

عنوان مقاله:

Robust design for facility layout problem in cellular manufacturing systems with uncertain demand

محل انتشار:

هفدهمین کنفرانس بین المللی مهندسی صنایع (سال: 1399)

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نویسندگان:

Mohammad H. Doroudyan

Arzhang Khoshghalb

خلاصه مقاله:

Cellular manufacturing system (CMS) is one of the well-developed subjects in the manufacturing systems area due to its many advantages. This subject is categorized to four sub problem including cell formation, group layout, and group scheduling and resource assignment. Despite of the importance of facility layout in manufacturing productivity, layout design is less investigated compared to the other problems in CMS, especially while considering uncertain demand of the real world. Hence, ignoring this issue leads to inefficiency in the models. In this paper, a new mathematical modeling is proposed to design a robust facility layout in CMS in the presence of uncertainty. This model simultaneously minimizes the cost of inter-cell and intra-cell movements based on two robust approaches. In the first approach, the worst case scenario is minimized in absolute robustness criterion and deviation from the optimal solutions are minimized by the robust deviation in the second approach. Moreover, the integer nonlinear model is linearized in order to solve it by linear programming. Finally, the performance of the proposed model is evaluated through a numerical example.

کلمات کلیدی:

Cellular manufacturing system (CMS); Facility layout problem; Robust design; Uncertain demand; inter-cell and intra-cell movement

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