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:

Advancing Logistics Planning and Control at Huge Construction Sites – Adapting Factory Planning Methods and Operational Excellence

The construction supply chain of engineered buildings (e.g., airports, maritime ports) is subject to particular logistical challenges. Not seldomly more than 10,000 material deliveries need to be organized at huge sites while various regulations about noise, traffic, energy, waste etc. are not to be neglected.

In contrast to mass manufacturing, huge differences stem both from the project-based character of construction sites and from less advanced planning methods (that neglect modelling or simulation). Adapting advanced logistical methods and know-how into construction logistics planning seems promising in order to cope with quality, cost, and lead time issues. Improved planning procedures may focus on managing material, inventory, transportation, eliminating non-value added times, to mitigating risk factors.

The thesis seeks to investigate methods for logistics planning and control at huge construction sites. First, the thesis should expand preliminary results by observing the current state of methods by conducting a survey among developers and/or construction managers: What logistics concepts and methods are (and could be) applied? Promoting and hindering factors (including moderating factors) should be identified in related to performance figures. Second, self-developed case studies describe the efficiency of selected methods (that also model uncertainties). Therefore, simulation methods shall be used (e.g., Arena software). Approaches from the field of factory planning and operational excellence should be taken in consideration and adjusted to the specific settings in the construction industry. Finally, as a pragmatic outcome, a management checklist should be developed to foster advanced logistic concepts for construction sites.

Selected research tasks:

- To perform an in-depth review of scholarly manuscripts (and software products) related to logistic planning and control concepts, related surveys, as well as “factory planning methods” and methods for operational excellence,
- To design and conduct interviews at different stakeholders in the construction industry (and to use advanced statistical methods to evaluate results),
- To describe methods useful for logistic planning and control of construction sites (e.g., build on case studies) - key ingredients for a pragmatic concept, and
- To synthesize the results to a complete methodical approach.

Requirements:

A qualified candidate has a strong interest in Supply Chain Management with focus on logistics of huge construction sites. The ability to work independently and to have excellent interview skills is required. Related work experience is a strong plus. Students should also have an understanding of factory planning approaches. The thesis could be written in German or English.

Begin: December 2012
Advisor: Dr. Martin Stößlein (martin.stoesslein@tum.de)

For further questions and selected literature on the topic, please see me in room 1547.