Multi-objective scheduling vehicles in cross docking system with temporary storage and solving by NSGAII

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Abstract

Cross-docking is a relatively new and extremely effective technique used in global supply chain management. This technique can rapidly consolidate shipments from different sources and reduce the cost of outbound transportation by eliminating the inventory holding function of a warehouse without hampering its consolidation and shipping functions. This paper studies the multi-objective scheduling of vehicles in cross-docking system with temporary storage. The objectives are minimizing the make span and total exchange cost. First, the mathematical model was solved by complete enumeration method using WinQSB software. Since the problem is known as NP-hard, the meta-heuristic multi-objective algorithm (NSGA II) proposed to obtain diverse locally non-dominated solutions.

Keywords: Supply chain management; Cross-docking system; Scheduling; Non-dominated sorting genetic algorithm; Multi-objective problem.

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