

THE QUALITY OF LIFE OF INHABITANTS IN THE CITY OF IOANNINA: THE CONTRIBUTION OF LAKE PAMVOTIDA

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Abstract

Lake Pamvotida is inseparably linked to the life and history of the inhabitants of the city of Ioannina. This research records the views and beliefs of the inhabitants of the city of Ioannina with regard to the lake. The majority of the citizens believe that Lake Pamvotida plays an important role in their lives since the mere presence of the lake contributes to improving their psychology. In addition, Lake Pamvotida contributes to the aesthetics of the city and helps with regard to opportunities for recreation and sport. In general, the citizens declare satisfied from the quality of their life. They also believe that if there are opportunities for them to stay in their homeland, they will do so. It seems that 50 percent of the citizens do not wish to participate in public matters. In addition, the percentage of citizens which do not participate in any environmental program is significant. However, it is encouraging that the percentage of those who would participate voluntarily in a lake protection program is quite big.

Key words: Lake Pamvotida, City of Ioannina, views of citizens, personal interviews, loglinear analysis.

Introduction

Lake Pamvotida, also known as the lake of Ioannina, is located in the north-western part of Greece. The lake covers a small part of the Ioannina basin. Lake Pamvotida as it is today is a left-over of a wider ecosystem which included Lake Lapsista which was drained in the 1950s. It is worth-noting that the health of the first lake depended on the health of the second and vice versa (Management Agency 2013). Geological research has

shown that lake Pamvotida is more than 1 million years old (Kagkalou 1990). Lake Pamvotida covers an area of 23 square kilometers. The depth of the lake is on average 4–5 meters (Vrigka 2003). The lake was always important to people because it provided their food and because it was a refuge against enemies and the harsh conditions of the surrounding mountains (Barba 2008).

Today the population in the wider area of Lake Pamvotida is 100,000 individuals. To a greater or lesser extent these

people use the lake as a source of living either directly or indirectly. At the same time the state of the natural environment has a direct influence on the life of the population (Management Agency 2013).

The development of the city of Ioannina and the wider area in recent years disturbed the harmonious co-existence of city and lake. Stock-breeding, industrial and agricultural production increased with fast rates something which increased the quality of life of people in the area on the one hand but which also simultaneously created ecological problems both with regard to the lake and the wider area (Lambrou 1998).

Today, lake Pamvotida suffers from serious eutrophication problems which are linked with the decreased transparency of its waters, the distinctive scent, the death of fishes, the lessening of fish catches, the excessive increase of aquatic vegetation, etc. The increased values of phosphorus, nitrogen and chlorophyll- α are indicative of the existence of eutrophication in the lake (Albanis et al. 1986).

In the past many well-intended interventions took place but in the long-run all had negative consequences on the ecosystem of the lake (Panou 2011). Interventions such as the drying of Lapsista, the construction of sea roads and low walls around the lake functioned as hydro dams which blocked some sources and prevented the entry of clean water to the lake. Filling areas with rubble in order to create public facilities (stadiums, squares) in the long term contributed to the changing of the natural seashore, the reduction of the lake's size and its total water volume and also restricted the possibilities for cleaning the lake. However, filling areas with rubble mainly changed society's views towards the lake.

The aim of this paper is to find out how important the lake is to the inhabitants of the city of Ioannina and why. Though examination of the views and behavior of the inhabitants with regard to the protection and promotion of the lake is done, the paper attempts to find out what people know about the lake and how sensitive they are towards issues which are related with the lake.

The views of the citizens regarding the quality of life which their homeland offers to them are analyzed but also the opportunities for work which exist mainly for young people as well the prerequisites which are created with the purpose of encouraging people to stay in the area. Also, the paper investigates if the inhabitants are keeping themselves informed about the public affairs of their region.

Research Methods

This research was carried out through the use of personal interviews. The research area of the paper was the Municipality of Ioannina (Fig. 1).

Satellite image of coastal part of the town is shown in Fig. 2, where it is obvious that the development of the Ioannina City is parallel with the western zone of the lake. The sampling method applied was simple random sampling. This choice was made on the basis of the simplicity of this method (Damianos 1999, Kalamatiou 2000, Matis 2001).

The proportion of the population which is the impartial estimation of population p and the estimation of the standard error of the proportion of the population s_p , without the correction of finite population since the sampling fraction is small, was done via the aid of the formulas of simple random sampling.

