Taguchi Method for Analyzing a Flexible Integrated Logistics Network

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Abstract : Logistics network design is known as one of the strategic decision problems. As these kinds of problems belong to the category of NP-hard problems, traditional ways are failed to find an optimal solution in short time. In this study, we attempt to involve reverse flow through an integrated design of forward/reverse supply chain network that formulated into a mixed integer linear programming. This Integrated, multi-stages model is enriched by three different delivery path which makes the problem more complex. To tackle with such an NP-hard problem a revised random path direct encoding method based memetic algorithm is considered as the solution methodology. Each algorithm has some parameters that need to be investigate to reveal the best performance. In this regard, Taguchi method is adapted to identify the optimum operating condition of the proposed memetic algorithm to improve the results. In this study, four factors namely, population size, crossover rate, local search iteration and a number of iteration are considered. Analyzing the parameters and improvement in results are the outlook of this research.

Keywords : integrated logistics network, flexible path, memetic algorithm, Taguchi method

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