

Research on Use of Digital Technologies in Polish Industry in Context of Creating Smart Structures*

Maciej Siemieniak

Poznan University of Technology, J. Rychniewskiego 2 Str., 60-965 Poznan, Poland

Correspondence should be addressed to: Maciej Siemieniak, maciej.siemieniak@put.poznan.pl

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Abstract

The research presented in the article focused on the level of adoption of modern digital technologies in Polish enterprises, particularly in the context of creating smart structures and cyber-physical systems. The primary motivation for conducting the study stemmed from the rapid development of Industry 4.0 technologies, which have the potential to significantly enhance the efficiency and flexibility of production. A notable gap in the literature pertains to the insufficient research on the actual implementation of these technologies in Poland, underscoring the need for empirical analysis.

The research employed a survey method directed at experts from 150 enterprises. Respondents evaluated the level of technology use on a five-point scale, enabling the collection of data regarding the advancement and readiness of companies to implement cyber-physical systems.

The results indicated a varied degree of adoption of modern technologies. Most companies do not fully exploit the potential of digital technologies such as the Internet of Things, artificial intelligence, cloud computing, and design support systems. Only a small number of enterprises report having fully implemented advanced solutions, while many others do not utilize these technologies at all.

The study's conclusions suggest that Polish companies require more support in digital transformation to fully leverage the opportunities presented by Industry 4.0. It also identified the critical role of education and investment in technology to meet the growing demands of the market.

Keywords: Industry 4.0, cyber-physical system, smart structures, modern technologies