In order to calculate the size of the sample we needed to carry out pre-sampling, with the size of the sample being 50 individuals. The size of the sample was calculated on the basis of the formulas of simple random sampling (where $t=1.96$ and $e=0.048$) (Kalamatianou 2000, Matis 2001). Although we used simple random sampling, the correction of finite population can be ignored because the size of the sample n is small in relation to the size of the population N (Pagano and Gauvreau 2000). In this case the size of the sample was calculated to be 417 individuals.

The collection of the data was done in the last six months of 2009. The individuals were then located precisely. The next step was to carry out personal interviews. When this was not possible we used the same process to choose new sampling units.

For the variables "quality of life", "following the public affairs of the municipality", "voluntary participation in programs of protection of the lake" and "age" we carried out analysis of frequencies for more than two criteria. Prior to the carrying out



Fig. 1. Map of Greece depicting the investigation area (by Science and Society 2008).

of loglinear analysis, it was decided to examine the expected frequencies in the contingency table (Siardos 1999). A large number of expected frequencies (more than 20 %) of less than 5 but not lower than 1, possibly lead to a loss in the effectiveness of the applied analysis (Tabachnick and Fidell 1989). Classes were grouped together in order to satisfy the above criteria.

Our data are classified in accordance with 4 criteria and expressed in terms of frequencies. The null hypothesis, H_0 , is that the 4 criteria are fully independent from each other. It is unlikely that this

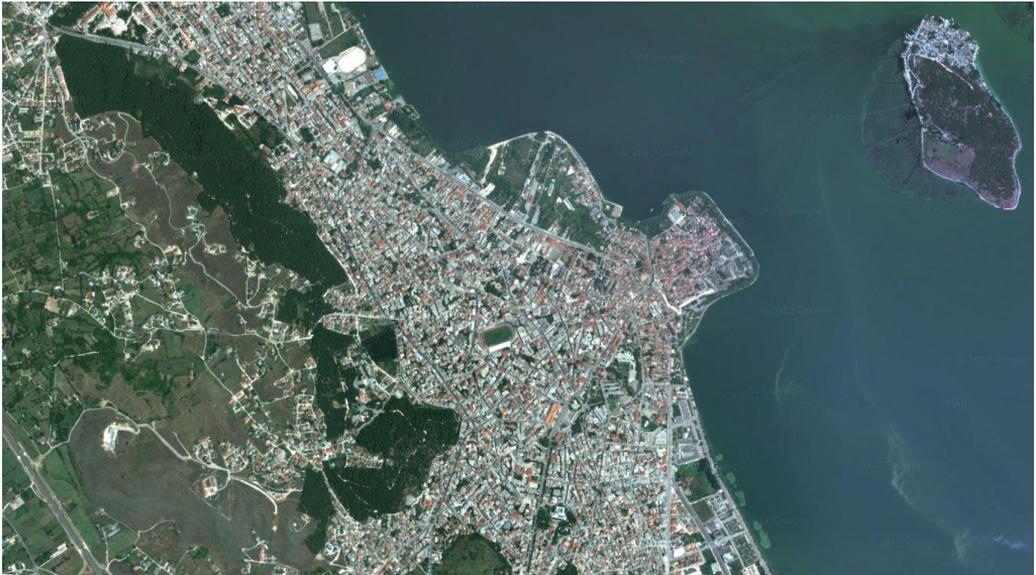


Fig. 2. Satellite image of coastal part of Ioannina (from www.map.google.gr).

assumption will be accepted, but the analysis will give information on the strength of various interrelations and this will be included in a model that expresses the interrelations between the data (Frangos 2004).

Results

The contribution and importance of the lake

Lake Pamvotida is interwoven with the life of the inhabitants of the city of Ioannina. The inhabitants regard the lake as a refuge for relaxation from the modern way of life and at the same time as a natural park in which the visitor comes into contact not only with water but also with several kinds of flora and fauna (Barba 2008). Thus, with regard to the question on how important

the lake is for the city, it is worth adding that 78.7 % ($s_p=0.0201$) of the inhabitants declared very much, 16.3 % ($s_p=0.0226$) much, while 4.6 % ($s_p=0.0102$) declared fairly. The percentage of those who think of the lake as not important at all is smaller, i.e. 0.2 % ($s_p=0.0024$). The same percentage applies to those who did not answer.

