

Table 1 summarizes the scope of 32 available DTMMs proposed from both, the academy and consultancies' perspectives. The list includes those models that were found to be the most cited and current.

Table 1. Overview of digital transformation maturity models.

Reference	Scope
(Valdez-De-Leon, 2016)	The model targets the telecommunications industry.
(Berghaus & Back, 2016)	This is a generic model, intended to be applied to any sector or industry.
(Ganzarain & Errasti, 2016)	Intended to be applied in any industry that seeks to identify new opportunities for diversification within Industry 4.0.
(Shahiduzzaman et al., 2017)	PWC Maturity Model - a general model that can be applied to any organization.
(Rossmann & Reutlingen, 2018)	Intended to be applied in any organization that is undergoing digital transformation, regardless of the sector or industry.
(Akdil et al., 2018)	The model assesses readiness for Industry 4.0 implementation.
(Horvat et al., 2018)	The authors suggest that the model can be used to assess the readiness for Industry 4.0 at the level of single companies, industries, the manufacturing sector, and countries as a whole.
(Deloitte, 2018)	The Deloitte Digital Maturity Index Survey is specifically designed to analyze the degree of digitalization in the manufacturing industry.
(<i>Industry 4.0 Readiness Online Self-Check for Businesses</i> , n.d.)	IMPULS, Industry 4.0 Readiness Online Self-Check for Businesses, is designed to help companies assess their readiness for Industry 4.0.
(Sjödín et al., 2018)	The model is focused on leveraging digitalization in manufacturing to enable smart factory implementation and process innovation.
(Romero et al., n.d.)	The model is intended for small and medium-sized enterprises (SMEs) undergoing digital transformation towards Smart Manufacturing and Industry 4.0.
(Schuh et al., 2020)	The Acatech Industrie 4.0 Maturity Index provides manufacturing companies with a basis for transforming themselves into learning agile organizations.
(Salume et al., 2021)	The model was specifically developed and tested in the retail sector companies in Brazil.

(Klötzer & Pflaum, n.d.)	The model targets companies within the manufacturing industry's supply chain.
(Barry et al., 2022)	The model covers 16 sub-dimensions for generic organizations, and additional sub-dimensions for specific sectors such as banking, industrial, SME, public, health, e-government, and education.
(Hongxiong & Xiaowen, 2022)	The proposal targets the evaluation of the digital maturity of the automotive supply chain.
(Turkyilmaz et al., 2023)	This model is within the scope of manufacturing industries/firms and is intended to be used in companies of different sizes.
(Aras & Büyüközkan, 2023)	The generic model is intended to be applied to companies of different sizes and sectors.
(Haryanti et al., 2023)	The model is generic and does not specify any restrictions on the company's size.
(P. Senna et al., 2023)	The proposal targets the manufacturing sector.
(Hellweg et al., 2023)	The target domain is the supply chains of companies handling physical products (including retail).
(Benotmane et al., 2023)	Intended to apply to any organization that is undergoing an IoT transformation.
(Kammerlohr et al., 2023)	The model for digital lab transformation targets the education and research sector.
(Perera et al., 2023)	This model was specifically designed for the design and construction industry in the Australian context.
(Kılıç et al., 2023)	This methodology is specifically designed for use in manufacturing companies.
(Benazzouz & Auhmani, 2023)	The model was designed for hospitals in the Moroccan pharmaceutical supply chain.
(Sukrat & Leeraphong, 2023)	The model targets micro and small businesses in developing countries.
(Ka et al., 2023)	The model is specifically tailored to the context of hospitality micro and small enterprises (MSEs).
(Nebati et al., 2023)	The model is designed for the defense industry.
(Demir et al., 2023)	The model assesses the readiness and maturity of Industry 4.0 tools and sustainability indicators.
(Mohammadi et al., 2023)	The model was specifically designed for electronic sports businesses in developing countries.
(Guerrero et al., 2023)	The model is intended to offer guidance for personal service firms to achieve the transition from analog to digital.

