do you think that the Greek paths should be a national strategy? (Q10)	1–5 Likert scale

(Description of Measurement scale: "1—Absolutely disagree"; "2—Disagree"; "3—Neither agree, neither disagree"; "4—Agree"; "5—Absolutely agree").

As regards the explanatory variables utilized in the structural equation modeling as potential factors to explain the attitudes of citizens towards path trails, we have chosen to use the following items:

1. Demographics (Gender, Age, Income, Level of education);
2. Use of mountain trail path—(USE);
3. Path condition assessment—CURRENT STATE (factor);
4. Level of experience on trail paths—EXPERT (factor);
5. Member of a mountaineering club (MEMBER);
6. Trail path activities (ACTIVITIES).

The explanatory variables and factors are described analytically in the following table (Table 2). The reliability of the factors was checked through Cronbach's alpha reliability coefficient and the reliability of the data was found to be satisfactory (alpha index > 0.77).

Table 2. List of explanatory variables and factors utilized for SEM analysis.

Explanatory Variables and Factors	Codification
USE	1: For bird watching 2: For fauna observation 3: For flora observation 4: For observation of natural monuments 5: For leisure activities
CURRENT STATE (FACTOR)	1: How do you judge the walkability of mountaineering-hiking trails? 2: How do you judge the marking of mountaineering-hiking trails? 3: How do you judge the condition of the surface of mountain paths in relation to the existence of all kinds of materials (e.g., branches, vegetation, massive stones)?
EXPERT (FACTOR)	1: What is the maximum distance you usually travel when using trails? 2: What is usually the maximum travel time when traveling on trails? 3: What is the usual slope of the path you use?
MEMBER	Are you a member of a mountaineering club or organization?
ACTIVITIES	1: Easy hiking route, lasting up to 5 h and up to 300 m. Positive altitude difference. 2: Easy hiking or crossing, lasting up to 8 h in low mountains and up to 800 m. Positive altitude difference with the corresponding equipment 3: One-day, two-day, or three-day ascents in high mountains or crossings, lasting more than 8 h with the corresponding equipment. 4: Long winter mountaineering ascents with the necessary use of ax-crampons or multi-day crossings with long daily walks. 5: Difficult, long winter climbs using ax-crampons and complete winter equipment.
GENDER	1: Female 2: Male
AGE	1. 18–30 y.o. 2. 31–40 y.o. 3. 41–50 y.o. 4. 51–60 y.o. 5. 61–70 y.o. 6. > 70 y.o.
INCOME	1. <5000 euros 2. 5001–10,000 euros 3. 10,001–15,000 euros 4. 15,001–20,000 euros 5. 20,001–25,000 euros 6. 25,001–30,000 euros 7. > 30,000 euros
EDUCATION	1. Primary level; 2. Secondary and vocational; 3. Higher education

The application of path analysis (also known as structural equation modeling-SEM), [63] is the most suitable statistical analysis for our study as—in contrast to typical regression analysis techniques—it allows the hypotheses to be tested for simultaneous effects at different levels and gives indications of the degree/strength of each effect. It is considered the most appropriate method to derive causal relationships between latent and observed variables and additionally allows the integration of factors (i.e., not directly measurable) or variables to capture mediation effects. Hence, SEM possesses a distinctive characteristic of latent variables being regressed on other latent variables or observed variables, such as those analyzed in our paper.

It is a general case (and integration framework) of many other statistical techniques, such as regression, generalized linear models (GLM), and confirmatory factor analysis.

For the parameter estimation, due to the nature of the data, which is a Likert scale, the method of generalized least squares was selected. After a number of iterations, the final SEM models are estimated. Parameter estimates are presented via suitable path diagrams, where the numbers on the arrows express the loadings of the factors on the observed

variables and the loadings for the relationship between the factors. We have followed a forward step procedure to select the best model for the data, starting by fitting the simplest model, including only demographics as the independent variables and adding at each step a single explanatory variable/factor to the SEM model. With the help of goodness of fit indicators, we check the adaptation of the models we have assumed (e.g., comparative fit index, root mean square error of approximation). Prior to SEM analysis, the reliability and validity of the latent constructs were tested via Cronbach's alpha and the percentage of variance was explained [63].

Descriptive and statistical modeling analysis was performed using the statistical package SPSS 21.0 [65] and AMOS software [66].

