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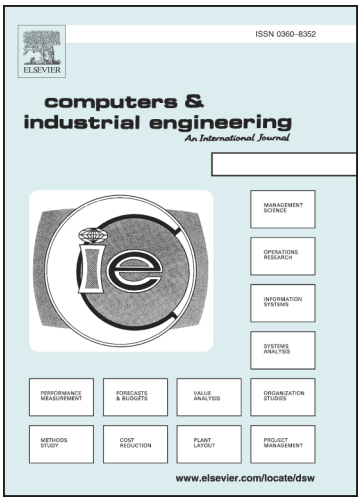

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A group multi-criteria decision-making based on best-worst method

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Abstract

In recent years, the daily increase in the application of the group decision-making approaches can be seen in the various areas such as facility location, supplier selection, energy schemes, project management, and performance evaluation. The group decision-making methods aggregate the individual preferences and present the best agreement using the mathematical models. On the other hand, best-worst method (BWM) is a novel multi-attribute decision-making (MADM) method which can solve the decision problems by a new perspective on the pairwise comparisons. So, in this paper, we extend a novel group decision-making method based on BWM (GBWM), which includes new attributes, under the three steps. Also, for the first time, we formulate two various mathematical models (*M1* and *M2*) to calculate the optimal weights of the criteria. Then, we present some numerical instances to evaluate the proposed method and clarify how we can use it. In addition, we perform a comprehensive sensitivity analysis on the main parameters of the proposed method. Finally, we use GBWM to solve a real case study. The results show the acceptable performance of GBWM, besides the simple usage and the customization ability of the presented model.

***Keywords**:* Multi-criteria decision-making, Group decision-making, Best-worst method, Group-AHP

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