

عنوان مقاله:

Design and Optimization of Dynamic Cellular Manufacturing Systems Considering Outsourcing

محل انتشار:

نهمین کنفرانس بین المللی مهندسی صنایع (سال: 1391)

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خلاصه مقاله:

Applying mathematical programming models for designing cellular manufacturing systems (CMS's) is a challenging issue due to the ambiguous nature of some critical parameters in real-world cases. In this paper, at first a crisp mathematical model is proposed representing a dynamic cellular manufacturing system (DCMS). Setup costs, outsourcing costs, and machines' capacity level are considered as critical parameters which comprise ambiguousness. To comprehensively cope with this problem, two major and well-known frameworks for modeling and analyzing systems are employed; i.e. 1) crisp mathematical programming, and 2) possibilistic programming. In other words, the ambiguous parameters in the objective function and constraints of the crisp model are treated as possibility distributions defined based on expertise of decisionmakers (i.e. subjective data) as well as historical data (i.e. objective data). A set of test-bed problems has been used to show applicability and usefulness of the proposed framework. A comparison between the results of crisp mathematical programming and possibilistic programming shows that what the best configuration of cells in each state is

کلمات کلیدی:

Dynamic cellular manufacturing systems; possibilistic programming; Setup costs and outsourcing costs

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