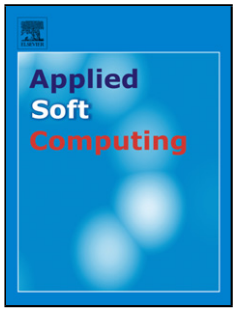

Title: Two new meta-heuristics for a bi-objective supply chain scheduling problem in flow-shop environment

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<AT>Two new meta-heuristics for a bi-objective supply chain scheduling problem in flow-shop environment

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<ABS-Head><ABS-HEAD>Graphical abstract
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<ABS-HEAD>Highlights► We define a new bi-objective production-distribution flow-shop scheduling problem ► We propose a mathematical model for the mentioned problem ► We propose a new MOPSO and a new NSGA-II for solving the problem ► The developed algorithms are compared with NSGA-II, MOPSO, NSGA-III and ACO ► Results demonstrate the outperformance of the developed algorithms

<ABS-HEAD>Abstract

<ABS-P>In this study, an integrated multi-objective production-distribution flow-shop scheduling problem will be taken into consideration with respect to two objective functions. The first objective function aims to minimize total weighted tardiness and make-span and the second objective function aims to minimize the summation of total weighted earliness, total weighted number of tardy jobs, inventory costs and total delivery costs. Firstly, a mathematical model is proposed for this problem. After that, two new meta-heuristic algorithms are developed in order to solve the problem. The first algorithm (HCMOPSO), is a multi-objective particle swarm optimization combined with a heuristic mutation operator, Gaussian membership function and a chaotic sequence and the second algorithm (HBNSGA-II), is a non-dominated sorting genetic algorithm II with a heuristic criterion for generation of initial population and a heuristic crossover operator. The proposed HCMOPSO and HBNSGA-II are tested and compared with a Non-dominated Sorting Genetic Algorithm II (NSGA-II), a Multi-Objective Particle Swarm Optimization (MOPSO) and two state-of-the-art algorithms from recent researches, by means of several comparing criteria. The computational experiments demonstrate the outperformance of the proposed HCMOPSO and HBNSGA-II.