

Teaching Optimization and Simulation in Supply Chain and Operations Courses with the use of anyLogistix™ software

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Session duration – 75 Minutes

About this session:

Supply chain (SC) network design and operational planning decisions can have a drastic impact on the profitability and success of a company. Whether to have one warehouse or two, close a factory or rent a new one, or to choose one network path over another are all consequential decisions a SC manager must make. However, these decisions must be the result of more than experience or intuition, and, as a result, research in SC management (SCM) is geared towards providing the data, tools, and models necessary for supporting SC managers' decisions. One of these decision-supporting tools is anyLogistix™ (ALX), a software which facilitates Greenfield Analysis, Network Optimization, and Simulation.

anyLogistix™ has become more and more popular with the provision of the free PLE version, and because it is an easy-to-use software, includes simulation and optimization, and covers all standard teaching topics (center-of-gravity, efficient vs responsive SC design, SC design through network optimization, inventory control simulation with safety stock computations, sourcing (single vs. multiple) and shipment (LTL vs FTL) policy simulation, and transportation optimization). This tool ideally suits to management courses in SC and operations. This specific suitability is based upon a broad range of pre-programmed algorithms and control policies. As such, the efforts for building the models by students are minimum and do not require any programming skills. This allows focusing on the applications and using the model-based analysis for decision-making support.

A set of didactic materials has been developed to support a course in Supply Chain Optimization and Simulation using anyLogistix™ software (i.e., ALX Educational Toolkit). The anyLogistix™ educational toolkit is comprised of the following parts: ALX book, ALX exercises, and ALX course structures

The following themes will be considered in this session:

- What is anyLogistix™
- How to use anyLogistix™ in teaching
- How to structure SCM courses using anyLogistix™
- Facility Location Planning (Greenfield Analysis)
- Supply Chain Design (Network optimization, CPLEX)
- Dynamic Supply Chain Simulation (simulation, safety stocks, inventory control policies, risk analysis)

The ALX courses address the application of quantitative analysis methods and software to decision-making in global supply chains and operations. Understanding of optimization and simulation methods in SCM is the core of these courses.

Using the models available in anyLogistix™, we will conduct analyses to (1) determine an optimal location using Greenfield Analysis (GFA) for a new warehouse, given the location of their current customers and those customers relative demands, (2) compare alternative network designs using Network Optimization (NO), (3) perform a Simulation of different scenarios, (4) validate the models using Validation, Comparison experiments, and (5) analyze SC behavior under disruption risks using the Risk Analysis experiment.