

## Bachelor's Thesis: Exploring Customers' Explainability Needs in (AI-based) Product Recommendations

Supervisor: M.Sc. Philipp Hansen ([philipp.hansen@uni-passau.de](mailto:philipp.hansen@uni-passau.de))

Start date: At the next possible date

### Motivation and Goals

Recommender systems are a vital part of the e-commerce landscape and can take the form of collaborative filtering-, content-based-, or hybrid recommender systems (Melville & Sindhvani, 2017). Building on e. g. Machine Learning (ML) techniques, such systems allow companies to advertise and, further down the line, sell products to customers based on their shared characteristics and/or individual interests (Melville & Sindhvani, 2017). However, the high performance of ML algorithms is oftentimes accompanied by opacity (Adadi & Berrada, 2018). As a consequence, customers might be inclined to distrust recommendations arising from black-box Artificial Intelligence (AI) models (Chen, Tian & Jang, 2024). In light of this, Explainable AI (XAI) aims at explaining the models' decisions and thus make them more transparent (Adadi & Berrada, 2018).

The goal of the thesis is to explore the explainability needs of customers when it comes to the outputs of recommender systems, i. e. product or service recommendations. This goal shall be achieved by means of interviews (e. g. in semi-structured form) and a thorough analysis of the results. Thus, the results of the thesis may guide researchers and companies in designing better (potentially XAI-based) recommender systems.

### Required Skills

- Interest in AI, ML, and Human-AI Interaction
- Good English skills
- Interest in / Prior experience in conducting qualitative research (e.g., interviews)

### Starting Literature (Topic)

Melville, P., & Sindhvani, V. (2017). Recommender Systems. In C. Sammut & G. I. Webb (Eds.), *Encyclopedia of Machine Learning and Data Mining* (pp. 1056–1066). Springer, Boston, MA.

[https://doi.org/10.1007/978-1-4899-7687-1\\_964](https://doi.org/10.1007/978-1-4899-7687-1_964)

Adadi, A., & Berrada, M. (2018). Peeking Inside the Black-Box: A Survey on Explainable Artificial Intelligence (XAI). *IEEE Access*, 6, 52138–52160. <https://doi.org/10.1109/ACCESS.2018.2870052>

Chen, C., Tian, A. D., & Jiang, R. (2024). When Post Hoc Explanation Knocks: Consumer Responses to Explainable AI Recommendations. *Journal of Interactive Marketing*, 59(3), 234–250.

<https://doi.org/10.1177/10949968231200221>

Weith, H., & Matt, C. (2023). Information provision measures for voice agent product recommendations—The effect of process explanations and process visualizations on fairness perceptions. *Electronic Markets*, 33, 57. <https://doi.org/10.1007/s12525-023-00668-x>

### Starting Literature (Method)

Mayring, P. (2021). *Qualitative Content Analysis: A Step-by-Step Guide*. SAGE Publications Ltd.

Myers, M. D., & Newman, M. (2007). The qualitative interview in IS research: Examining the craft. *Information and Organization*, 17(1), 2–26. <https://doi.org/10.1016/j.infoandorg.2006.11.001>