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Assessing the Digital Economy in Business: A Systematic Approach to Digital Potential, Maturity, and Performance Management

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Abstract: Focusing on innovative economic progress, this research sorts out practical evaluation ways to measure firms' digital potential. It first sorts available evaluation tools for corporate digital shift, digital capacity and maturity, then picks out core measuring metrics. Digital potential covers firms' ICT adoption, data security management and the overhaul of routine workflows and operating modes. This study builds a four-part evaluation system concerning organizational digital reform, intellectual resources, client communication and external market surroundings. Well-known international maturity frameworks mostly evaluate digital progress from strategy, internal culture, daily operation, technical equipment and consumer service. According to cross-border statistics, Nordic nations plus Belgium and Germany own outstanding corporate digital levels; Hungary, Czech Republic and Sweden gain high added value from local ICT industries. Real digital success relies on equipment upgrade as well as cultural adjustment, model renewal and staff digital skill training. This paper sorts mixed qualitative and quantitative evaluation approaches as its core innovation. The customized evaluation framework fits food and high-tech enterprises to judge digital status and make upgrade plans, helping businesses judge transformation readiness, arrange investment and set industrial development targets.

Keywords: Digital economy; Digital transformation; Innovative development; Industry 4.0; Industrial enterprise

Introduction

In the contemporary economic landscape, digital transformation has emerged as a defining paradigm, fundamentally reshaping the mechanisms of production, management, and value creation (Verhoef et al., 2023). This process, often contextualized within the framework of the Fourth Industrial Revolution (Industry 4.0), signifies a shift towards the integration of physical and digital resources, where information and communication technologies become the backbone of economic activity (Schumacher et al., 2022). As organizations navigate this new reality, the ability to effectively leverage digital tools—termed "digital potential"—has become a critical determinant of competitiveness, financial stability, and innovative capacity (Garzoni et al., 2023). Despite the growing body of literature on digitalization, there remains a notable gap in the systematic assessment of this potential, particularly regarding its measurement and strategic implementation across various sectors (Baiyere et al., 2025).

This article explores the multifaceted nature of evaluating the digital economy within business contexts, focusing on the conditions of innovative development. It synthesizes existing approaches to defining and assessing key concepts such as digital potential and digital maturity, highlighting the methodologies proposed by scholars and global consulting firms. By examining quantitative and qualitative indicators, as well as practical frameworks like balanced scorecards (BSC) and digital maturity models, the analysis underscores the importance of a comprehensive, modular approach to evaluation. Furthermore, it considers the broader implications for industrial enterprises, including the transformation of business models, organizational culture, and

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the necessity for a skilled workforce. Ultimately, this work aims to contribute to a more structured understanding of how businesses can measure, manage, and enhance their digital capabilities to achieve sustainable growth in an increasingly digitized economy.

Materials and Methods

TMethodological Framework

This study conducts a comprehensive analysis of existing theoretical frameworks, methodological approaches, and empirical data concerning the evaluation of corporate digital potential and digital transformation. To guarantee the validity and reliability of its research findings, this study adopts a mixed research method combining general scientific methods and domain-specific specialized methods.

The theoretical foundation of this research is established on a systematic review of domestic and foreign academic literature, covering peer-reviewed journal articles, academic monographs, and analytical reports released by top global consulting institutions, including McKinsey & Company, Arthur D. Little, and Acatech. All literature sources are strictly selected based on their pertinence to the core research themes, namely digitalization, Industry 4.0, digital potential, and digital maturity. Current academic research has reached a consensus that digital transformation compels enterprises to reshape their strategic layouts and cultivate dynamic adaptive capabilities to cope with iterative technological changes (Cennamo & Santaló, 2024). Meanwhile, the incorporation of digital maturity assessment frameworks has become a core prerequisite for judging enterprises' organizational readiness for digital transformation and clarifying their transformation gaps (Westerman et al., 2024).

On the basis of the above theoretical foundation, this study constructs a multi-dimensional methodological framework by integrating five complementary scientific approaches, which jointly support the completion of systematic evaluation of corporate digital potential. The specific methodological applications are detailed as follows:

Systematic analysis

This method is adopted to dissect the internal structural composition and interactive correlation of the core elements of corporate digital potential, involving hardware infrastructure, software systems, employee digital competencies, and financial support resources. In addition, systematic analysis is also applied to classify and sort the digital transformation processes of industrial enterprises, forming a clear contextual framework for subsequent research.

Comparative analysis

This approach is mainly used to compare and evaluate mainstream digital assessment models, including the Balanced Scorecard (BSC), Total Performance Scorecard (TPS), Digital Maturity Model, Industry Digitisation Index (IDI), and Business Digitalization Index (BDI). Based on the statistical data from the authoritative international dataset Indicators of the Digital Economy (2020, 2025), this study further carries out cross-country comparative analysis to explore the differentiated development trends and overall characteristics of digitalization levels across different countries.

Synthesis and formalization

To solve the problem of scattered and fragmented evaluation indicators in existing research, this study adopts synthesis and formalization methods to integrate diverse fragmented evaluation approaches into a unified and coherent digital potential assessment system. Specifically, multiple independent indicator dimensions extracted from existing literature are categorized into four thematic modules: digital transformation practice, intellectual capital, customer interactive capability, and business operation environment. All indicators are further standardized into a 0–1 quantitative scoring scale, realizing the quantifiable and standardized measurement of corporate digital potential.

Structural and functional modeling

This method is utilized to visualize and clarify the complex logical correlation and functional coupling relationship among each component of the digital potential assessment system. The structural framework and comparative indicator system of digital potential assessment are intuitively presented through schematic diagrams (Figures 1–3), which enhance the integrity and operability of the assessment model.

Inductive and deductive reasoning

This study applies inductive reasoning to summarize empirical rules from literature data and practical cases, and adopts deductive reasoning to derive universal research conclusions. On this basis, it systematically identifies and verifies the key influencing factors of corporate digital transformation, covering organizational culture, strategic planning capability, financial operation stability, and staff digital professional competencies.

Results

The digital transformation of the economy can be studied as a modern innovative stage of economic development, which is based on the integration of physical and digital resources in the field of production and consumption, in the economy and society. This stage is characterized by new methods of generating, processing, storing, and transmitting information in all spheres of human activity. The very concept of "digitalization" indicates a new stage in the development of production management based on the end-to-end use of modern information and communication technologies, ranging from the Internet of Things to e-government technologies.

At the present stage, trends in innovative development are characterized by a structural restructuring of the economy based on the penetration of information and communication technologies into all spheres and types of activity. In

industry, these changes have been taken into account since the beginning of the fourth industrial revolution, called "Industry 4.0". This concept involves the digitalization of assets of industrial enterprises with the introduction of so–called cyberphysical systems into production and consumption - engineering structures controlled remotely through information and communication technologies. The development of the digital economy has a direct impact on the innovative activities of industrial enterprises, accelerating the introduction of technological innovations and shortening the duration of the innovation process.

Numerous economic literature works are devoted to the study of the problems of economic systems digitalization and processes. However, insufficient attention has been paid to the concept of the digital potential of an organization, assessment methods, quantitative and qualitative measurement. The term "digital potential" in relation to an industrial enterprise appeared in the scientific literature in 2010. The most common approach is to define the concept of "digital potential" as a characteristic of the capabilities of economic systems to use digital technologies. Contemporary research conceptualizes digital potential as a multidimensional construct that encompasses not only technological infrastructure but also human capabilities and organizational readiness for change (Vial, 2024). The concept of "digital potential of an enterprise" is a relatively new concept, both for foreign and domestic science. Scholars explore digital potential as the ability of an enterprise to carry out activities to create, implement and apply information technologies, ensure information security in order to meet the current or future needs of the enterprise. Digital potential is a set of data itself, software and hardware for their storage and processing, and personnel using this data for management.

In general, when exploring digital potential, the following aspects should be taken into account: “potential” comes from the Latin “potentia” – strength, power, internal capabilities that exist in a hidden form and can manifest themselves under certain conditions; the concept of “digital” is used to denote a sign (quality, property) of an object associated with digital (information) technologies that have a certain life cycle and scope in an enterprise.

Digital industrial organization means an integrated set of digital models, methods and tools interconnected on the basis of a data management system. The main objective of the activities of organizations is the integrated planning, evaluation and continuous improvement of the main and auxiliary structures, production processes and resources. The concept of digital transformation of an industrial enterprise is defined as a change in intra-production components, parameters and proportions, connections of the economic system of an industrial enterprise, which determine the gradual transition of an industrial enterprise to a new qualitative digital state.

