AI Adaption within SMEs: Analysis of Impedances and Suggested Approaches

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Extended Abstract

This paper examines the most effective means of supporting small and medium-sized enterprises (SMEs) for the integration of artificial intelligence (AI) into their business practises. In addition to the challenges and limitations described in the existing literature, the experiences of the KI-Labor Südbaden[1] will be used as a case study. First, we undertake a literature review, then analyse the current AI maturity level of our local use cases as well as summarize our experiences. Next we summarize the main challenges that were faced, and finally suggest new supportive methods to facilitate AI adoption.

The KI-Labor Südbaden is a project funded by the German state of Baden-Württemberg with the objective of supporting SMEs in initiating their engagement with AI. The principal objective of the project is the development of individual use cases to demonstrate how companies can optimise the potential of their data through the application of AI. Over a period of almost two years, insights have been gained regarding the extent to which SMEs have progressed in the field of AI, the remaining obstacles they face, and the services they stand to benefit from the most.

Although AI has shown both rapid progress in terms of model development as well as media attention in the past years, implementation of AI solutions within companies has been noticeably slower. German companies have been slower at adaption compared to international competitors, with only 16% reporting that they have already implemented AI, compared to 23% elsewhere [1]. SMEs are also less likely to use AI compared to larger companies.

Research such as [2–4] shows that the main challenges faced by SMEs in adopting AI include:

1. Lack of technical know-how
2. Lack of useable and available data
3. Lack of infrastructure
4. High costs

Based on the maturity model developed by Schuster et al. [5], the SMEs that were advised by the KI-Labor Südbaden are mostly classified as "Novices." To enable implementation of AI solutions in a sustainable way, external support is required to facilitate progression along the maturity dimension factors.

Based on our experience of working with SMEs within the project, we propose a structured approach for the introduction and onboarding of AI projects entailing:

[1] https://ki-suedbaden.de/

1. Providing foundational AI competency workshops, with the objective of fostering a fundamental comprehension of the technology and an outlook into its potential and constraints.
2. The implementation of data workshops. The objective of these workshops is to facilitate the utilisation of the company's own data. The focus is on elucidating the insights that can be derived from the existing data and identifying the remaining steps that are necessary to ensure the data is fit for purpose for AI.
3. Plug-and-play AI examples that utilise industry standard best-practices as a first AI solution to implement. In the case that the company lacks enough data for such a solution, this would also act as a springboard from which to highlight what infrastructure or technical means need to be adapted first.

This new proposed approach of starting from specific AI implementations is derived from our previous experience as well as recent advice from industry leaders: Andrew Ng advises companies "to work on a *concrete idea*, meaning a specific product envisioned in enough detail" as opposed with starting from a more design-thinking approach to identifying use cases [6]. Developing "plug-and-play" solutions that could be easily applicable to most companies would ensure faster implementation as well as a faster learning process to identify the company's challenges regarding the onboarding of AI technologies. These quick implementations could then be used as building blocks on which to foster wider AI adoption within the whole business. As solutions are implemented and tested, it is foreseeable that other solutions can be developed and fine-tuned based on company feedback. [7].

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