

## Bachelor's Thesis: Design and Evaluation of an XAI Dashboard for Corporate Decision-Making in e-Commerce

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Start date: At the next possible date

### Motivation and Goals

Decision makers benefit greatly from systems that generate information from data – e. g. when deciding between different options and their respective costs –, as those systems hold the potential of improving both the decision process itself as well as the resulting outcomes (Burnay et al., 2019). Effectively visualizing relevant information to the system's users however poses a challenge (Burnay et al., 2019). In addition, many of today's decisions are made using Artificial Intelligence (AI) methods, such as Machine Learning (ML) algorithms, which often suffer from opacity (Adadi & Berrada, 2018). Explainable AI (XAI) methods aim to conquer this issue by increasing the models' transparency (Adadi & Berrada, 2018).

Building on this, the goal of the thesis is to design and evaluate an XAI dashboard for an e-Commerce use case (such as customer service, online retail, etc.). For this purpose, it may build on the Design Science Research Methodology, to ensure that both research and practice can benefit from its results (Hevner et al., 2020).

### Required Skills

- Interest in AI and ML
- Good English skills
- Prior coding experience (e. g. Python, MATLAB, etc.)

### Starting Literature (Topic)

Burnay, C., Dargam, F., & Zarate, P. (2019). Special issue: Data visualization for decision-making: an important issue. *Operational Research*, 19, 853–855. <https://doi.org/10.1007/s12351-019-00530-z>

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>

Shneiderman, B. (2020). Bridging the Gap Between Ethics and Practice: Guidelines for Reliable, Safe, and Trustworthy Human-centered AI Systems. *ACM Transactions on Interactive Intelligent Systems*, 10(4), Article 26, 1–31. <https://doi.org/10.1145/3419764>

Hjelle, S., Mikalef, P., Altwaijry, N., & Parida, V. (2024). Organizational decision making and analytics: An experimental study on dashboard visualizations. *Information & Management*, 61, 104011. <https://doi.org/10.1016/j.im.2024.104011>

Nadj, M., Maedche, A., & Schieder, C. (2020). The effect of interactive analytical dashboard features on situation awareness and task performance. *Decision Support Systems*, 135, 113322. <https://doi.org/10.1016/j.dss.2020.113322>

## **Starting Literature (Method)**

Vom Brocke, J., Hevner, A., & Maedche, A. (2020). Introduction to Design Science Research. In J. vom Brocke, A. Hevner, & A. Maedche (Eds.), *Design Science Research. Cases* (pp. 1–13). Springer International Publishing. [https://doi.org/10.1007/978-3-030-46781-4\\_1](https://doi.org/10.1007/978-3-030-46781-4_1)

Hevner, A. R., March, S. T., Park, J., & Ram, S. (2004). Design Science in Information Systems Research. *MIS Quarterly*, 28(1), 75-105. <https://doi.org/10.2307/25148625>