A fuzzy majority-based construction method for composed aggregation functions by using combination operator

ABSTRACT

This paper focuses on the problem of constructing aggregation functions which support the concept of partial agreement when only one or more sub-group(s) of decision makers and criteria, not necessarily all of them, is (are) involved to take the final action. The proposed method is started with computing all different α-combinations from an n-element set of inputs, according to the binomial coefficient, and then completed by combining their aggregations. This approach, so-called combination operator-based aggregation function, guarantees to consider various agreement scenarios at different consensus levels in contrary with the traditional composition-based construction methods that act as a full agreement. The attention is then given to the weighted case specially the conditions of weighting vectors for ensuring the well-defined property of the proposed method. As an application, the combination operator-based aggregation function is generalized over the Cartesian product of unit intervals [0,1] to deal with multi-polar information. The proposed aggregating methodology is then used to reach consensus in a group decision-making problem.