Ioannina is a picturesque city with many traditional elements all related to the history of the city. The history of the city is interwoven with the lake. For this reason and with regard to the question on the extent of correlation of the history of the city with the lake, the vast majority of those asked, i.e. 71.7 % ($s_p=0.0221$) answered very much. 20.9 % ($s_p=0.0199$) of the inhabitants answered much and 6 % ($s_p=0.0116$) fairly. The percentages of the rest of the categories are small. The percentage of those who did not want to answer was 1 % ($s_p=0.0048$), of those who said little was 0.2 % ($s_p=0.0024$) and not

at all 0.2 % ($s_p=0.0024$). 1 % ($s_p=0.0048$) of the inhabitants did not answer the question.

An important incentive for the protection of the cultural and natural resources of an area is tourism (Gunce 2003). When tourism and natural environment are interwoven they create a system which is ecologically healthy, economically sustainable and socially and culturally appropriate and humanitarian (Farrel and McLellan 1987). The majority of the inhabitants agree with this opinion since 64.3 % believe that the lake has a very positive impact on tourist development (Table 1).

The area inside and around Lake Pamvotida has been declared a protected area (Environment DG – European Commission 2001). In these areas the local inhabitants have to adopt land use practices which would be friendly to the environment (Lassen and Panagopoulos 2008).

Local communities generally welcome the establishment of protected areas

something which is particularly true in developing countries since their income depends on such areas (Rodgers 1989). Improvements in the quality of life are intimately related with the creation of sustainable economic activities and the real participation of the local population in decision making processes (Seixas et al. 2012).

The next question is about the influence of tourist development on the lake itself. 41.2 % ($s_p=0.0241$) declared that tourism has affected the lake positively, 37.2 % ($s_p=0.0237$) is neither positive nor negative on the issue, while 13.7 % ($s_p=0.0168$) assessed this influence as negative. 7.9 % ($s_p=0.0137$) of the citizens did not answer the question (Fig. 3).

The lake also offers to the inhabitants of Ioannina opportunities for recreation. On this issue a quite large percentage of the citizens replied positively: 36.2 % replied very much and 33.6 % much. Regarding opportunities for sports the majority of the inhabitants also expressed positive views (Table 1).

Table 1. Evaluation by the citizens of the city of Ioannina regarding the positive contribution of Lake Pamvotida.

Positive contribution	Very much		Much		Fairly		Little		Not at all		No answer	
	$p, \%$	s_p	$p, \%$	s_p	$p, \%$	s_p	$p, \%$	s_p	$p, \%$	s_p	$p, \%$	s_p
Touristic development	64.3	0.0235	28.3	0.0221	5.5	0.0112	1.7	0.0063	0.2	0.0024		
Opportunities for recreation	36.2	0.0235	33.6	0.0231	19.7	0.0195	9.8	0.0146	0.7	0.0041		
Opportunities for sports	31.9	0.0228	34.5	0.0233	24.7	0.0211	6.7	0.0123	1.4	0.0058	0.7	0.0041
Beauty for the city	79.1	0.0199	17	0.0184	1.9	0.0067	1.0	0.0048	0.5	0.0034	0.5	0.0034
Better psychology	42.9	0.0242	26.4	0.0216	22.5	0.0205	6.0	0.0116	1.9	0.0067	0.2	0.0024
Better quality of life	32.1	0.0229	33.1	0.023	19.2	0.0193	12.5	0.0162	2.9	0.0082	0.2	0.0024

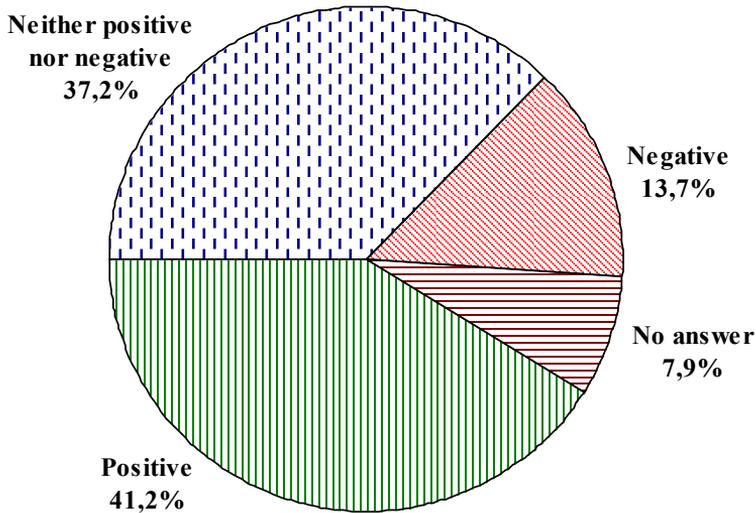


Fig. 3. The opinion of the inhabitants regarding the influence of tourist development on the lake.

