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Adoption of Artificial Intelligence in German SMEs – Results from an Empirical Study

TREO Talk Paper

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Abstract

Artificial intelligence (AI) is on everyone's lips and will dominate the coming years of business. This is true not only, but also in the context of the global COVID-19 pandemic (Vaishya et al. 2020). Despite the potential of technologies such as machine learning (Alpaydin 2020), deep learning (Goodfellow et al. 2016), neural networks, and others, implementation in enterprise practice is not as advanced in itself as one would hope. This is particularly the case in Germany, which has been rather late in providing political support for AI technologies and implementing them in corporate practice by international comparison (Harhoff et al. 2018). The global success of the German economy is mainly due to her SMEs, so the following questions are of interest from a research perspective: - do German SMEs know artificial intelligence as well as AI-related technologies? - what is the level of digitization in German SMEs in general and in which areas could AI be used? - who is responsible for the introduction of AI in SMEs? - what barriers to introduction exist? - are there already ongoing pilot projects and experiences?

These and other questions were explored in a quantitative-exploratory study of 283 German SMEs in 2020, the approach and initial findings of which are presented in this TREO talk paper. The data was collected with the aid of a standardized online questionnaire. Finally, the survey period ranged from October 22nd to November 11th, 2020. A total of 12,360 companies were contacted by e-mail, whereby 1,112 e-mails could not be delivered. Thus, 11,248 companies received the link to the online survey. The online questionnaire was answered 283 times during the survey period, corresponding to a participation rate of 2.5 percent.

The initial empirical results of this study show that German SMEs are not yet fully aware of the relevance and potential of AI technologies. They mainly use classic technologies that have been known for a long time, such as rule-based systems. Not yet apparent from the analysis to date are the reasons why AI has not yet been used extensively in German SMEs. This could be due on the one hand to restrictions in terms of financial and human resources, but on the other hand also to decision-making specifics that can be traced back to the influence of one or more entrepreneurial families. Contextual factors such as company size, industry and the general level of digitization of the company as well as the potential influence of an entrepreneurial family and a capital market orientation were also queried in the study, but not yet evaluated. It is assumed that these contextual factors have a significant influence on the fundamental importance, the assessment of opportunities and risks, organizational responsibility and ultimately also the budget for AI implementation.

References

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