

Modeling Uncertainty of Elements in Pairwise Comparison Matrix on Alo-Group

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Abstract

This lecture deals with pairwise comparison matrices (or, preference matrices) where the matrix elements are modeled by various types of fuzzy sets: interval sets, fuzzy sets, interval valued fuzzy sets and intuitionistic fuzzy sets in the sense of Atanassov. These approaches are applied whenever the decision maker is not sure about the value of his/her evaluation of the relative importance of elements to be ranked. We investigate pairwise comparison matrices with elements from Abelian linearly ordered group (alo-group) over a real interval. By this we generalize the concept of reciprocity and consistency of pairwise comparison matrices with various types of fuzzy sets. We also define the concept of consistency index and priority vector - an extension of the well known concepts in crisp case and which is used for ranking the alternatives. Illustrating examples are provided.