Among the most beautiful cities of Greece are those which have water near them. One of these cities is the city of Ioannina. Regarding the question on how much the lake makes the city beautiful a high percentage of the citizens (79.1 %) replied very much. Almost all of the inhabitants think that to a larger or

a lesser extent the lake influences positively the psychology of the people. This is logical since the life of the inhabitant is interwoven with water. This is also supported by psychologists who think of water as the most precious element of the aesthetics of landscape (Kaplan and Kaplan 1989). Also there was a high

Table 2. Evaluation by the citizens of the city of Ioannina regarding the negative contribution of the Lake Pamvotida.

Negative contribution	Very much		Much		Fairly		Little		Not at all		No answer	
	p, %	s _p	p, %	s _p	p, %	s _p	p, %	s _p	p, %	s _p	p, %	s _p
Source of pollution	14.1	0.0171	20.1	0.0196	28.8	0.0222	26.4	0.0216	10.1	0.0147	0.5	0.0034
Reproduction of mosquitos	21.6	0.0201	21.1	0.0200	31.4	0.0227	21.8	0.0202	3.8	0.0094	0.2	0.0024
Source of undesirable scents	13.9	0.0169	19.9	0.0196	30.2	0.0225	29.0	0.0222	6.2	0.0118	0.7	0.0041
Danger for children	7.4	0.0128	9.4	0.0143	23.3	0.0207	36.5	0.0236	23.5	0.0208		
Negative microclimate (humidity)	29.0	0.0222	26.4	0.0216	32.9	0.0230	9.8	0.0146	1.4	0.0058	0.5	0.0034

percentage of acceptance regarding the beneficial influence of water on the psychology of the people (42.9 % replied very much and 26.4 % much) Finally the quality of life is important for the local population of a city or a village with lake or river nearby and its improvement is a challenge for the further development of the area (Tsiadikoudis et al. 2012). Finally on the question if the inhabitants are satisfied from the quality of life in their area 32.1 % said very much and 33.1 % much.

Negative aspects of the lake

Lakes do not only influence the lives of those who live in the nearby areas positively but negatively, too (Tsiadikoudis et al. 2012). Therefore, Pamvotida lake may often be the source of pollution or reproduction of mosquitoes or undesirable scents. The lake may also contribute negatively to the microclima of the area (by increasing humidity) and may also constitute an additional danger for small children. So, regarding the question if the lake constitutes a negative contribution for the city of Ioannina the effect of the microclima, especially humidity, is the most important problem for the inhabitants (29.0 % replied very much and 26.4 % much) (Table 2).

The negative contribution of the reproduction of mosquitoes seems to be another important problem for the residents (21.6 % answered very much and 21.1 % much). Other negative contributions are: the lake as a source of pollution for their area (14.1 % very much and 20.1 % much) and reproduction of undesirable scents (13.1 % very much and 19.9 % much). Less important is the lake as a danger for the children (36.5 % little and 23.5 % not at all).

The impact of the lake on the quality of life of the inhabitants

Water constitutes one of the most important attributes of the environment which influences the demand for houses and in this way is increasing their market value In the Netherlands such an increase may fluctuate from 12–18 % (Luttik 2000). On the question how much extra money the inhabitants of Ioannina would give in order to buy a house with a view to the lake 37.6 % ($s_p=0.0237$) would give from 0–20 % extra, 23.3 % ($s_p=0.0207$) 21–40 %, 9.4 % ($s_p=0.0143$) 41–60 %, 5 % ($s_p=0.0107$) from 61–80 %, 3.1 % ($s_p=0.0085$) 81–100 % and 2.2 % ($s_p=0.0071$) more than 100 % while the same percentage applies to those who did not give an answer. Finally, 17.3 % ($s_p=0.0185$) of the inhabitants replied that they would not give any extra money for a house with a view to the lake (Fig. 4).

