At the Chair of Logistics and Supply Chain Management of TUM School of Management we are looking for an interested and qualified student to conduct his/her Master thesis on the topic:

Managing Supply Chains in International Companies: Simulation Optimization for Inventory Management under Multiple Sourcing

Multinational manufacturing companies often work with a global supply network comprising of onshore and offshore suppliers. Sourcing parts or products from more than one supplier is a common strategy to reduce supply risk and cover peak demands. Working with multiple supply sources while facing stochastic demand poses a special challenge to supply chain managers. Finding the right inventory holding, sourcing and distribution strategy that assures customer service while at the same time meeting economic targets is a non-trivial question for many manufacturing companies.

The main goal of this thesis is to use machine learning methodologies to evaluate inventory management policies for multiple suppliers under stochastic customer demands. Specifically, the concept of “Index Policies” (eg., Veeraraghavan, 2008) should be extended to multiple suppliers in a simulation optimization study (preferably in Matlab or Python). Based on this data-driven simulation approach, a proposal should be developed on how supply chain managers should make operational ordering decisions.

Selected research tasks:

- Review the relevant literature
- Simulate an inventory model
- Conduct a comprehensive numerical study

Details and further suggestions will be discussed during a kick-off meeting.

Requirements:

The thesis is particularly suitable for TUM-BWL Master students with an interest in Operations and Supply Chain Management who have strong analytical skills and the ability to work independently. Course attendance of “Inventory Management” is desirable and good knowledge of / willingness to learn simulation in Matlab, Python, Java or a comparable language is required.

Begin: From now on
Advisor: Josef Svoboda (josef.svoboda@tum.de)
Application: Email with curriculum vitae and transcript of records to logtheses.wi@tum.de