



Master Thesis

“The Role of Task Characteristics for a Strategic AI Transformation – A Case Study”

Background

Digitalization is not only a buzzword for managers, but a crucial attempt to systematically transform a company and its business model into a digital entity. Moreover, it affects each and every industry worldwide. Particularly technologies based on artificial intelligence (AI) promise new opportunities for value creation and thus foster transformation. When applied in a fitting context, AI offers plenty of space for gaining competitive advantage and ceteris paribus higher profits.

Importantly, AI differs from human-programmed algorithms through its unique ability of machine learning (ML) that enables systems to autonomously improve over time with data. However, for successful technology adoption and exploitation, organizations need to assess if a certain use case is a good fit with the inner working mechanisms of ML algorithms. Thus, it is important to understand the actual task, its context, and underlying environment i.e., the **task characteristics**. Without such a task-technology-fit, it is likely that the AI does learn the wrong things which can lead to high damage or investment losses. Accordingly, it will be worthwhile to investigate how task characteristics are affecting a firm’s strategic AI transformation.

Introductory Readings

- Barredo Arrieta, A., Díaz-Rodríguez, N., . . . (2020). Explainable Artificial Intelligence (XAI): Concepts, Taxonomies, Opportunities and Challenges Toward Responsible AI. *Information Fusion*, 58, 82–115.
- Berente, N., Recker, J., Gu, B., & Santhanam, R. (2021). Managing Artificial Intelligence. *MIS Quarterly*, 45(3), 1433–1450.
- Brynjolfsson, E., & Mitchell, T. M. (2017). What Can Machine Learning Do? Workforce Implications. *Science*, 358(6370), 1530–1534.
- Shanteau (1992). Competence in Experts. The Role of Task Characteristics. *Organizational Behavior and Human Decision Processes*, 53(2), 252-266.

Tasks, Goals, and Research Method

This master thesis is closely related to the current research of the chair, and you will conduct your analyses in close collaboration with our doctoral students. The thesis will be based on case study/qualitative methodology to examine different AI applications, their task characteristics, and their impact on strategic AI transformation. For this, you will review relevant scientific literature, search for applicable companies, and conduct interviews with them. Based on the information you gather, you will elaborate a thorough case study as your final thesis.

Requirements

- Very Good English skills as well as previous experience with strategic topics and/or AI
- Independent, reliable, and diligent working style with an eye for detail and high motivation
- Successful participation (min. grade of 2.0) in the lecture **Strategies in Multinational Enterprises (SMNE)** or in one of **our Advanced Seminars**

Details

- Supervisors Prof. Dr. Thomas Hutzschenreuter and Tim Lämmermann
- Timing Flexible / As of now for a duration of 6 months after the research exposé is accepted

Contact

If you are interested in writing your thesis at our chair or have questions to this topic, please contact Tim Lämmermann (tim.laemmermann@tum.de). Please send an email, including a tabular CV and your current transcript of records (**one PDF file**), to apply for a master thesis. We are looking forward to hearing from you!