

# An interval fuzzy multicriteria decision making method based on the expected value

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This paper presents a multicriteria decision making method in the event that at least one decision-maker does not respond to a specific question with exactly one choice, but choose two variants of answer or give an intermediate response. Allowing these situations, we avoid the introduction in the surveys of too many levels for the variation of responses. The methods elaborated in [1] and [4] are extended.

Interpretation of an answer consists on two choices or an intermediate choice is given by using intervals of fuzzy numbers.

As a simple method with suitable properties, the expected value is often used for the ranking of fuzzy numbers (see [2]). We introduce the expected value of an interval of fuzzy numbers, following the idea in [3]. We prove the most important properties, we calculate it in the case of intervals of trapezoidal fuzzy numbers or product of intervals of trapezoidal fuzzy numbers. We elaborate an algorithm of rankings of alternatives versus criteria and weights of criteria given by intervals of trapezoidal fuzzy numbers.

Theoretical considerations are illustrated by an example taken from [1] and [4] and modified accordingly.

## References

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- [4] T.-C. Chu, Y. Lin, *An extension to fuzzy MCDM*, Computers and Mathematics with Applications, 57 (2009), pp. 445-454.