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Fuzzy Logic Toolbox in Evaluating the Effectiveness of Projects in the Matlab Program

Puryaev A.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2020 IEEE. The work reveals a new alternative mechanism (method) for translating into Harrington's desirability function parameters that are presented in the form of linguistic variables. This method is implemented using the Fuzzy Logic Toolbox toolkit of the Matlab software environment. This method is used in the developed author's methodology for assessing the effectiveness of investment projects of global and national significance. The methodology, based on the calculation of the integral evaluation criterion (Harrington's desirability function) and developed in the Matlab program, was presented by us earlier in an article published in the IEEE Xplore library. Under conditions of uncertainty, the relevance of accounting and presentation of non-economic parameters in fuzzy scales becomes apparent. The parameters presented in fuzzy scales in the form of linguistic variables allow us to take into account the ambiguity of the evaluation. This is also considered in the process of assessing the impact of the project on the external environment of the project (ecology, society, safety, cultural traditions, maintaining people's health, and sustainability of development in general). Fuzzy Logic Toolbox allows us to do this quickly and accurately. The formation of a single fundamental base of non-economic parameters (NEP) for assessing the effectiveness of investment projects of global and national significance level is becoming a challenge to the modern world. The relevance of this is emphasized by the emergence of a new coronavirus infection, which became an unforeseen circumstance, a negative impact on the global economy as a whole. Taking into account the possibility of the emergence and spread of the disease during the implementation of certain projects of a global level is necessary both at a qualitative level and at a quantitative level. A quantitative assessment of such parameters is possible more objective in fuzzy scales.

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Keywords

Fuzzy Logic Toolbox, linguistic variables, Matlab software, non-economic parameters (indicators), sustainability

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