4. Results

4.1. Descriptive Statistics

Table 3 below presents summary demographic information for the collected sample of citizens (i.e., sample characteristics of gender, age, personal income, and level of education of respondents). The majority of the sample were males (52.7%), between 51 and 60 y.o. (32.3%) and of higher educational level (72.3%).

Table 3. Demographic information for the sample under study.

Demographics		Percentage (%)
Gender	Male	52.7
	Female	47.3
Age	18–30	18.5
	31–40	25.9
	41–50	23.0
	51–60	32.3
	61–70	20.1
	70+	1.9
Education	Primary level	5.5
	Secondary and vocational	22.2
	Higher education	72.3
Income	<5000 euros	23.3
	5001–10,000 euros	28.5
	10,001–15,000 euros	27.8
	15,001–20,000 euros	11.9
	20,001–25,000 euros	6.6
	25,001–30,000 euros	0.4
	>30,000 euros	1.5
Sample size: 385		

The next table (Table 4) shows descriptive statistics for the various constructs and items from the questionnaire utilized for the structural equation modeling (see Tables 1 and 2 for analytical descriptions of the items). As is seen from these results, the highest scores from respondents are observed on the variable of “use” (average score: 3.83) and on most of the “attitude” variables. The lowest scores were found for the items of “activities” (average score: 1.55) and “member” (average score: 1.30).

Table 4. Descriptive statistics (min, max, average, standard deviation) for the factors and observed items were used for the structural equation modeling.

Factor/Variable	Item	N	Min	Max	Average	Std. Deviation
Activities		385	1	5	1.55	0.919
Use		385	1	5	3.83	1.211
Member		385	1	2	1.30	0.459
Current state	1	385	1	5	3.27	0.858
	2	385	1	5	3.05	1.035
	3	385	1	5	3.10	0.838
Expert	1	385	1	4	2.06	0.911
	2	385	1	3	1.64	0.694
	3	385	1	5	2.17	1.025
Attitudes of citizens towards path trails	Q1	385	2	5	3.90	0.846
	Q2	385	1	5	4.08	0.751
	Q3	385	2	5	4.12	0.744
	Q4	385	1	5	3.59	0.912
	Q5	385	1	5	3.94	0.925
	Q6	385	1	5	3.73	0.845
	Q7	385	1	5	4.13	0.727
	Q8	385	1	5	3.83	0.902
	Q9	385	1	5	3.60	0.921
	Q10	385	1	5	3.13	1.110

Concerning the scores on the dependent variables of attitudes towards trail paths, we see that higher scores are on variables Q2 (average: 4.08), Q3 (average: 4.12), and Q7 (average: 4.13), whereas lower scores are observed for variable Q10 (average: 3.13).

4.2. Results of SEM Modeling

In the current section, the results of structural equation modeling for explaining variations in the attitudes/opinion of citizens towards trail paths are presented.

Prior to the results of SEM analysis, Table 5 below shows the reliability and validity test results for the factors included in SEM modeling. Results reveal that the utilized latent constructs fulfill the reliability and validity prerequisites. Moreover, no common method bias was noted in the collected data, with variance explained by each construct being higher than 50%.

Table 5. Reliability and validity measures for latent constructs (factors) used in SEM analysis (Cronbach's α , % of explained variance).

Constructs	Cronbach's α	% of Explained Variance
Current State	0.773	62.88
Expert	0.796	72.95
Attitudes of citizens towards path trails (Dependent)	0.794	58.64

Next, the results of parameter estimation of the structural equation models fitted to the data are presented in detail with the use of path diagrams.

In the initial fitted SEM model (Model A), demographic information is examined for its effects on the citizens' attitudes factor. The estimated parameters, in the form of standardized coefficients, are shown in the following Figure 2.

