Minimizing Deviations Models for Solving MADM Problems with Preference Information on Alternatives in Uncertain Linguistic Setting

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Abstract——In this paper, we investigate the multiple attribute decision making (MADM) in uncertain linguistic setting where the information about attribute weights is incompletely known and the attribute values are uncertain linguistic variables, and the decision maker (DM) has preferences on alternatives. We establish two optimization models, which minimize deviations between the overall attribute values of alternatives and the overall preference values. Based on these two models and a formula of possibility degree for the comparison between uncertain linguistic variables, we propose a method for MADM with preference information on alternatives in uncertain linguistic setting. The method can sufficiently meet the DM's requirements and can also be performed on computer easily. Finally, we apply the method to evaluate university faculty for tenure and promotion.

Keywords——Multiple attribute decision making (MADM), Uncertain linguistic variables, Model, Deviation, Preference

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