

Management of Empty Containers by Consignees in the Hinterland

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Abstract : This study aims to evaluate street-turn strategies for empty container repositioning in the hinterland. Containers arrive over time at the (importer) consignee, while the demand for containers arises from the (exporter) shipper. A match can be operated between an empty container from the consignee and the load from the shipper. Therefore, we model the system as a double-ended queue with non-zero matching time and a limited number of resources in order to optimize the repositioning decisions. We determine the performance measures when the consignee operates using a fixed withholding threshold policy. We show that the matching time mainly plays a role in the matching proportion, while under a certain duration, it only marginally impacts the consignee's inventory policy and cost per container. Also, the withholding level is mainly determined by the shipper's production rate.

Keywords : container, double-ended queue, inventory, Markov decision process, non-zero matching time, street-turn

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