Quality of life is multidimensional construct including physical, emotional, mental, social, and behavioural components (Janse et al 2004). The recognition of the relationship between quality of life and environmental problems is a recent phenomenon in contemporary literature. The human sciences and environmental sociology in particular have only recognized an intimate relationship between these two themes. This has probably come about because of the effects that environmental degradation has imposed on the lives of populations in different regions of the planet (Seixas et al. 2012). Studies also show that improvements in the quality of life are intimately related with the creation of sustainable economic activities and the real participation of the local population in decision making processes (Pacione 2003, Seixas et al. 2012).

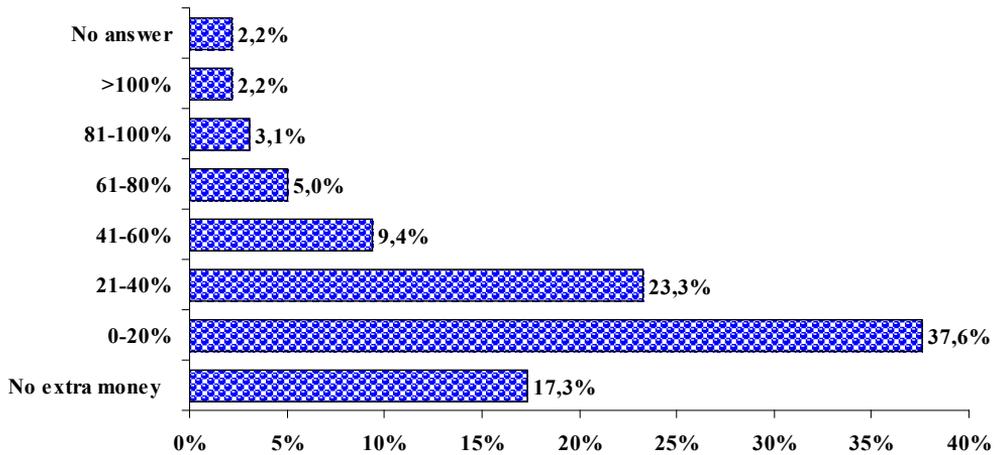


Fig. 4. Resident's view about extra money given for a house with view to the lake.

Lakes have often been characterized as the eyes of landscape. They can provide a spiritual value to those who want to look deep inside themselves (Klessig 2001).

The issue quality of life constitutes an important factor for the local population of an area. Improving the quality of life of the population, for purposes of further development of the area these people live in, is something which is certainly considered a challenge. Regarding the general question if the inhabitants are satisfied from the quality of life in their area the answers are the following: 16.3 % ($s_p=0.0181$) declared absolutely satisfied and (51.6 %, $s_p=0.0245$) very satisfied. 27.6 % ($s_p=0.0219$) said they were a little satisfied while 4.3 % ($s_p=0.0100$) declared not at all satisfied. Finally, 0.2 % ($s_p=0.0024$) of the inhabitants did not give an answer (Fig. 5).

Opportunities for work are especially important for young people and constitute decisive factors for the young to remain in their home land. Possible failure regarding exploitation of these opportunities for the

completion of the necessary infrastructure of an area constitutes a real danger which could lead to isolation and social decay. From this research we concluded that 53.5 % ($s_p=0.0244$) of the inhabitants believe that their area provides sufficient incentive and is capable of creating the pre-requisites for the young to stay in the area. On the other side, 35 % ($s_p=0.0234$) believe that there are not enough choices and for this reason the young cannot remain in the area. 11.5 %, ($s_p=0.0156$) of the inhabitants declared that they do not have a clear opinion on this issue.

Participation, regular meetings and effective discussions between inhabitants and the various departments of the municipality of Ioannina constitute a first step so that each side can learn from the other which could then have a positive impact on the development of the area. This is so because the principles of democracy could be better applied if decision making processes were to take place via dialogue with all interested parties. Therefore, on the question if the inhabitants follow

