UNIVERSITY OF PASSAU
School of Business, Economics and Information Systems

Prof. Dr. Thomas Widjaja
Chair of Business Information Systems

Obstacles to Artificial Intelligence adoption in manufacturing

Supervisor	Korbinian Stadler (korbinian.stadler@uni-passau.de)
Type	Bachelor's / Master's Thesis
Language	German / English

Motivation

Over the past decades the amount of available data has been growing exponentially, due to the proliferation of technologies such as smartphones, the internet of things (IoT), and digital platforms. Classical approaches are often insufficient to handle these massive volumes of data. Instead, Artificial Intelligence (AI) is increasingly being applied to process the raw data and extract of valuable knowledge from it. However, while many industries have embraced AI, the manufacturing industry has been comparatively slow in adopting this technology. In today's highly dynamic market environments, it is vital for manufacturers to utilise the data they generate to monitor and improve their processes in order to stay competitive.

This thesis aims to systematically identify and analyse the key factors that hinder the adoption of Artificial Intelligence in the manufacturing sector. Subsequently, these theoretical findings will then be verified with a case study. By identifying the key challenges companies face this thesis can provide valuable practical guidelines for future AI-system implementation projects.

Objectives

- Summarise the information systems literature on technology adoption with a structured literature review
- Examine what characteristics differentiate classical information systems and artificial intelligence systems
- Analyse how characteristics of artificial intelligence systems hinder their adoption in the manufacturing industry by conducting a case study

Literature

- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science, 35*(8), 982–1003.
- Menard, P., & Bott, G. J. (2025). Artificial intelligence misuse and concern for information privacy: New construct validation and future directions. *Information Systems Journal, 35*(1), 322–367. https://doi.org/10.1111/isj.12544
- Ross, J. (2008). Creating a Strategic IT Architecture Competency: Learning in Stages. *MIS Quarterly Executive, 2*(1). https://aisel.aisnet.org/misqe/vol2/iss1/5