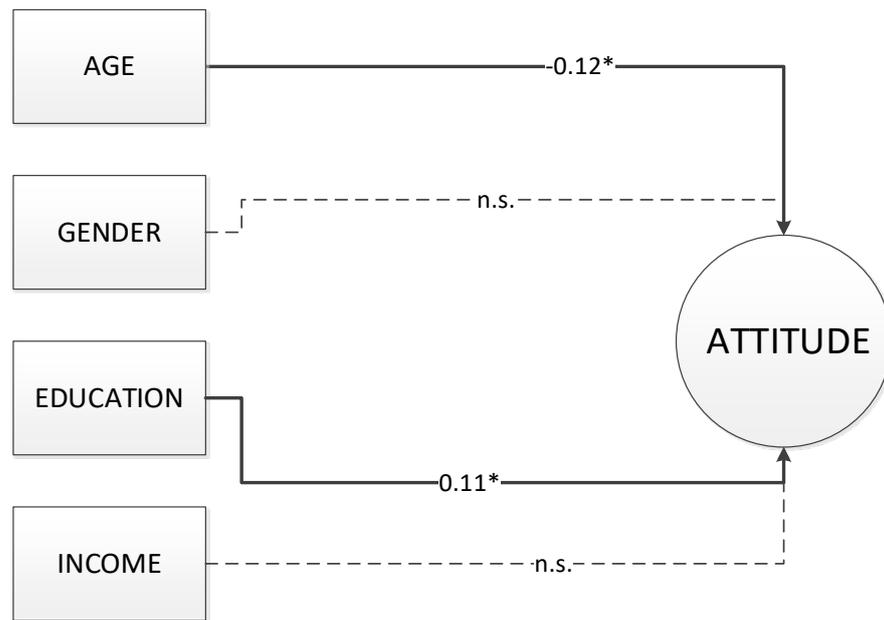


Figure 2. Estimated parameters along with corresponding statistical significance (Model A). * parameter is significant at the 10% significance level. n.s.: non-significant.

As is seen from the results, the effect of the variables “AGE” and “EDUCATIONAL LEVEL” on the attitude of citizens is statistically significant at a significance level of 10%. The “AGE” variable has a negative effect on the factor of “Attitude,” whereas a positive sign is observed for the independent variable of “EDUCATION.” Goodness-of-fit statistics values are: RMSEA = 0.105; CFI = 0.723.

The next model (Model B) additionally includes the factor of “CURRENT STATE” as a mediator variable in the previous SEM model and the association between demographic variables and the response factor (Figure 3).

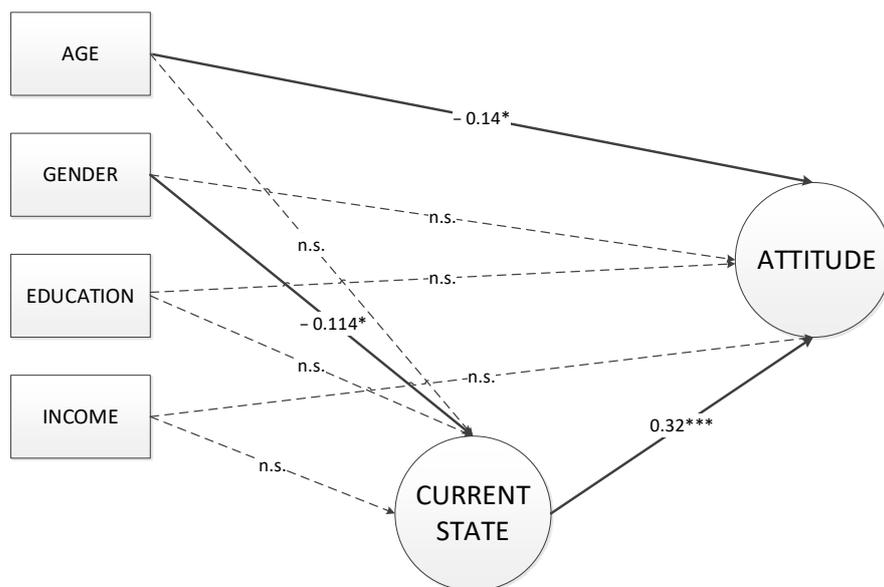


Figure 3. Estimated parameters along with corresponding statistical significance (Model B). * parameter is significant at the 10% significance level. *** parameter is significant at the 1% significance level. n.s.: non-significant.

We observe a statistically significant direct effect of “AGE” on the attitude ($\beta = -0.14$; p -value < 0.1) and a statistically significant effect of the assessment of the current situation

on the attitude ($\beta = 0.32$; p -value < 0.01). Goodness-of-fit statistics are: RMSEA = 0.092, CFI = 0.746.

In the two following models, the mediator variables of “EXPERT” and “MEMBER” are added (see Figures 4 and 5).

