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:

**Simulation Optimization of Global Production Networks Considering Sustainability Requirements**

Restructuring global production networks in response to sustainability effects gain momentum whether the task is to design the supply network or to select transportation modes. The master thesis seeks to explore the effect of sustainability requirements on supply chain decisions using simulation (multi-objective) optimization. The outcome shall be a pragmatic and user-friendly decision support system that can be used by consultants. First, the thesis shall highlight major research contributions in simulation optimization in the related fields. Second, a simulation model shall be developed (with AnyLogic and FICO Xpress) in order to evaluate various global production networks in terms of design options, inventory (including safety stocks) and transport modes. The modular system design shall allow the (de)activation of different optimization modules to support the investigation of various problems. Third, a “sustainable module” shall consider 'green' supply chain issues. In order to validate the decision tool, it needs be tested using anonymized data. Fourth, in order to illustrate the impact of decisions, results should be reflected in fictitious shareholder reporting. Wassermann AG, a top management consultancy in the supply chain management arena, will assist the research work in Munich.

**Selected research tasks:**

- To perform a literature analyses about simulation optimization
- To develop a logistical simulation model for global production networks (using FICO Xpress)
- To investigate the effects between network simulation and sustainable SCM
- To use simulation optimization regarding lead time, costs and sustainable units
- To analyze the impact on financial and environmental key figures

**Requirements:**

This Master thesis is particularly suitable for a candidate who has a strong interest in strategic supply chain issues and stochastic optimization. Previous work experience with industry client (gained in one of the leading management consultancies) paired with superb analytical capabilities are required. Experiences in simulation and optimization tools like AnyLogic and FICO Xpress are a plus.

**Begin:** April 2013

**Advisor:** Dr. Martin Stößlein (martin.stoesslein@tum.de)