A stochastic facility layout model in cellular manufacturing systems.

ABSTRACT

Facility layout which is the arrangement of facilities in the shop-floor has a great impact on the performance of manufacturing systems, while in volatile manufacturing systems; any kinds of change can degrade the performance of the system and leads to inefficiency of the layout. In this paper, a new mathematical model for layout problems in cellular manufacturing systems has been proposed that considers the stochastic nature of demand. The model minimizes the total material handling cost (both inter-cell and intra-cell material handling cost), and it is solved by two solution approaches, Lingo optimization software, and an enumeration method. The obtained results show the validity of the mathematical model.

Keyword: Cellular manufacturing; Facility layout; Stochastic model; Enumeration; Lingo.