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Abstract

In this paper, we propose an uncertain linguistic hybrid geometric mean (ULHGM) operator, which is based on the uncertain linguistic weighted geometric mean (ULWGM) operator and the uncertain linguistic ordered weighted geometric (ULOWG) operator proposed by Xu [Z. S. Xu, "An approach based on the uncertain LOWG and induced uncertain LOWG operators to group decision making with uncertain multiplicative linguistic preference relations", *Decision Support Systems***41** (2006) 488–499] and study some desirable properties of the ULHGM operator. We have proved both ULWGM and ULOWG operators are the special case of the ULHGM operator. The ULHGM operator generalizes both the ULWGM and ULOWG operators, and reflects the importance degrees of both the given arguments and their ordered positions. Based on the ULWGM and ULHGM operators, we propose a practical method for multiple attribute group decision making with uncertain linguistic preference relations. Finally, an illustrative example demonstrates the practicality and effectiveness of the proposed method.

Keywords: Aggregation ▪ multiple attribute group decision making ▪ uncertain linguistic variables ▪ uncertain linguistic hybrid geometric mean (ULHGM) operator