A SCALE FOR MEASURING PEOPLE S OPINION ON THE VALUE OF WATER RESOURCES

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Abstract
The opinion of visitors on the environmental values of the river Penaeus (central Greece) was investigated. All types of environmental values were studied. The methodology that was employed for the development of measurement scales, was a combination of applied methodological research techniques in marketing research. More specifically, evaluation of a-Cronbach, Principal Component Analysis with Varimax rotation were used in order to assess the internal consistency and construct validity of the used scale.

Keywords: Economic valuation, Ecosystem services, Intermediate Waters

Introduction

The expression of total economic value (TEV) is an attempt to express the motivations behind people's preferences for environmental assets and the services these resources provide. The TEV provides a framework, to comprehensively evaluate natural and environmental resources [6]. The TEV is used in environmental economics to divide an environment into different components of value [6]. The mechanisms that link resources to individual and community well being, are the direct use of natural resources (for example, commercial and non-commercial recreation), the indirect use of a resource (i.e. ecosystem function values such as protection of biodiversity) and the non-use (such as the preservation of natural ecosystems, species or special areas) [7]. Economists divide use values into three main categories: direct, indirect and option values [4]. *A* type of option value is *quasi-option value* that has been described as the value ofpreserving options for future use given same expectation of the growth of knowledge [2]. On the contrary non-use values can be divided further into existence, bequest, and option values [5]. For many economists the option value may be classified as use value because is clearly connected to potential use (direct or indirect) and it is considered as unnecessary with the argument that it derives from the real use [9]. The existence value and the bequest value have not functional significance, for [8] existence value should not be used in cost-benefit analysis. The main objective of this paper is to investigate the existence of all type of environmental values and to examine who people perceive or recognize them in practice.

Materials and methods

The present research was carried out in the Penaeus River (central Greece), one of the most important aquatic ecosystem of Greece. Target population was visitors of the region. The socio-economic profile of survey sample (246 valid questionnaires) is given in Table 1.

Tab. 1. Socioeconomic profile of survey sample

Sex	53.3 % (Men)
Age	29-30 (33.75%)
Education level	Higher education (18.7%)
Occupation	Office Employee (21.1%)
Monthly income	900-1200 (17.1%)

The lack and the weakness of creating a sampling frame before the beginning of the study had led to the selection of the cluster sampling method [1]. A questionnaire was developed to determine all the types of environmental values. For this purpose every type of environmental value was described by a number of motives according to [7] and 47-attribute scale was derived to measure the value of the destination area. A five point Likert scale was used to measure visitor's opinions [3]. Evaluation of a-Cronbach and Principal Component Analysis with Varimax rotation were used in order to assess the internal consistency, construct validity of the used scales, classify types of values and investigate the motives that influence people to value a water resource. The identification of factors that describe the involved variables was performed by the orthogonal rotation method or the Varimax method. For determining the factors that were drawn it was used the eigenvalue or the characteristic root criterion (eigenvalue $\geqslant$1) [1].

Results and Discussion

The principal components analysis gave 6 factors that explain the 72.37% of total of the total variability (Table 2). Only 4 of them can be explaining people's opinions for river value. The Bartlett's test of sphericity has shown that there is high statistical significance (x^2=8.293,97, p=0.000 and d.f.=990) and shows that the factor analysis model is suitable for our data. Kaiser – Mayer – Olkin (KMO) value shows that the measure of sampling was suitable (0.94). Reliability analysis of the scale revealed that a-Cronbach was 0.98. Examining corrected item-to-total correlation and value of coefficient alpha if item deleted, no items were found that would increase coefficient alpha significantly (>0.01), so all items retained. It is very From the results, the people do not distinguish the deference between direct and option value. The use value (direct and option), was the most important type (50.34%) and follows by the existence value (10.75%). This is in accordance to many economist's opinions which suggests that it is value of assuring future direct or indirect use [9]. According to survey results people has an anthropocentric consideration of the environment and their attribute and give more significance to instrumental value of them. The results of our research shows that people recognize most of the different types of environmental values but classification high use values. Types of values like quasi-option value can not be noticeable. The results confirm the opinion of many environmental economists who claim that we put only instrumental value to the environment and natural resources.

Tab. 2. Principal components analysis results

Factors	Identification	Mean score per Factor	Explanatory Dispersion %	a-Cronbach
F1	Use value (Direct and option value)	3.3293	50.345	0.964
F2	Existance value	2.8690	10.748	0.934
F3	Indirect use value	3.0348	3.426	0.935
F4	Bequest value	3.0263	2.969	0.8484

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