Investment Projects Selection Problem in the Hesitant Fuzzy Environment

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The present study develops a decision support methodology for investment projects selection problem under hesitant fuzzy environment.

Selection of investment projects is made considering a set of weighted criteria. To evaluate criteria the proposed approach implies using of experts' assessments. The values of the criteria are given by group of experts in the form of lingual assessments - linguistic terms.

The proposed methodology is based on the TOPSIS (Technique for Order Performance by Similarity to Ideal Solution) approach in the hesitant fuzzy environment. The case when the information on the criteria weights is completely unknown is considered. The weights identification based on Shannon information entropy is generalized for hesitant fuzzy set.

The ranking of projects is performed depending on proximity of their distances to the both fuzzy positive-ideal and fuzzy negative-ideal solutions. For this purpose, the weighted Hamming distance is used in the context of the hesitant fuzzy set.

An example is shown to explain the procedure of the projects ranking.

Keywords: Investment projects selection, Shannon entropy, hesitant fuzzy TOPSIS approach, ranking of projects.