

**Title:** A stochastic approach to the cooperative carrier facility location problem (Verdonck Lotte, Beullens Patrick)

**Abstract:**

Fierce competition and declining profit margins often force transport companies to adopt a collaborative mind-set. Cooperating with fellow carriers can provide efficiency increasing strategies which are not available under an internal company focus. Due to its practical importance, collaborative logistics has developed into an active and growing research domain. Existing studies mainly focus on collaborative transport in order to increase the efficiency of vehicle fleet operations. Instead of optimising joint transport operations, carriers may also cooperate by sharing warehouses or distribution centres (DCs). In Verdonck et al. (2016), the cooperative carrier facility location problem is discussed. By jointly deciding on two types of decisions, namely, first which DCs to open, and, second how to allocate the quantity of product flows in the distribution network, partnering companies aim to minimise their total logistics cost. In addition, the carriers have to decide on a suitable distribution of the collaborative benefits while ensuring stability of the coalition. The majority of studies on collaborative logistics assume deterministic problem settings. Very few studies address how horizontal collaboration between carriers can work in a stochastic environment. As such, our research work investigates approaches to the stochastic optimisation of the cooperative carrier facility location problem. We can draw on past research on the facility location problem under uncertainty, but the context of horizontal carrier collaboration introduces additional challenges with respect to the assessment and sharing of risks, and the robustness of coalition stability.

Verdonck L, Beullens P, Caris A, Ramaekers K, Janssens G (2016) Analysis of collaborative savings and cost allocation techniques for the cooperative carrier facility location problem. *Journal of the Operational Research Society* 67(6):853-871

**Stream:** Supply chain management

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