Smart Manufacturing Technology Adoption: An Empirical Study of Manufacturing Enterprises

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Abstract:

The purpose of the paper is to contribute to the discussion on how to support and prepare enterprises for the ongoing Fourth Industrial Revolution, known as Industry 4.0. Although Industry 4.0 has been widely discussed for some time, its relevance extends beyond narrow process improvements. This paper focuses on smart manufacturing technologies while situating them within their broader significance. Manufacturing companies can significantly benefit from Industry 4.0 as the use of these technologies enables manufacturing processes to be planned, coordinated, executed, executed, interconnected and controlled from an entirely new perspective and dynamic. In the paper, we also present the results of our study, which evaluated the extent of use of smart manufacturing technologies based on data from a survey of 68 manufacturing enterprises in Slovakia. Our main results show that, on average, these technologies had not yet been implemented, with firms instead preparing for implementation as part of their organizational goals. We also concluded that certain enterprise characteristics and activities (such as size, readiness for Industry 4.0, an approach to continuous improvement, perceived potential of Industry 4.0 technologies, and external collaboration) were associated with greater adoption of smart manufacturing technologies.

Keywords:

Smart manufacturing technology, Industry 4.0, manufacturing enterprises.