

# Coordination of a Retail Supply Chain Distribution Flow

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**Abstract**—Retail supply chains are very sensitive by their nature and need to adapt to several situations with the aim to increase its reliability, flexibility and convenience. There are many factors affecting the effectiveness of a distribution flow, from perishability, capacities of storage areas, lead times, untimely deliveries and others. Because the latter heavily depend on the planned and realized distribution and not on the demand side perspective, we partially neglect them in the initial study. We focus only on the demand satisfaction, without considering any pricing policies, perishability factors, etc. Beside stochastic demand modelling we introduce the multi-objective optimization approach to cope with the minimization of transport and warehouse costs, minimization of over stock effects and the maximization of customers' service level. Methodology used produces a set of solutions and its quality estimations in order to find the desired distribution plan that is near optimal. The paper further explains the integration of management decisions with respect to the obtained results of the modelling approach. The applicability of the model will be explained using a numerical example.

**Key words**—Distribution flow, Flow coordination, Retail supply chain, Stochastic demand.

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