Knust, Sigrid; Le, Xuan Thanh; Nga, Nguyen Thi
The gain of robustness for a storage loading problem. (English) Zbl 07438378
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Summary: We consider a storage loading problem in a stack-based storage area, in which incoming items have to be loaded to stacks, taking into account that some items have already been stored in the storage area and another set of items will arrive later. Each item has an associated value referring to e.g. its weight, length, or departure time. Stacking constraints based on associated values of the items are imposed. While the actual data of the first two item sets are known exactly, a limited number $\Gamma$ of items arriving later may have uncertain data that deviate from their nominal associated values. Dealing with this $\Gamma$-uncertainty, by following the robust optimization paradigm we propose algorithms for finding strictly and adjustable robust solutions to the uncertain problem. Computational results on randomly generated instances show the impact of different parameters on the gain of including robustness in improving stacking solutions.

MSC:
90B05 Inventory, storage, reservoirs
90B06 Transportation, logistics and supply chain management
90C90 Applications of mathematical programming

Keywords:
storage loading; $\Gamma$-uncertainty; strict robustness; adjustable robustness

Full Text: DOI

References: