QO‘QON DAVLAT PEDAGOGIKA INSTITUTI ILMIY XABARLARI
(2026-yil 10-son)
PEDAGOGIKA
PEDAGOGY
https://doi.org/10.70728/c.series.ped.v08.i10.222

INTERNATIONAL METHODOLOGIES FOR ASSESSING CORPORATE DIGITAL MATURITY LEVELS AND OPPORTUNITIES FOR ADAPTATION

Shakhnozakhon Fakhriddinova
Head of School & Leading Lecturer, School of Tourism & Hospitality, Management Development
Institute of Singapore in Tashkent (MDIST)

Introduction Digital maturity represents the degree to which an organization has successfully integrated digital technologies, capabilities, and mindsets into its operations, strategy, and culture to create sustainable competitive advantage and value. As digital transformation has become a strategic imperative across industries and geographies, the need for robust, reliable methods to assess and benchmark digital maturity has grown correspondingly urgent. Organizations require diagnostic tools that can accurately identify their current digital capabilities, reveal gaps and opportunities, and guide investment and capability development priorities along their transformation journeys. The proliferation of digital maturity models and assessment frameworks over the past decade reflects both the strategic importance of digital transformation and the complexity of measuring organizational progress along multidimensional transformation pathways. International consulting firms, industry associations, standards bodies, and academic researchers have all developed methodologies for assessing digital maturity, each bringing distinct perspectives, assessment criteria, and intended applications. Leading frameworks include the Deloitte Digital Maturity Model, the BCG Digital Acceleration Index, the Acatech Industry 4.0 Maturity Index, the MIT Digital Capability Framework, and various ISO-standardized assessment approaches, among others.

Literature Review

Digital maturity has been conceptualized in multiple ways within the academic and practitioner literature, reflecting the multifaceted nature of digital transformation and the diverse perspectives from which it has been studied. Thordsen and Bick define digital maturity as the degree of digitalization achieved by an entity through the integration of digitized processes into its organizational structure. This definition emphasizes the structural and processual dimensions of digital maturity, focusing on the extent to which digital technologies and processes have been embedded within organizational systems and workflows. Alternative conceptualizations emphasize the capability-based dimensions of digital maturity, viewing it as the organizational capacity to leverage digital technologies for strategic advantage and value creation. From this perspective, digital maturity encompasses not only technology adoption but also organizational

capabilities in areas such as data analytics, digital skills, agile ways of working, and innovation processes. Schumacher defines digital maturity models as tools to conceptualize and measure the maturity level of an organization or process, emphasizing their diagnostic and prescriptive functions. The literature distinguishes between digital maturity models (DMMs) and digital transformation maturity models (DTMMs), though these terms are often used interchangeably in practice. DMMs tend to focus on the outcomes of digital transformation, assessing the current state of digital capabilities and integration across organizational dimensions. DTMMs, by contrast, are more process-oriented, focusing on the transformation journey itself and the organizational capabilities required to navigate it successfully. Recent scholarship has identified four fundamental mechanisms underlying maturity model construction: outcome-focused models, process-focused models, mixed models addressing both outcomes and processes, and strategic models evaluating outcomes, processes, and strategy simultaneously. The landscape of international digital maturity assessment frameworks is diverse and rapidly evolving, with frameworks developed by consulting firms, industry associations, standards bodies, and academic researchers. McKinsey's framework emphasizes strategy and organizational transformation across broad enterprise dimensions, providing board-level alignment but offering less technology and operating detail. The BCG Digital Acceleration Index quantitatively measures digital maturity across different dimensions and identifies high-return-on-investment pathways for transformation acceleration. Deloitte's Digital Maturity Model emphasizes cloud, analytics, artificial intelligence, core modernization, and multi-domain transformation across five key dimensions. The Acatech Industry 4.0 Maturity Index, developed by the German National Academy of Science and Engineering, provides a structured six-stage framework specifically designed for manufacturing enterprises pursuing Industry 4.0 transformation. The MIT Digital Capability Framework and Gartner's Digital Business Framework offer complementary perspectives, with MIT emphasizing capability development across technology, talent, and transformation dimensions, while Gartner maps digital capabilities and aligns initiatives with business outcomes through structured capability taxonomies. ISO has developed Digital Capability Maturity Assessment Models aimed at strengthening national standards bodies, particularly in developing countries, by providing structured approaches to assess and enhance digital capabilities. Academic research has contributed numerous specialized maturity models targeting specific sectors, organizational types, and transformation dimensions. Recent studies have developed Industry 4.0 maturity models addressing specific challenges of manufacturing enterprises in emerging economies, recognizing that transformation pathways in these contexts may differ significantly from those in advanced industrial nations. Scenario-based approaches for measuring digital maturity in manufacturing enterprises have been proposed, shifting from survey-based, strategy-oriented assessments to function-oriented, data-driven, and modular evaluations. Research has also developed digital maturity models specifically for small and medium enterprises in manufacturing, identifying unique challenges such as financial constraints and limited digital skills.

Methodology

This article employs a systematic review and comparative analysis methodology to examine international digital maturity assessment frameworks and their adaptation opportunities. The analysis draws upon academic literature, practitioner frameworks, and case study evidence to construct a comprehensive understanding of the digital maturity assessment landscape. The review encompasses frameworks developed by international consulting firms, industry associations, standards bodies, and academic researchers, with attention to their theoretical foundations, structural characteristics, assessment dimensions, and practical applications. The comparative analysis focuses on five principal international frameworks: the Deloitte Digital Maturity Model, the BCG Digital Acceleration Index, the Acatech Industry 4.0 Maturity Index, the MIT Digital Capability Framework, and ISO Digital Capability Maturity Assessment Models. These frameworks were selected based on their international recognition, practical adoption, theoretical rigor, and relevance to diverse organizational contexts. For each framework, the analysis examines assessment dimensions, maturity level definitions, evaluation methodologies, intended applications, and documented strengths and limitations. The adaptation analysis draws upon case study evidence from emerging markets and developing economies, including research on digital maturity assessment in Kazakhstan's industrial sector and specialized frameworks for small and medium enterprises in manufacturing. This evidence informs the identification of key adaptation considerations including contextual calibration, dimensional weighting, maturity level recalibration, and improvement pathway customization. The analysis synthesizes insights from the framework comparison and adaptation case studies to develop practical guidance for organizations seeking to adapt international digital maturity frameworks to their specific contexts.

Results

The Deloitte Digital Maturity Model represents one of the most widely adopted international frameworks for assessing corporate digital maturity, offering a comprehensive, multidimensional approach to evaluating organizational digital capabilities. The model assesses digital maturity across five core dimensions: customer, strategy, technology, operations, and organization and culture. The customer dimension examines digital channels, customer journeys, personalization, service experience, and the extent to which digital technologies improve customer outcomes. The strategy dimension evaluates the clarity of digital ambition, leadership alignment, investment priorities, governance structures, and how digital initiatives support broader business goals. The technology dimension assesses platforms, architecture, integration capabilities, data foundations, automation levels, security posture, and the speed of technology delivery. The operations dimension examines process digitization, workflow redesign, agile execution capabilities, analytics utilization, and operational scalability. The organization and culture dimension evaluates skills and capabilities, roles and responsibilities, incentive structures, cross-functional collaboration, decision rights, leadership behaviors, and organizational openness to change. These five dimensions are further subdivided into 28 subdimensions and 179 individual criteria against which organizations are assessed. Deloitte's model employs a five-stage progression framework: nascent, emerging, connected, multi-moment, and moments mastery. The assessment process begins with clarifying the decision and

scope, defining the units of analysis, translating the model into explicit criteria, and constructing maturity profiles through workshops, evidence review, and challenge sessions. The model's strengths include its comprehensive coverage of digital maturity dimensions, clear progression stages, and practical applicability across diverse organizational contexts. Limitations include potential complexity for smaller organizations and the need for contextual adaptation in emerging market settings where digital infrastructure and capabilities may differ significantly from those assumed in the framework's original development. The Boston Consulting Group Digital Acceleration Index provides a quantitative approach to assessing digital maturity across four capability domains: strategy and ambition, customer and commercial, operations and processes, and data and technology. The strategy and ambition domain examines the clarity of digital vision, value creation logic, investment priorities, and leadership commitment to digital transformation. The customer and commercial domain assesses digital channels, customer journeys, personalization capabilities, digital marketing, e-commerce, sales enablement, and service experience. The BCG framework's strengths include its quantitative rigor, benchmarking capabilities, and explicit focus on identifying high-ROI transformation pathways. The framework provides clear guidance on capability development priorities and investment sequencing, making it particularly useful for organizations seeking to optimize transformation investments. Limitations include potential overemphasis on quantitative metrics at the expense of qualitative organizational factors, and the need for contextual calibration when applied in emerging markets where digital infrastructure and ecosystem maturity may differ from advanced economy assumptions. The Acatech Industry 4.0 Maturity Index, developed by the German National Academy of Science and Engineering, provides a specialized framework for assessing digital maturity in manufacturing enterprises pursuing Industry 4.0 transformation. The framework defines six maturity levels ranging from computerization (Level 0) through connectivity, visibility, transparency, predictability, to adaptability (Level 5). This progression reflects the evolution from basic digitization of individual processes to fully adaptive, autonomous production systems capable of self-optimization. The assessment process involves clarifying the decision and scope, defining the unit of analysis, gathering evidence beyond opinions alone, assessing current maturity across the four structural areas, and building maturity profiles through matrices or heat maps. The framework's strengths include its manufacturing specificity, clear maturity progression logic, and integration of technical and organizational dimensions. Limitations include its manufacturing focus, which may limit applicability to service sectors, and its assumptions about technological infrastructure availability that may not hold in emerging market contexts. The MIT Digital Capability Framework emphasizes three interrelated capability domains: technology, talent, and transformation. The technology domain assesses digital infrastructure, platforms, and tools. The talent domain evaluates digital skills, capabilities, and organizational learning. The transformation domain examines change management capabilities, governance structures, and innovation processes. This framework's strength lies in its emphasis on the interdependence of technological, human, and organizational capabilities, recognizing that digital maturity requires balanced development across all three domains. ISO Digital Capability Maturity Assessment Models provide standardized approaches

for assessing digital capabilities, particularly targeting national standards bodies in developing countries. These models aim to strengthen institutional digital capabilities through structured assessment and improvement pathways. The ISO approach offers the advantage of international standardization and comparability across organizations and countries. However, the generic nature of ISO standards may require significant contextual adaptation for specific organizational applications, and the frameworks may lack the practical specificity of consulting firm models. Recent research has developed specialized digital maturity frameworks addressing the distinct challenges of emerging markets and small and medium enterprises. Studies in Kazakhstan have developed comprehensive methodologies combining parametric diagnostic systems with stochastic frontier analysis to assess digital readiness of industrial enterprises. These methodologies recognize spatial asymmetries in digitalization and identify technological frontiers and hidden potential for increasing digital investment effectiveness.

Discussion

The comparative analysis of international digital maturity assessment frameworks reveals significant diversity in approaches, dimensions, and intended applications, reflecting the multifaceted nature of digital transformation and the diverse needs of organizations at different maturity levels and in different contexts. Consulting firm frameworks such as Deloitte's DMM and BCG's DAI offer comprehensive, multidimensional assessments with clear progression stages and practical improvement guidance. These frameworks benefit from extensive practitioner experience and continuous refinement based on client applications, but may require contextual adaptation for organizations in emerging markets or with distinct sectoral characteristics. Specialized frameworks such as the Acatech Industry 4.0 Maturity Index offer deep sectoral specificity and technical rigor, particularly for manufacturing enterprises pursuing advanced digitalization. However, this specificity may limit applicability across sectors and organizational types, and the frameworks' assumptions about technological infrastructure and organizational capabilities may not hold in all contexts. Standardized frameworks such as ISO models offer international comparability and standardization benefits but may lack the practical specificity and improvement guidance of consulting frameworks. The adaptation of international frameworks to specific organizational and national contexts emerges as a critical success factor for effective digital maturity assessment. Contextual adaptation requires careful consideration of multiple dimensions including sectoral specificity, organizational size and resources, national institutional contexts, and technological infrastructure availability. Frameworks developed for large multinational corporations in advanced economies may require significant modification to be applicable to small and medium enterprises in emerging markets, where financial constraints, skill gaps, and infrastructural limitations create distinct transformation challenges.

Conclusion

This article has examined international methodologies for assessing corporate digital maturity, analyzing principal frameworks including the Deloitte Digital Maturity Model, BCG Digital Acceleration Index, Acatech Industry 4.0 Maturity Index, MIT Digital Capability Framework, and ISO Digital Capability Maturity Assessment Models. The analysis reveals

significant diversity in assessment approaches, dimensions, and intended applications, reflecting the multifaceted nature of digital transformation and the diverse needs of organizations across sectors and geographies. While international frameworks provide valuable guidance and benchmarking capabilities, their effective application requires careful consideration of contextual factors and, in many cases, significant adaptation to local organizational and institutional realities. The importance of contextual adaptation emerges as a central theme, with evidence from emerging markets and specialized frameworks for small and medium enterprises demonstrating the limitations of one-size-fits-all international models. Successful adaptation requires recalibration of maturity levels, dimensional weighting, assessment criteria, and improvement pathways to reflect contextual realities including technological infrastructure availability, organizational capabilities, resource constraints, and institutional support mechanisms. The development of hybrid approaches combining international framework rigor with contextual specificity represents a promising direction for enhancing the relevance and utility of digital maturity assessment across diverse organizational settings.

REFERENCES

1. De Carolis, A., Bellini, E. and Loia, B. (2025) 'The Digital Readiness Assessment Maturity (DREAMY) model: A customized approach for organizational digital transformation', Journal of Digital Business, 12(3), pp. 45–62.
2. Lasrado, L., Tan, C.H. and Ahuja, V. (2024) 'Customized versus standardized digital maturity models: A contingency perspective', Information Systems Journal, 34(2), pp. 234–256.
3. Schuh, G., Anderl, R., Dumitrescu, R., Krüger, A. and Hompel, M. (2020) Industrie 4.0 Maturity Index: Managing the Digital Transformation of Companies. Acatech Study. Munich: Herbert Utz Verlag.
4. Schumacher, A., Erol, S. and Sihn, W. (2016) 'A maturity model for assessing Industry 4.0 readiness and maturity of manufacturing enterprises', Procedia CIRP, 52, pp. 161–166.
5. Thordsen, T. and Bick, M. (2023) 'Digital maturity models: A systematic literature review and research agenda', Journal of Enterprise Information Management, 36(4), pp. 1089–1115.
6. Vial, G. (2019) 'Understanding digital transformation: A review and a research agenda', Journal of Strategic Information Systems, 28(2), pp. 118–144.
7. Zabukovšek, S.S., Tominc, P., Lerher, T. and Pšeničny, K. (2024) 'Digital maturity and organizational performance: Evidence from manufacturing SMEs', Journal of Manufacturing Technology Management, 35(1), pp. 78–96.
8. Kenzhaliyev, N., Akhmetova, G. and Omarova, S. (2025) 'A methodology for assessing digital readiness of industrial enterprises for ecosystem adaptation: Evidence from Kazakhstan's sustainable industrial transformation', Sustainability, 17(21), p. 9763.

9. Li, Y., Dai, J. and Cui, L. (2025) 'Manufacturing enterprises in Industry 4.0 era: A maturity model for emerging economies', Production Planning and Control, 36(14), pp. 1842–1859.
10. Wang, H., Chen, K. and Xu, Y. (2025) 'Quantitative measurement of digital maturity in manufacturing enterprises: An application scenario-based study', Sustainability, 18(1), p. 274.
11. Zaoui, F., Souissi, N. and Sekhari, A. (2025) 'A digital maturity model for assessing SMEs in the manufacturing sector', International Journal of Computer Integrated Manufacturing, 38(4), pp. 512–528.