

Digital Maturity Assessment Criteria for Enterprises Implementing Industry 4.0*

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Abstract

Implementing solutions in line with the Industry 4.0 concept, digital transformation, and reliance on new technological trends are opportunities to survive in the difficult conditions of a turbulent environment of manufacturing companies and changes caused by, e.g., the coronavirus pandemic, international conflicts, or even wars. The motive behind this study is to meet such challenges by developing research on adequate tools and criteria for assessing the digital maturity of enterprises. Among the key assessment criteria, technological ones certainly play an important role, which should also be significantly complemented by those concerning the organization's strategy adapted to dynamic technological changes, as well as an organizational culture open to the phenomena related to digital transformation and the introduction of new business models. This paper is to discuss a set of criteria for assessing the digital maturity of manufacturing companies implementing the Industry 4.0 principles. Selected models and criteria used so far are presented synthetically. Based on the literature research, non-participant observations, and unstructured interviews, a set of criteria was defined, which was then used in empirical computational experiments based on the Analytic Hierarchy Process (AHP). The empirical data was connected with a manufacturing company that has been taking steps to implement digital transformation in line with the Industry 4.0 scenarios for several years. The analyzed digital maturity assessment criteria were discussed with business practitioners, and the research results confirm their usefulness in making strategic and operational decisions related to the digital transformation of production enterprises. The obtained results also constitute a reasonable basis for further study on digital maturity assessment methods.

Keywords: Digital Maturity, Assessment Criteria, Digital Transformation, Industry 4.0.