The leaders in the formation of competitive advantages with the implementation of the digital transformation of the industry are the following concerns: Siemens, ThyssenKrup, Robert Bosch, BASF, Embedded Systems, Smart Factory, Robuste Netze, Cloud Computing и IT-Security, NV, Materialise NV, Limacorporate SPA, Medical Modeling, Inc.

The problem of the digital potential integral assessment, which allows assessing the ability of organizations to implement information technologies and transform business processes, is relevant and in demand. Such an assessment can be carried out in two ways: by forming a balanced scorecard system (BSC), taking into account the level of digitalization, allowing a systematic analysis of the performance of enterprises and based on an integral assessment. An integral indicator – "digital potential of the enterprise" – is proposed, reflecting the actual level and opportunities for the future, taking into account the factors and conditions of the external environment (this is the readiness of the industry for the formation of a digital environment, the readiness of specific key stakeholders of the enterprise to interact, the level of consumer friendliness, the degree of state support for digitalization processes). The proposed approach makes it possible to analyze both the current level of digitalization of individual processes in an organization and the opportunities for increasing digital potential. The readiness of industrial organizations to accept new transformational changes requires, along with the introduction of new information technologies in the processes of organizing their activities, a change in the business model (Li et al., 2023).

To assess the potential for business digitalization, the Industry Digitisation Index (IDI) proposed by McKinsey&Company is used, which includes 23 indicators grouped into three groups: assets, use and labor.

Digital potential is one of the elements of the enterprise economic potential and a distinctive feature of its assessment methodology is a modular structure that allows assessing the potential of enterprises of both full and incomplete cycles in the formation of flexible value chains in the digital economy. The methodology takes into account the basic principles and elements of the Industry 4.0 concept and the Technet roadmap.

The growth rate of the enterprise digital potential is determined by the presence of both hardware and software, and taking into account the financial component (financial resource availability, liquidity indicators and financial stability ratios), which makes it possible to justify the possibility of implementing a digital strategy.

The results of the studies have shown that estimation of the digital potential of food organizations requires creation of a hierarchy of private indicators, that makes the basis for integral indicator formation. The following groups of estimated private indicators have been identified:

1. Digital transformation of the organization: the level of business processes automation, scientific and information resources, return on investment in digitalization, income from new digital services;
2. Intellectual capital: the presence of digital competencies and personnel capable of using digital technologies, the attitude of the team to digital innovations;

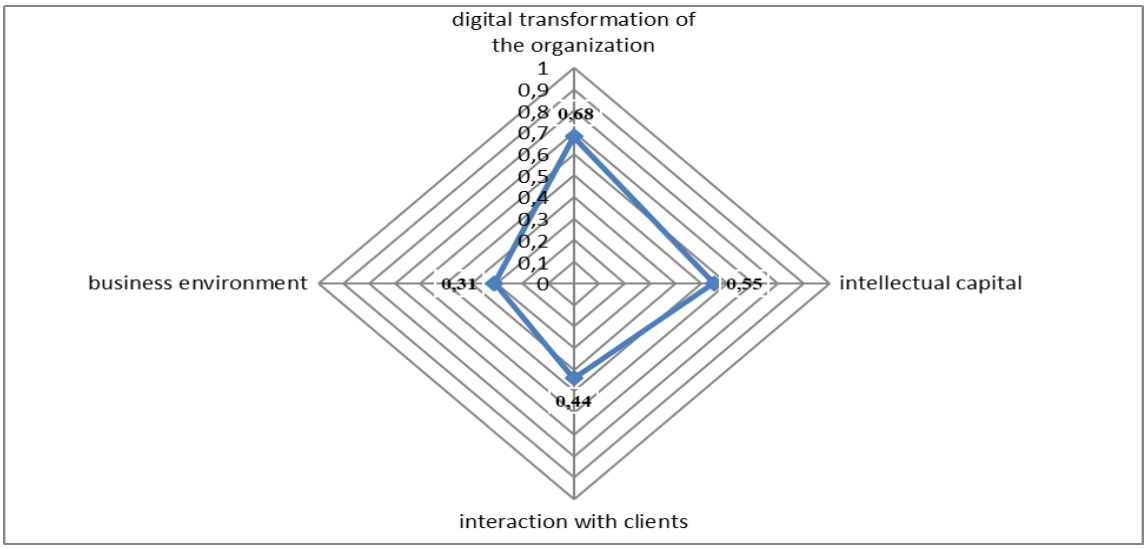

Figure 1 | