عنوان مقاله:

A Novel Interactive Possibilistic Mixed Integer Nonlinear Model for Cellular Manufacturing Problem under Uncertainty

محل انتشار:

ماهنامه بین المللی مهندسی, دوره 30, شماره 3 (سال: 1395)

تعداد صفحات اصل مقاله: 9

نویسندگان:

a Hashemoghli - *Department of Industrial and Systems Engineering, Mazandaran University of Science and Technology, Babol, Iran*

i Mahdavi, - *Department of Industrial and Systems Engineering, Mazandaran University of Science and Technology, Babol, Iran*

a Tajdin - *Department of Industrial and Systems Engineering, Mazandaran University of Science and Technology, Babol, Iran*

خلاصه مقاله:

Elaborating an appropriate cellular manufacturing system (CMS) could solve many structural and operational issues. Thereby, considering some significant factors as worker skill, machine hardness, and product quality levels could assist the companies in current competitive environment. This paper proposes a novel interactive possibilistic mixed integer nonlinear approach to minimize the total costs of cellular manufacturing design. The proposed approach is elaborated regarding operation sequence, worker and machine assignments, route and worker flexibility, machine hardness level, worker and machine capacity, worker skill level, and product quality level based on imprecise information. Meanwhile, the product demand parameter because of its nature is defined based on fuzzy setting environment. Then, the interactive possibilistic approach is provided to cope with the existed uncertainty according to the problem environment. Finally, a numerical experiment is considered to show the capability of the proposed approach. The results of the proposed interactive possibilistic model show that the presented approach could assist companies for minimizing their costs and manipulating the machines and workers' suitability. In this respect, comparing the obtained results from the proposed approach and similar circumstances shows that the proposed model could reduce the total costs by 27.8%.

کلمات کلیدی:

Cellular Manufacturing Problem,Possibilistic Approach,Interactive Fuzzy Approach,Worker Skill and Flexibility

لینک ثابت مقاله در پایگاه سیویلیکا:

https://civilica.com/doc/630379