

## Introduction to Intelligent Decision Support for Logistics and Supply Chain Management Minitrack

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Information technology (IT) is a prerequisite for successful supply chain management today and will become even more so in near future. While IT systems are vital components in supply chains, their successful management rests on coordinated decision making throughout the logistics network. Data warehouses and data mining can be used to store and analyze product, inventory, and sales information. Simulation and optimization can be employed for, e.g., inventory, production, procurement, and distribution planning. Intelligent agents can, e.g., communicate with different partners in the supply chain, assist in collecting information, share product information, negotiate prices, and distribute alerts throughout logistics networks.

This minitrack consists of nine contributions which deal with intelligent decision support in the field of logistics and supply chain management. The papers provide a heterogeneous yet complementary ensemble as they consider different approaches in coping with the uncertainty and complexity found in real-world decision situations.

Kaj-Mikael Björk, József Mezei and Henrik Nyman extend a fuzzy EOQ (Economic Order Quantity) track of research with a multi-item model that takes storage limitation into consideration as well as a finite production rate.

Despite the fact that the Vehicle Routing Problem (VRP) with its variants has been widely explored in Operations Research, there is very little published research on the VRP concerning Real World constraint combinations and large problem sizes. Marcel Kunkel and Michael Schwind present a heuristic vehicle routing optimization approach with Real World constraints driven by clients in the Courier, Express and Parcel (CEP) delivery industry in order to support their routing plan decisions and driver assignments.

In a world of steady change, producing companies face major challenges. They have to react quickly to an increasing competition and more and more individual customer requests. Sander Lass and Hanna Theuer study the advantages of computer-based simulations

and model factories, which are combined into a new simulation approach with reduced effort.

Sebastian Langton and Martin Josef Geiger describe an approach for decision support at tactical stockout management, primarily with respect to inventory management problems. A framework for eliciting information on stockout consequences from experts is presented.

Torsten Reiners, Julia Pahl, Michael Maroszek and Cornelius Rettig focus on the aircraft routing where the aircrafts are assigned to flight legs considering further requirements like maintenance. They develop algorithms that extend the aircraft routing problem by including profit and robustness.

Facilities for transportation, logistics and production often select entities for service from queues in which a preparatory step is required before service can begin. L. Douglas Smith, Dirk

C. Mattfeld, Jian Li and Jan F. Ehmke present an efficient heuristic for scheduling operations to minimize average waiting times while fostering equity among users with different service requirements.

Aaron Luntala Nsakanda, Yuheng Cao, Moustapha Diaby, Shaobo Ji and Mike Hine explore analytically the issue of whether an option contract mechanism is a viable alternative to help hedge against demand uncertainties for rewards in a Loyalty Reward Programs (LRP) enterprise-led supply chain. They introduce an analysis framework based on the study of the problem of planning the supply of rewards given demand uncertainties and considering option contracts featuring two parameters.

Yiping Jiang, Yufei Yuan, Kai Huang and Lindu Zhao present a literature review of emergency logistics in the context of large-scale disasters.

International supply chains heavily rely on maritime shipping. Since the beginning of the latest economical crisis, the containership fleet is slowing down. Jasper Meyer, Robert Stahlbock and Stefan Voß give a short overview of the slow steaming history as well as the widely assumed coherence between a ship's speed and its fuel consumption.