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/Bachelor Thesis**

on the topic:

**Large-Scale Data-Driven Call Center Staffing**

The problem of staffing employees (= agents) in a telephone call center is a relevant cost driver in many companies. On the one hand there are customer service levels to be satisfied, e.g. short waiting times, on the other hand a low agent utilization is very expensive for a company. This problem can be modeled as Vehicle Routing Problem with Time Windows (VRPTW) where vehicles (= agents) visit different locations (= callers) within a given time window (= callers’ patience times until they hang up). Additionally, agents need a certain service time to fulfill the customer request. The objective is to minimize the necessary number of agents with certain customer service levels as additional constraints.

The aim of the work is to implement the respective VRPTW and to find and apply advanced solution methods, e.g. column generation, in order to solve this problem for larger scales between 50 and 100 agents.

**Selected research tasks:**
- to find advanced solution methods
- to implement these solution methods
- to compare the results to (given) results of a different staffing approach

**Requirements:**
The thesis is for Master/Bachelor students of the study-programs TUM-BWL or TUM-WIN. Qualified candidates have a major in Supply Chain Management. The ability to work independently as well as analytical skills are required. A background in mathematics and optimization is helpful. The thesis should be written in English.

**Begin:** as soon as possible

**Advisors:**
- Christian Bohner (christian.bohner@tum.de)
- Pirmin Fontaine (pirmin.fontaine@tum.de)

For further questions and selected literature on the topic, please see us in room 1565.
Please send your application together with your curriculum vitae and transcripts of records by email.