References

- Akdil, K. Y., Ustundag, A., & Cevikcan, E. (2018). Maturity and Readiness Model for Industry 4.0 Strategy. In *Springer Series in Advanced Manufacturing* (pp. 61–94). Springer Nature. https://doi.org/10.1007/978-3-319-57870-5_4
- Aras, A., & Büyüközkan, G. (2023). Digital Transformation Journey Guidance: A Holistic Digital Maturity Model Based on a Systematic Literature Review. *Systems*, 11(4). <https://doi.org/10.3390/systems11040213>
- Barry, A. S., Assoul, S., & Souissi, N. (2022). Benchmarking of digital maturity models according to the dimension component. *2022 2nd International Conference on Innovative Research in Applied Science, Engineering and Technology, IRASET 2022*. <https://doi.org/10.1109/IRASET52964.2022.9737781>
- Benazzouz, T., & Auhmani, khalid. (2023). Digital maturity assessment model for pharmaceutical supply chain: a patient and hospital-centred development. *International Journal of Healthcare Management*. <https://doi.org/10.1080/20479700.2023.2177584>
- Benotmane, M., Elhari, K., & Kabbaj, A. (2023). A review & analysis of current IoT maturity & readiness models and novel proposal. *Scientific African*, 21. <https://doi.org/10.1016/j.sciaf.2023.e01748>
- Berghaus, S., & Back, A. (2016). *Stages in Digital Business Transformation: Results of an Empirical Maturity Study*. <http://aisel.aisnet.org/mcis2016><http://aisel.aisnet.org/mcis2016/22>
- de Moura, R. L., Carneiro, T. C. J., & Dias, T. L. (2023). VUCA environment on project success: The effect of project management methods. *Brazilian Business Review*, 20(3), 236–259. <https://doi.org/10.15728/bbr.2023.20.3.1.en>
- Deloitte. (2018). *Digital Maturity Model Achieving digital maturity to drive growth*.
- Demir, S., Gunduz, M. A., Kayikci, Y., & Paksoy, T. (2023). Readiness and Maturity of Smart and Sustainable Supply Chains: A Model Proposal. *EMJ - Engineering Management Journal*, 35(2), 181–206. <https://doi.org/10.1080/10429247.2022.2050129>
- Ganzarain, J., & Errasti, N. (2016). Three stage maturity model in SME's towards industry 4.0. *Journal of Industrial Engineering and Management*, 9(5), 1119–1128. <https://doi.org/10.3926/jiem.2073>
- Gonçalves, M. L. A., Penha, R., Silva, L. F., Martens, C. D. P., & Silva, V. F. (2023). The relationship between project management and digital transformation: Systematic literature review. *Revista de Administracao Mackenzie*, 24(4). <https://doi.org/10.1590/1678-6971/eRAMR230075.en>

- Guerrero, R., Lattemann, C., & Gebbing, P. (2023). Helping Personal Service Firms to Cope with Digital Transformation: Evaluation of a Digitalization Maturity Model. *Pacific Asia Journal of the Association for Information Systems*, 15(2), 1–31. <https://doi.org/10.17705/1pais.15201>
- Haryanti, T., Rakhmawati, N. A., & Subriadi, A. P. (2023). The Extended Digital Maturity Model. *Big Data and Cognitive Computing*, 7(1). <https://doi.org/10.3390/bdcc7010017>
- Hellweg, F., Janhofer, D., & Hellingrath, B. (2023). Towards a Maturity Model for Digital Supply Chains. *Logistics Research*, 16(1). https://doi.org/10.23773/2023_5
- Hongxiong, Y., & Xiaowen, X. (2022). Research on Computer Evaluation Index System of Digital Maturity of Automotive Supply Chain. *2022 IEEE International Conference on Electrical Engineering, Big Data and Algorithms, EEBDA 2022*, 442–446. <https://doi.org/10.1109/EEBDA53927.2022.9744996>
- Horvat, D., Stahlecker, T., Zenker, A., Lerch, C., & Mladineo, M. (2018). A conceptual approach to analysing manufacturing companies' profiles concerning Industry 4.0 in emerging economies. *Procedia Manufacturing*, 17, 419–426. <https://doi.org/10.1016/j.promfg.2018.10.065>
- Ibrahimi, G., & Benchekroun, B. (2023). The Contribution of Agility to an Organization's Digital Transformation. *TEM Journal*, 12(4), 2361–2369. <https://doi.org/10.18421/TEM124-48>
- Industry 4.0 Readiness Online Self-Check for Businesses*. (n.d.). Retrieved December 4, 2023, from <https://www.industrie40-readiness.de/?lang=en>
- Jiang, J. J. (2023). From Information Technology Projects to Digital Transformation Programs: Research Pathways. In *Project Management Journal* (Vol. 54, Issue 4, pp. 327–333). SAGE Publications Inc. <https://doi.org/10.1177/87569728231170261>
- Ka, X., Ying, T., & Tang, J. (2023). A Conceptual Model for Developing Digital Maturity in Hospitality Micro and Small Enterprises. *Journal of Theoretical and Applied Electronic Commerce Research*, 18(3), 1511–1528. <https://doi.org/10.3390/jtaer18030076>
- Kammerlohr, V., Paradise, D., & Uckelmann, D. (2023). A maturity model for the effective digital transformation of laboratories. *Journal of Manufacturing Technology Management*, 34(4), 621–643. <https://doi.org/10.1108/JMTM-01-2022-0050>
- Kılıç, H. S., Kalender, Z. T., Korkmaz, C., & Kaya, B. (2023). INTEGRATED METHODOLOGY FOR THE ASSESSMENT OF INDUSTRY 4.0 MATURITY LEVEL. *International Journal of the Analytic Hierarchy Process*, 15(2). <https://doi.org/10.13033/ijahp.v15i2.1096>
- Klötzer, C., & Pflaum, A. (n.d.). *Toward the Development of a Maturity Model for Digitalization within the Manufacturing Industry's Supply Chain*. <http://hdl.handle.net/10125/41669>

