Group Consensus of Hesitant Fuzzy Linguistic Variables for Decision-Making Problem

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Abstract : Due to the different knowledge, experience and expertise of experts, they usually provide the different opinions in the group decision-making process. Therefore, it is an important issue to reach the group consensus of opinions of experts in group multiple-criteria decision-making (GMCDM) process. Because the subjective opinions of experts always are fuzziness and uncertainties, it is difficult to use crisp values to describe the real opinions of experts or decision-makers. It is reasonable for experts to use the linguistic variables to express their opinions. The hesitant fuzzy set are extended from the concept of fuzzy sets. Experts use the hesitant fuzzy sets can be flexible to describe their subjective opinions. In order to aggregate the hesitant fuzzy linguistic variables of all experts effectively, an adjustment method based on distance function will be presented in this paper. Based on the opinions adjustment method, this paper will present an effective approach to adjust the hesitant fuzzy linguistic variables of all experts to reach the group consensus. Then, a new hesitant linguistic GMCDM method will be presented based on the group consensus of hesitant fuzzy linguistic variables. Finally, an example will be implemented to illustrate the computational process to enhance the practical value of the proposed model.

Keywords : group multi-criteria decision-making, linguistic variables, hesitant fuzzy linguistic variables, distance function, group consensus

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