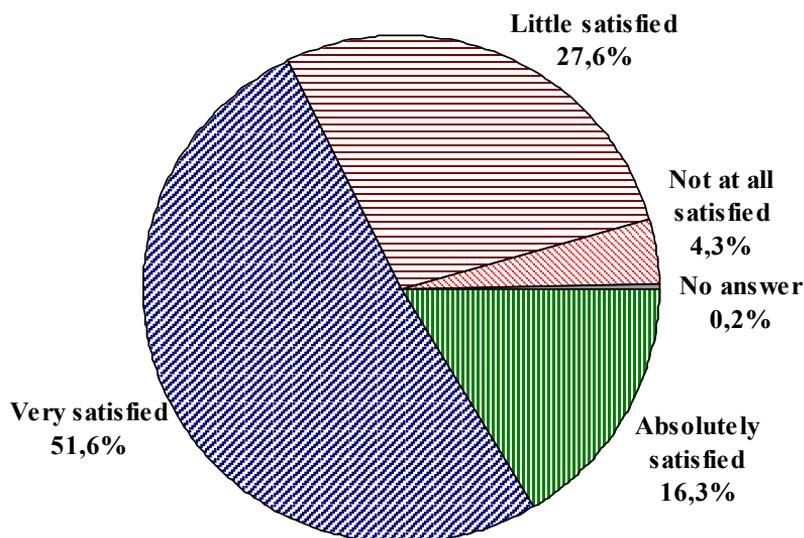


Fig. 5. Satisfaction of the population regarding quality of life.

public affairs in their area (46 %, $s_p=0.0244$) of those asked replied positively and are willing to participate in the processes and events with regard to their municipality, while 40.5 % ($s_p=0.0240$) of the inhabitants were negative regarding the issue of their participation. It is worth noting that 13.4 % ($s_p=0.0167$) of the inhabitants had not formed an opinion on this issue.

Environmental programs can give knowledge to the people who attend them but also make them more sensitive on environmental issues. Environmental programs for the protection of the lake could constitute an important factor and incentive for the citizens of Ioannina 68.1 % ($s_p=0.0228$) of whom have never been involved in such programs. 23.3 % ($s_p=0.0206$) have had experience with some environmental program while 8.6 %

($s_p=0.0140$) did not express a view.

Interest for voluntary participation in a lake protection program, e.g. cleaning the lake from garbage etc., is particularly high and this is an optimistic message for the lake and the area near it, since 73.9 % ($s_p=0.0215$) of the inhabitants would involve themselves with such a program if such opportunity presented itself. 16.1 % ($s_p=0.0180$) said they would not take part in such activities and 10.1 % ($s_p=0.0146$) did not give an answer (Fig. 6).

Before the application of loglinear analysis it was tested that there is no problem with low expected frequencies. Applying hierarchical loglinear analysis, after the removal of the correlation term of fourth and third class, it was established that the most appropriate model was the one which includes the impact and the interaction of the variables in pairs. We have

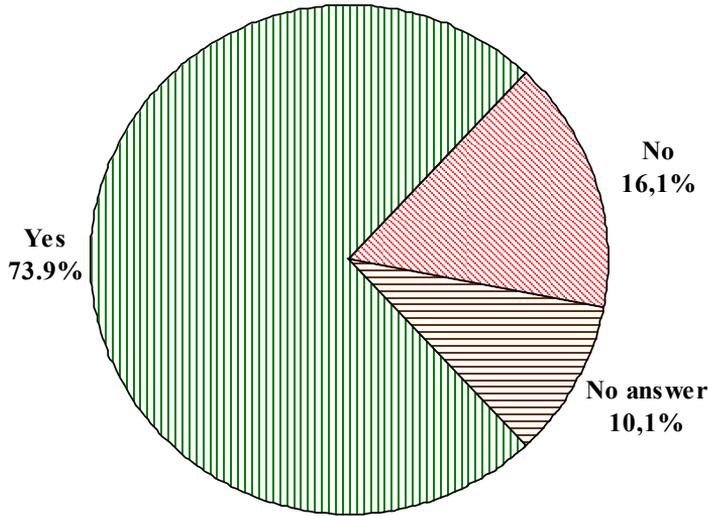


Fig. 6. Opinion given about voluntary participation in a lake protection program.

erase interaction per 4 and 3 criteria, because the X^2 for the Pearson test is 4.021 with probability $p=0.855$ and because the X^2 likelihood ratio is 4.264 with probability $p=0.833$. The above are confirmed by

the “null” controls for the interaction of k terms and terms of higher degree, as well as the “null” controls for the interaction of k terms (Norusis 1994). As shown in Table 3, there exists no interaction per 4 criteria

Table 3. Nullity tests.

