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:

**Designing Flexible Manufacturing Networks at BMW Group**

Manufacturing firms undertake substantial investments in production facilities to satisfy future demand. Often flexible manufacturing networks are pursued. Hereby, the ability to adjust capacity requirements is of utmost importance, i.e. to increase or decrease assembly, paint and body shop capacity as well as organizational capacity (e.g., workers, shifts).

The thesis aims at developing a key performance indicator (KPI) system to plan and control manufacturing flexibility. Therefore, global production sites, multiple products, stochastic demand and aforementioned capacity dimensions shall be modeled according to their specific differences, i.e. region, productivity. Different types of flexibility levels and relevant mechanisms (to adjust flexibilities) are to be identified and assessed. Based on the developed KPI system a stochastic-driven decision support systems shall be designed and tested that allows to plan and execute defined flexibility steps towards required demands. Giving priority to the planning criteria could be empirically examined. Importantly, the newly developed system shall be evaluated against the current planning system. The project partner provides necessary data and further support.

**Selected research tasks:**

- To perform a literature review on planning of capacities (with focus on automobile production)
- To evaluate the existing network-wide system of key performance indicators
- To improve the performance system in order to plan and monitor manufacturing flexibility
- To apply stochastic programming approaches or similar techniques
- To develop mechanisms in order to react on excess or lack of capacity flexibility
- To compare existing against newly developed planning system

**Company description:**

BMW is one of the leading premium car manufacturers in the world. In 2011, the BMW Group sold over 1.7 million cars, generating revenues of over €68 billion. The Group employes more than 100,000 employees worldwide, with production facilities all over the world.

**Requirements:**

This Master thesis is particularly suitable for a candidate who has a strong interest in supply chain strategy and ideally has attended the Stochastic Modeling and Optimization course at LOG-SCM. Previous experience in the Automotives is a plus. The thesis can be prepared in German.

**Begin:** April 2013

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

For further questions and selected literature on the topic, please see me in room 1547. Please send your application together with your curriculum vitae and transcripts of records by email.