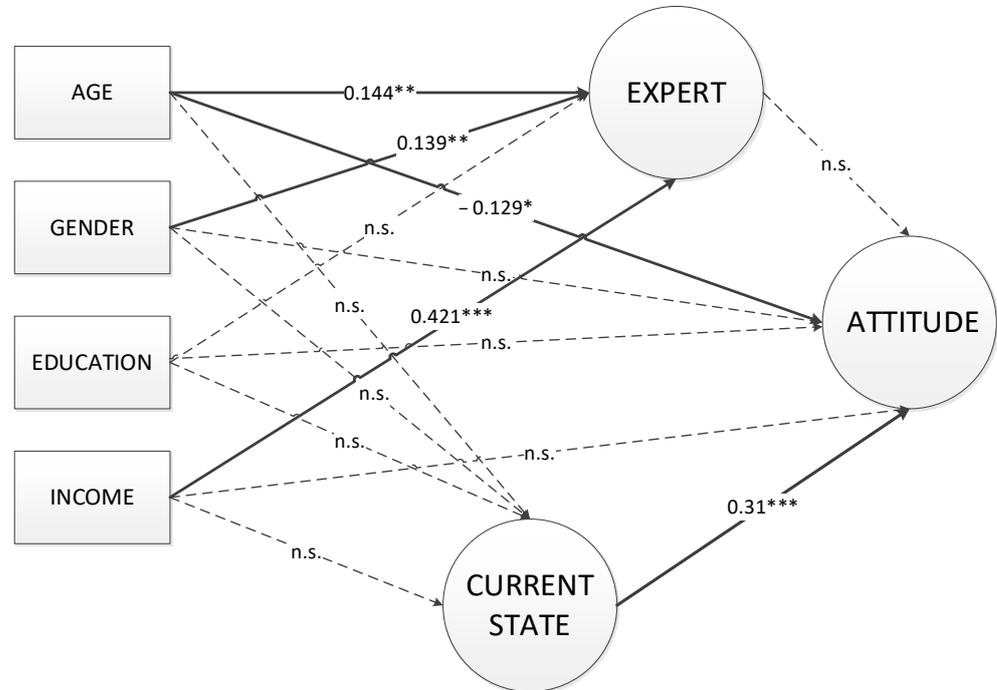


Figure 4. Estimated parameters along with corresponding statistical significance (Model C). * parameter is significant at the 10% significance level. ** parameter is significant at the 5% significance level. *** parameter is significant at the 1% significance level. n.s.: non-significant.

