

A Simulation Study on the Applicability of Overbooking Strategies in Inland Container Transport

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Abstract : The inland transportation of maritime containers entails the use of different modalities whose capacity is typically booked in advance. Containers may miss their scheduled departure time at a terminal for several reasons, such as delays, change of transport modes, multiple bookings pending. In those cases, it may be difficult for transport service providers to find last minute containers to fill the vacant capacity. Similarly to other industries, overbooking could potentially limit these drawbacks at the cost of a lower service level in case of actual excess of capacity in overbooked rides. However, the presence of multiple modalities may provide the required flexibility in rescheduling and limit the dissatisfaction of the shippers in case of containers in overbooking. This flexibility is known with the term 'synchromodality'. In this paper, we evaluate via discrete event simulation the application of overbooking. Results show that in certain conditions overbooking can significantly increase profit and utilization of high-capacity means of transport, such as barges and trains. On the other hand, in case of high penalty costs and limited no-show, overbooking may lead to an excessive use of expensive trucks.

Keywords : discrete event simulation, flexibility, inland shipping, multimodality, overbooking

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