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's Thesis on the topic:

**Inventory Routing: Evaluating Benefits of Vendor Managed Inventories with Cross-Docking possibilities (in cooperation with Barkawi Management Consultants)**

The inventory routing solves lot-sizing and vehicle routing problems in an integrated fashion and thus optimizes the delivery timing and quantity, and the routing in an integrated fashion. This problem applies the vendor managed inventory (VMI) strategy, where the vendor is responsible for replenishment of its customers’ inventories, rather than serving their requests. The problem may be further enhanced by optimizing over multiple echelons of a supply chain with cross-docking opportunities, where a tremendous savings potential can be utilized by applying VMI. The goal of this Thesis is to introduce vendor managed inventories to a real-world network with cross-docking opportunities and evaluate the benefits of managing the supply chain in an integrated fashion under different shipping modes, i.e. full pallets/mixed pallets.

**Selected research tasks:**
- Data analysis (Data provided by Barkawi)
- Evaluating different shipping modes (e.g., full pallet vs. mixed pallet)
- Modelling the Multi-Echelon Inventory Routing Problem with Cross-Docks
- Quantifying the benefits of Vendor Managed Inventories over Retailer Managed Inventories
- Working out recommendations for the given network

**Requirements:**
The thesis is for Master students of the study-program TUM-BWL. The ability to work independently as well as analytical skills are required. Knowledge of mathematical programming and optimization is required. The thesis should be written in English.

**Begin:** May 2019

**Advisor:** Sebastian Malicki

**Application:** Email with curriculum vitae and transcript of records to logtheses.wi@tum.de