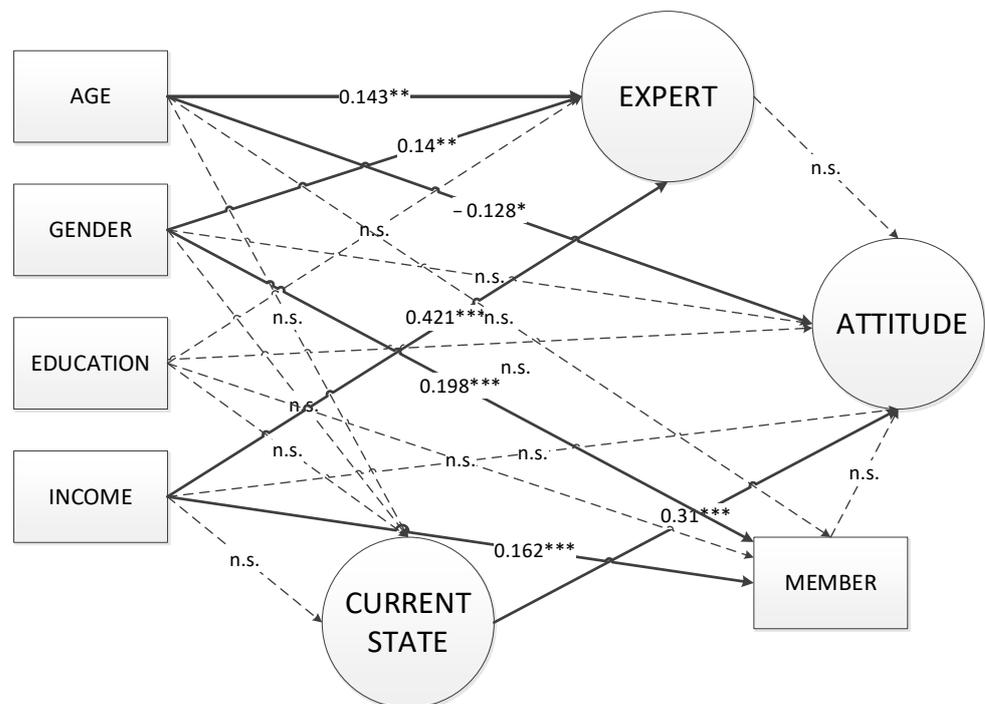


Figure 5. Estimated parameters along with corresponding statistical significance (Model D). * parameter is significant at the 10% significance level. ** parameter is significant at the 5% significance level. *** parameter is significant at the 1% significance level. n.s.: non-significant.

Model C shows that the variables of Gender, age, and income statistically significantly affect the experience of mountaineering trail paths. Moreover, the assessment of the current situation has a positive effect on their attitude towards the trail paths. (Goodness-of-fit statistics: RMSEA = 0.082, CFI = 0.791).

By the inclusion of the variable of being a member of a mountaineering club (MODEL D), it is found that the citizens' opinion is influenced by age and the assessment of the current condition of the trail paths. Experience depends on gender, age, and income. In addition, gender and income influence whether or not citizens are members of a mountaineering club. (Goodness-of-fit statistics: RMSEA = 0.077; CFI = 0.799).

The next step involves the addition of the SEM model of the variable of "Activities." Results are presented in the following path diagram (Figure 6).

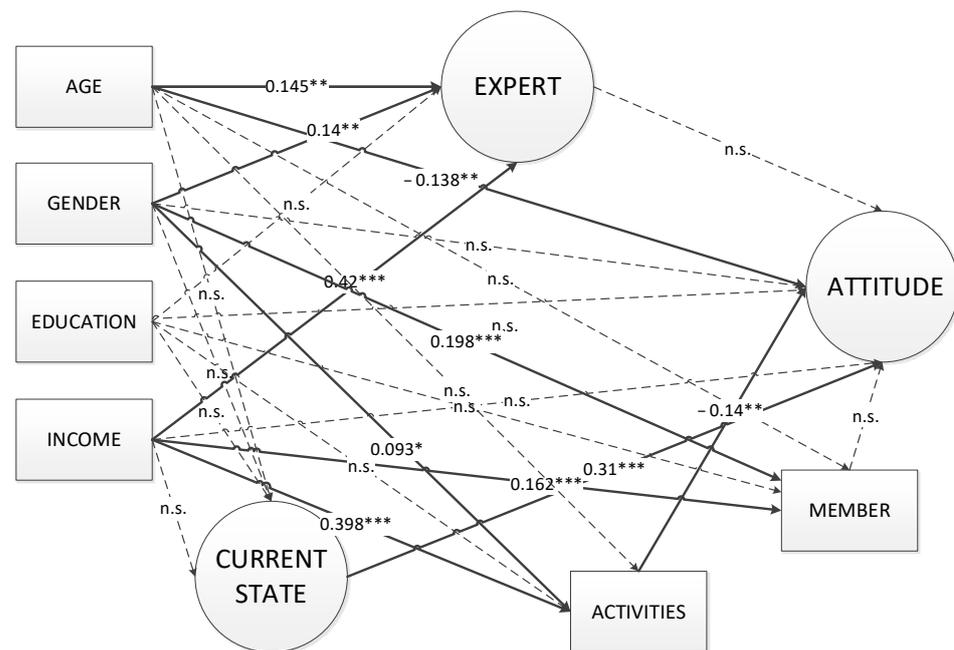


Figure 6. Estimated parameters along with corresponding statistical significance (Model E). * parameter is significant at the 10% significance level. ** parameter is significant at the 5% significance level. *** parameter is significant at the 1% significance level. n.s.: non-significant.

Among the main findings is that the addition of mountain activity does not significantly improve model fit. However, the activity affects the attitude of the citizens following easy routes during triling and having a more positive attitude toward the trail paths. (Goodness-of-fit statistics: RMSEA = 0.078, CFI = 0.815).

Finally, the last fitted model (Model F) includes additionally the mediator factor of "USE."

From the inspection of the results in Figure 7, it is seen that the type of use of paths affects the opinion of citizens regarding trail paths. Moreover, those who use them for leisure activities have a more positive attitude towards paths. According to the goodness-of-fit statistics, we also observe that the final model (Model F) shows the best fit in comparison to the previously fitted SEM models (Goodness-of-fit statistics: RMSEA = 0.069, CFI = 0.836).