k	df	$L \cdot R \cdot X^2$	Probability	Pearson X^2	Probability	Iteration
Tests that k -way and higher order effects are zero						
4	1	0.053	0.8180	0.053	0.8180	3
3	5	2684.000	0.7490	263.400	0.7560	3
2	11	39832.000	0.0000	42.109	0.0000	2
1	15	302438.000	0.0000	357.154	0.0000	0
Tests that k -way effects are zero						
1	4	262606.000	0.0000	315.045	0.0000	0
2	6	37148.000	0.0000	39.475	0.0000	0
3	4	2631.000	0.6210	2.581	0.6300	0
4	1	0.053	0.8180	0.053	0.8180	0

k – the number of effects being zero; df – degrees of freedom.

because the value of probability $p=0.8180$. In addition, there exists no interaction per 3 criteria because the value of probability $p=0.6300$. However, there exists interaction per 2 criteria because the probability $p<0.05$. Indeed, regarding the three pairs of variables “following the public affairs of the municipality” – “voluntary participation in a program of lake protection”, “following the public affairs of the municipality” – “age” and “quality of life” – “voluntary participation in a program of lake protection” there is significant statistical interaction.

In order to interpret the interactions, we should first present all the data in the form of three-dimensional tables (Cross-tabs). Through the aid of Table 4 we see that the inhabitants of the city of Ioannina who follow the public affairs of their municipality are positive on the issue of their participation in lake protection programs, while those who declare that they do not participate in public affairs or do not answer, are negative or do not provide an answer regarding their participation in lake protection programs.

Through the aid of Table 5 we see that the

Table 4. Table of cross tabulation of the variables “following the public affairs of the municipality” and “voluntary participation in a program of lake protection”.

Following the public affairs of the municipality	Indicator	Voluntary participation in a program		Total
		Yes	No or they did not answer	
Yes	Count	157	35	192
	Expected count	141.8	50.2	192
	Residual	15.2	-15.2	
No or they did not answer	Count	151	74	225
	Expected count	166.2	58.8	225
	Residual	-15.2	15.2	
Total	Count	308	109	417
	Expected count	308	109	417

inhabitants who follow the public affairs of their municipality are more than 30 years old, while those who declare that they do not participate in the public affairs of their municipality or who do not give an answer are 18–30 years old.

Finally, we see (Table 6) that the inhabitants who declare fully or very

Table 5. Table of cross tabulation of the variables “following the public affairs of the municipality” and “age”.

Following the public affairs of the municipality	Indicator	Age, years		Total
		18–30	>30	
Yes	Count	33	159	192
	Expected count	48.8	143.2	192
	Residual	-15.8	15.8	
No or they did not answer	Count	73	152	225
	Expected count	57.2	167.8	225
	Residual	15.8	-15.8	
Total	Count	106	311	417
	Expected count	106	311	417

Table 6. Table of cross tabulation of the variables “quality of life” and “voluntary participation in a program of lake protection”.

Quality of life	Indicator	Voluntary participation in a program		Total
		Yes	No or they did not answer	
Fully satisfied – very satisfied	Count	223	60	283
	Expected count	208.8	74.2	283
	Residual	14.2	-14.2	
Satisfied – not at all satisfied	Count	84	49	133
	Expected count	98.2	34.8	133
	Residual	-14.2	14.2	
Total	Count	307	109	416
	Expected count	307	109	416

satisfied from the quality of their life are positive regarding the issue of their participation in programs related to the protection of the lake, while those who declare that they are satisfied or not at all satisfied are negative or they do not give an answer regarding their participation in programs of lake protection.

Demographic attributes

The demographic attributes of the people who participated in the research are given in (Table 7).

Conclusions – Discussion

Lake Pamvotida constitutes an inseparable part of the city of Ionnina and of the life of the people who live there.

The human factor has affected the city negatively. It is only in the recent years that the proper attention was given to the problems created and to efforts to deal with these problems. The ignorance of

the inhabitants of Ioannina regarding the negative consequences which were to follow as well as their greed for more arable land led to the draining of the Lapsistas. The consequences from this ecological destruction are obvious even today. The impact on the flora and fauna of the ecosystem was a negative one and the quality of

the lake's water was degraded. This happened because some underground tunnels closed which, in turn, prevented the renewal of the lake's waters.

The role of the lake was always important for the inhabitants of the area and it is for this reason that its uses are many which means that they include recreation, water sports, tourism, etc. In addition, the lake is encroached both by local bodies and by individuals who engage in activities around the lake. The result is the deterioration of the lake through time. The human factor is responsible for the increase of the pollutants which enter the lake and which worsen significantly the phenomenon of eutrophication. The reduction of the level and body of water as well as the non-renewal of its waters make necessary the enrichment of the lake with water. However, no action has been taken in order to deal with the problem.

