

Single-machine scheduling with uncertain durations for optimizing service logistics with one truck

Time Objective

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Abstract. A single-machine scheduling problem is studied for the optimization of the service logistics with one truck and uncertain (interval) times needed for the truck to supply products from the warehouse to n supermarkets S_1, S_2, \dots, S_n . We propose to use the following additional criterion: to find the permutation P_k with the maximal relative perimeter of the optimality box. We investigate properties of the optimality box and develop efficient algorithms for constructing the permutation P_k having the largest relative perimeter of the optimality box. Computational results with small, moderate and large benchmark instances showed that such permutation P_k is close to the factual optimal permutation P_m for the main criterion (the permutation P_m is determined when all factual times t_i become known).

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