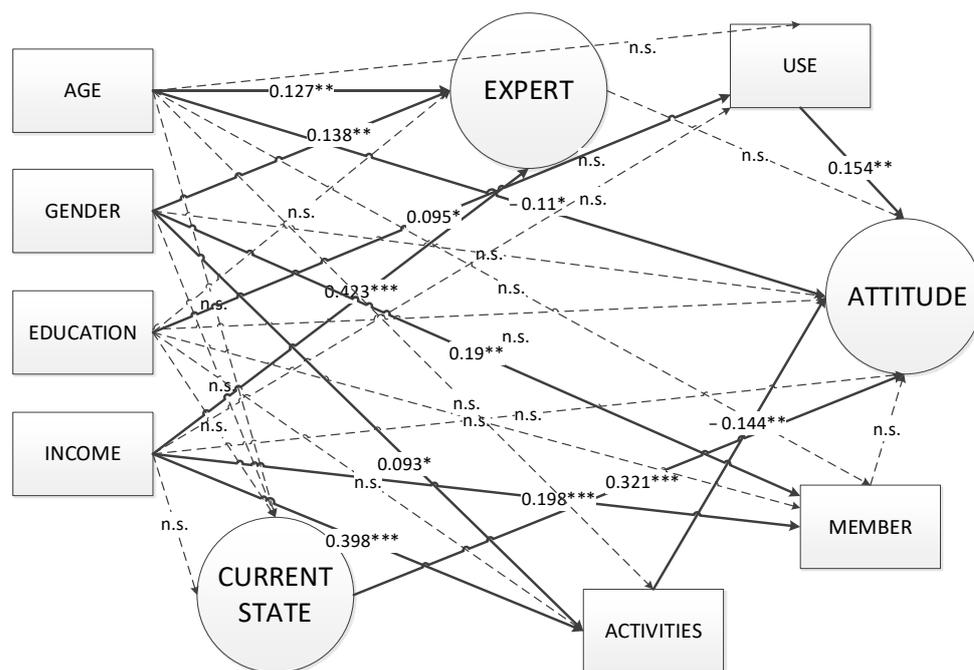


Figure 7. Estimated parameters along with corresponding statistical significance (Model F). * parameter is significant at the 10% significance level. ** parameter is significant at the 5% significance level. *** parameter is significant at the 1% significance level. n.s.: non-significant.

Finally, the following table (Table 6) shows the relative contributions in terms of standardized path coefficients of the 10 items measuring the attitudes of citizens towards trail paths (see Table 1).

Table 6. Standardized path coefficients of the final selected SEM model for the association between the dependent factor of “Attitudes” and relative items for its construction from the questionnaire.

Association		Standardized Path Coefficient	
ATTITUDE	→	Q1	0.485
ATTITUDE	→	Q2	0.657
ATTITUDE	→	Q3	0.686
ATTITUDE	→	Q4	0.529
ATTITUDE	→	Q5	0.172
ATTITUDE	→	Q6	0.620
ATTITUDE	→	Q7	0.630
ATTITUDE	→	Q8	0.665
ATTITUDE	→	Q9	0.691
ATTITUDE	→	Q10	0.384

As is seen from the results of the latter associations, the most contributing items in the factor of “Attitudes of local citizens” are the questions Q3 and Q9, which related to the significance of trail paths in terms of highlighting historical and cultural monuments (Q3) and their contribution to the cultural awareness of citizens (Q9). Their contributions to enhancing tourist activity in the region are also important, as revealed by the association of this item to the overall factor (Q7). On the other hand, the perception of local citizens is that the development of paths is not a major contributing factor to the prevention of natural disasters (Q5). It is also of importance to note that the perception of people relative to the positive contribution of paths to the improvement of their quality of life is relatively high (Q2).

5. Discussion and Conclusions

The results of the research show that the attitude of citizens to the contribution of paths in the protection and promotion of the cultural and natural environment is directly or indirectly influenced by various factors. In particular, age directly affects the view of citizens towards the trail paths, with the younger ones having a more positive view than the older ones.

Citizens who use them for leisure activities have a more positive attitude. In combination with the results of previous research [7], where it was found that more than 2/3 of the visitors of the mountain trail paths do it for leisure purposes, it seems that the majority of the visitors/users of the trail paths have a positive attitude.