We must point out that the lake has many problems and many drastic measures should be taken for the restoration

Table 7. Socio-demographic profile of the inhabitants of the city of Ioannina.

1. Gender					
Male	Female				
49.9 % ($s_p=0.0245$)	50.1 % ($s_p=0.0245$)				
2. Age					
18–30 years	31–40 years	41–50 years	>50 years		
25.4 % ($s_p=0.0213$)	29.7 % ($s_p=0.0224$)	24.2 % ($s_p=0.0210$)	20.6 % ($s_p=0.0198$)		
3. Marital status					
unmarried	married	divorced	widowed	did not answer the question	
39.3 % ($s_p=0.0239$)	53.5 % ($s_p=0.0244$)	4.6 % ($s_p=0.0102$)	1.7 % ($s_p=0.0063$)	1.0 % ($s_p=0.0048$)	
4. Childhood					
without children	one child	two children	three children	more than three children	
48.2 % ($s_p=0.0245$)	12.2 % ($s_p=0.0160$)	28.1 % ($s_p=0.0220$)	7.9 % ($s_p=0.0132$)	3.6 % ($s_p=0.0091$)	
5. Educational level					
primary school	lower secondary school	technical school	upper secondary school	technological education	university
7.7 % ($s_p=0.0130$)	9.8 % ($s_p=0.0146$)	7.2 % ($s_p=0.0127$)	40.3 % ($s_p=0.0240$)	14.4 % ($s_p=0.0172$)	19.9 % ($s_p=0.0196$)
6. Profession					
private employee	public servants	self-employed	students	unemployed	housewives
27.6 % ($s_p=0.0219$)	19.2 % ($s_p=0.0193$)	16.8 % ($s_p=0.0183$)	8.9 % ($s_p=0.0139$)	7.2 % ($s_p=0.0127$)	7.4 % ($s_p=0.0128$)
farmers or stock-breeders		pensioners		did not answer the question	
5.0 % ($s_p=0.0107$)		5.8 % ($s_p=0.0114$)		2.2 % ($s_p=0.0071$)	
7. Annual income					
<5,000 euro	5,000–10,000 euro	10,001–20,000 euro	20,001–30,000 euro	>30,000 euro	no answer
6.7 % ($s_p=0.0123$)	9.4 % ($s_p=0.0136$)	27.1 % ($s_p=0.0218$)	19.4 % ($s_p=0.0194$)	8.4 % ($s_p=0.0143$)	29.0 % ($s_p=0.0222$)

of the lake. Taking into account the answers given by those asked we are led to some important conclusions.

The majority of the inhabitants claim that the lake plays an important role in their lives since the mere presence of the lake is important for the improvement of their psychology. This is something which is also proved by their desire to give more money for the purpose of buying a house with a view to the lake. In addition, Pamvotida contributes positively to the aesthetics of the city and provides opportunities for recreation and sport. Everybody agrees that the inhabitants are satisfied from the quality of life in their area something which is confirmed by them admitting that there are many opportunities and incentives which can create prerequisites for the young to stay home.

Despite all this an important percentage of the inhabitants thought that there was a need for stronger support regarding opportunities for work in the area.

On the one hand a big part of the inhabitants declares that it participates and follows the public affairs of their area and on the other hand another big part of the inhabitants replied that it has never participated in an environmental program. However, the fact that there is a large percentage of people who would participate voluntarily in an environmental protection program is encouraging. The large percentage of abstinence regarding the question on problems facing the area is particularly worrying since it shows ignorance on behalf of the inhabitants and inertia for taking measures for solving these problems. Indeed, the inhabitants who are positive regarding their participation in environmental protection programs are the ones who follow the public affairs of their municipality and declare fully or very satisfied from the quality of their life.

The participation of the citizens in environmental decision making processes mainly refers to decisions the results of which can in some way affect the local community. The participation of the public includes the right of the local society to information and access to decision making processes. The education and sensitization of citizens to issues of social, cultural and environmental sustainability is one more important factor for the development of sustainable societies and by extension of sustainable tourism (McNeely 1994).

Many studies view the preservation of water and natural resources as a result of minimal influence of human activity, but only a small percentage of studies has considered including population as a dynamic force which can shape and sustain an environment which helps the coming generations with a healthier future (Lassen and Panagopoulos 2008).

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