**عنوان مقاله:**

Simulation Optimization of Workshop activities with Ambiguous Environment Incorporating Cognitive Factors

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**خلاصه مقاله:**

This paper puts forward an integrated fuzzy simulation-fuzzy data envelopment analysis (FDEA) - fuzzy cognitive map (FCM) algorithm for performance optimization of maintenance workshops by incorporating cognitive and time dependent factors. Fuzzy computer simulation is employed for modelling the workshop and providing time dependent factors. Due to severe ambiguousness associated with processing times, fuzzy sets theory is incorporated into the simulation model. FCM is used for extracting relations between cognitive factors. FDEA is used for ranking scenarios based on inputs and outputs of FCMand the developed computer simulation. FDEA is used since outputs of simulation and also cognitive factors are in the form of triangular fuzzy sets. Moreover, a recent possibilistic programming approach is used to convert the fuzzy DEA model to an equivalent crisp model. The proposed algorithm is capable of modelling and optimizing performance of maintenance workshops in uncertain and non-linear environments. The solution quality is inspected and shown through an actual maintenance workshop. This is the first study that presents an integrated non-crisp algorithm for performance optimization of maintenance activities with cognitive and time dependent factors

**کلمات کلیدی:**

Discrete-Event-Simulation; Fuzzy Cognitive Map; Fuzzy Data Envelopment Analysis (FDEA); Fuzzy Sets; Possibilistic Programming

**لینک ثابت مقاله در پایگاه سیویلیکا:**

https://civilica.com/doc/214868