Citizens who use the easy routes on the mountain have a more positive attitude towards the trail paths. This percentage is around 65% of the total number of visitors [7]. Citizens who have a better view of the current state of the trail paths have a more positive attitude towards mountaineering-hiking trails.

Another finding in the final model is that the education of the respondent does not directly affect the citizen's attitude. However, the examination of indirect effects (indirect mediation effects) through the bootstrap control for indirect effects showed that the level of education indirectly affects the positive attitude of citizens through the variable of the use of paths (higher level of education combined with the use for activities leisure have a more positive attitude).

Moreover, the income through the "activity" variable also has an indirect effect on the citizens' attitudes towards the paths.

The most important dependencies among the other variables are summarized as follows:

- Gender, age, and income affect the experience of using the trail paths;
- The type of activity is affected by gender and income;
- Joining a club is influenced by gender and income;
- The use of paths is influenced by the level of education;

As regards the relative contributions of the various items measuring the attitudes of citizens towards the trail paths on the overall "Attitude" factor, we have observed that the perceptions of respondents are that paths may contribute more to the highlighting of historical and cultural monuments of their area. This finding is in accordance with previous research that highlights ancient and historical routes as of special importance in hiking [5]. Their current view is that the trail paths are less likely to contribute to the prevention of natural disasters, such as forest fires. Moreover, it is of interest to note that people do not believe at large that paths in the study area can be part of a national strategy plan (Q10).

Based on the main findings of statistical modeling, we could propose that efforts to improve the hiking trails should focus on moderate/difficult hiking/mountain climbing, where a less positive attitude was observed compared to the easy routes. It is also necessary to improve the possibilities of using the paths for extracurricular activities, such as observation of flora/fauna, bird watching, and observation of natural monuments.

In addition, based on the main findings of the current study, we may also propose the following basic-general policy directions that could be undertaken to promote and further develop the trail paths in the study area but also in Greece in general, along with constituting more positive attitudes and views of citizens about their contributions.

Citizens are already positively oriented towards the positive effects of trail paths on the cultural and historical highlighting of local areas. Hence, one direction is towards further cultivating and promoting the position that trail paths are essentially "roads" of recreation and culture, which connect places, people, and societies. They are the most environmentally friendly means of contact with nature, getting to know local communities, their traditions, and history, and getting familiar with rural life. Tourism activities are also gaining from the creation and utilization of trail paths, as revealed by the current analysis, according to the perceptions of local residents. Trails enable visitors to explore nature [31], attracting additional visitors to an area but also increasing their stay time, making the area

more attractive and contributing to its further development [32]. In addition, the paths contribute both to the preservation, protection, and promotion of the mountainous and disadvantaged areas and the countryside in general, as well as to the utilization of the local cultural heritage and tradition [7].

Hence, the characterization of the paths as a basic tourist infrastructure of a special form and their inclusion in the general planning of public infrastructures, with or without the participation of the private sector, can be of major importance for local communities. Towards this direction, the search for synergies and broad political and social support may significantly assist the already increased interest of governments in the development of trail paths [1]. The coordination of all involved bodies and parties, the public and private sector, towards drawing up a national strategy for the paths and a national management system for them, with an emphasis on design and maintenance, could be a major contributing factor to their promotion. A national campaign for the Greek trail paths could collect dynamics from political, artistic, and business perspectives. It could be supported by conferences, workshops, events, competitions, sponsorships, etc.

Finally, we should mention as a limitation of the current study that similar research could be done in other areas with similar socio-economic and physical characteristics or of different ones. To this end, future research could extend the study areas to provide comparisons and generalize more the obtained results. Alternative multivariate analysis techniques could also be utilized in future research.

Author Contributions: Conceptualization, S.G., A.K., P.L. and G.A.; methodology, C.M., A.K. and P.L.; investigation, A.K., P.L., C.M. and G.A.; data curation, G.A., A.K., C.M. and C.D.; writing—original draft preparation, C.M., A.K., S.G. and G.A. writing—review and editing, C.M., A.K. P.L., C.D., G.A. and S.G. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Ethics Committee of Agricultural University of Athens (protocol code 35/21.03.2022).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the authors.

Conflicts of Interest: The authors declare no conflict of interest.

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