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:

**Value of Information in Inventory Management: Machine Learning and Data-driven Optimization for Stocking Decisions**

Machine Learning and more specifically data-driven optimization has developed into a popular and effective methodology in the age of Big Data and Industry 4.0. Recent publications apply data-driven optimization to supply chain management problems (e.g., Ban & Rudin, 2018). The main goal of this thesis is to apply artificial intelligence to inventory management by utilizing data structures and features. Specifically, a data-driven optimization model is to be developed for making stocking decisions for items that are sold in small quantities at a stochastic demand rate (e.g., in vending machines). Furthermore, the developed model should be used to understand and analyzing the value of available and utilized information in data (i.e., feature information). Thus, understanding the value of data availability, as it is found in industries and companies today, is also a goal of this thesis.

**Selected research tasks:**

- Review the relevant literature
- Implement a data-driven optimization 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 “MOS” (and ideally “Inventory Management”) is desirable and knowledge of or willingness to learn linear programming in Mosel/XPRESS (or comparable) 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