- Larson, E. W., & C.F. Gray. (2010). *Project management: the managerial process*.
- Mohammadi, S., Heidari, A., & Navkhsi, J. (2023). Proposing a Framework for the Digital Transformation Maturity of Electronic Sports Businesses in Developing Countries. *Sustainability (Switzerland)*, 15(16). <https://doi.org/10.3390/su151612354>
- Nebati, E. E., Ayvaz, B., & Kusakci, A. O. (2023). Digital transformation in the defense industry: A maturity model combining SF-AHP and SF-TODIM approaches. *Applied Soft Computing*, 132. <https://doi.org/10.1016/j.asoc.2022.109896>
- Ng, P. L., Maqsood, T., Khalfan, M., & Rahmani, F. (2023). *AgiBuild: A Proposed Framework for Agile Building Adaptation Project Management Based on Literature Review*. <https://doi.org/10.20944/preprints202305.0638.v1>
- P. Senna, P., Barros, A. C., Bonnin Roca, J., & Azevedo, A. (2023). Development of a digital maturity model for Industry 4.0 based on the technology-organization-environment framework. *Computers and Industrial Engineering*, 185. <https://doi.org/10.1016/j.cie.2023.109645>
- Perera, S., Jin, X., Das, P., Gunasekara, K., & Samaratunga, M. (2023). A strategic framework for digital maturity of design and construction through a systematic review and application. *Journal of Industrial Information Integration*, 31. <https://doi.org/10.1016/j.jii.2022.100413>
- Romero, D., Wuest, T., & Mittal, S. (n.d.). *Towards a Smart Manufacturing Maturity Model for SMEs (SM3E) Towards a Smart Manufacturing Maturity Model for SMEs (SM 3 E)*. <https://www.researchgate.net/publication/327230099>
- Rossmann, A., & Reutlingen, H. (2018). *Digital Maturity: Conceptualization and Measurement Model*. <https://assets.kpmg.com/content/dam/kpmg/pdf/2016/04/ch-digital-readiness-assessment-en.pdf>.
- Salume, P. K., Barbosa, M. W., Pinto, M. R., & Sousa, P. R. (2021). Key dimensions of digital maturity: A study with retail sector companies in Brazil. *Revista de Administracao Mackenzie*, 22(6). <https://doi.org/10.1590/1678-6971/ERAMD210071>
- Schlömer, I. F. (2022). Agility as a Driver of Digital Transformation - a Literature Review. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 13454 LNCS, 238–253. https://doi.org/10.1007/978-3-031-15342-6_19
- Schuh, G., Anderl, R., Dumitrescu, R., & Krüger, A. (2020). *Industrie 4.0 Maturity Index Managing the Digital Transformation of Companies*.
- Shahiduzzaman, M., Kowalkiewicz, M., Barrett, R., & Mcnaughton, M. (2017). *Digital business towards a value-centric maturity model - part A. PWC report chair in digital economy*.

- Sjödin, D. R., Parida, V., Leksell, M., & Petrovic, A. (2018). Smart Factory Implementation and Process Innovation: A Preliminary Maturity Model for Leveraging Digitalization in Manufacturing. Moving to smart factories presents specific challenges that can be addressed through a structured approach focused on people, processes, and technologies. *Research Technology Management*, 61(5), 22–31. <https://doi.org/10.1080/08956308.2018.1471277>
- Sukrat, S., & Leeraphong, A. (2023). A digital business transformation maturity model for micro enterprises in developing countries. *Global Business and Organizational Excellence*. <https://doi.org/10.1002/joe.22230>
- Thordsen, T., & Bick, M. (2023). A decade of digital maturity models: much ado about nothing? *Information Systems and E-Business Management*. <https://doi.org/10.1007/s10257-023-00656-w>
- Turkyilmaz, A., Dikhanbayeva, D., Lukhmanov, Y., & El-Thalji, I. (2023). *Managing Digital Transformation: Maturity Model Development*.
- Valdez-De-Leon, O. (2016). A Digital Maturity Model for Telecommunications Service Providers. In *Technology Innovation Management Review* (Vol. 6, Issue 8). www.timreview.ca
- van Solingen, R. (2019). The Why, How and What of Agile Transformations. In *The Future of Software Quality Assurance* (pp. 217–228). Springer International Publishing. https://doi.org/10.1007/978-3-030-29509-7_17
- vom Brocke, J., Hevner, A., & Maedche, A. (2020). *Introduction to Design Science Research* (pp. 1–13). https://doi.org/10.1007/978-3-030-46781-4_1