COMPARISON OF A DOZEN AHP TECHNIQUES FOR GLOBAL VECTORS IN MULTIPERSON DECISION MAKING AND COMPLEX HIERARCHY

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ABSTRACT

A problem of synthesizing the local preferences into global priorities in multi-person decision making by the hierarchy structure is considered. Classic methods are tried together with new developed techniques, including multi-response multiplicative mode, three-dimensional eigenproblem and its simplification in parallel proportional profile estimation, orthogonal regression, nonlinear local evaluation, linear and nonlinear synthetic hierarchy optimizing procedures. Various marketing research data with different numbers of criteria, sub-criteria, alternatives, and respondents have been used to produce results by a dozen techniques. Most of the estimations yield rather similar global priority vectors with comparable ranks of the items. The best methods correspond to nonlinear estimations. The analysis performed helps in practical managerial decisions.

Keywords: AHP, multi-person decision making, complex hierarchy, global priority synthesis, optimizing.