APPLICATION OF THE ANALYTIC HIERARCHY PROCESS TO THE SOCIOLOGICAL ANALYSIS

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ABSTRACT

In this research the *Analytic Hierarchy Process* is applied to analyze the complex problems related to the social field, as, for example, the phenomenon of foreign students' school integration, a phenomenon that is simultaneously considered complex and multidimensional by all the most recent literature. For this purpose a case study is presented, in which we have interviewed twelve teachers of a primary school. The opinions of each of these teachers are represented with three pairwise comparisons matrices: the matrix of paired comparisons of the sub-objectives with respect to the general objective, and the two matrices of paired comparisons of a set of variables with respect to every sub-objective. Precisely, starting from the definition of the general objective "*foreign students' school integration*", two sub-objectives have been single out: "*the interpersonal communication"* and *"the degree of scholastic profit"*. Furthermore nine variables B1, B2, ..., B9, have been introduced, in order to give an implicit definition of the general objective and of the sub-objectives. Furthermore, with Saaty's AHP method, for every interviewed teacher, pairwise comparisons matrices are compiled. In order to give a *group evaluation* of opinions of teachers, for every set of homogeneous matrices, two summarizing matrices are introduced, the *geometric mean* G, and the *uncertainty multiplicative index* U. Matrices G and U are utilized to assign fuzzy triangular scores to sub-objectives, and to variables with respect to every sub-objective. In order to obtain the cores of such fuzzy scores, two criteria are considered and compared, the first one based on a weighted arithmetic mean of the columns of G, the second one based on eigenvalues and eigenvectors. As a significant social meaning, it has emerged from the results obtained that the *interpersonal communication* is resulted far more important than the *degree of scholastic profit*. Moreover, variables concerning *relation* and *interaction capacity* are dominant with respect to variables concerning *school*, *sport* or *manual abilities*.

Keywords: Social complex systems and phenomena, pairwise comparisons matrix, AHP method, fuzzy numbers, uncertainty indices.