TUM
School of Management

Strategic and International Management

Master Thesis

"The Impact of Explainability for Different Stakeholder Groups of AI Applications – 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.

AI differs from traditional algorithms through its unique ability of machine learning (ML) that enables systems to autonomously improve over time. Nevertheless, due to its complexity that often exceeds human skills, many ML applications are neither understood nor validated by domain experts. As this evokes questions about the technologies' actual task suitability or might lead to AI rejection/non-usage, many applications must ensure a kind of explainability. However, as AI applications of firms usually involve multiple stakeholder groups with different characteristics, it is important to investigate the individual needs of each group in order to successfully exploit the ML algorithms strengths and progress the companies 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.
- Blackman, R., & Ammanath, B. (2022). When - and Why - You Should Explain How Your AI Works. *Harvard Business Review*.
- Doshi-Velez, F., & Kim, B. (2017). Towards a Rigorous Science of Interpretable Machine Learning. *ArXiv:1702.08608*.
- Miller, T. (2019). Explanation in Artificial Intelligence: Insights From the Social Sciences. *Artificial Intelligence, 267*, 1–38.
- Rudin, C. (2019). Stop explaining black ox machine learning models for high stakes decisions and use interpretable models instead. *Nature Machine Intelligence, 1*, p 206-215.

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 the impact of explainability on the validation and usage of AI applications in the context of strategic AI transformations. For this, you will review scientific literature, search for appropriate firms, and conduct interviews with them to elaborate a thorough case study as master 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 when 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!

Professor Dr. Thomas Hutzschenreuter
Chair of Strategic and International Management
Technical University of Munich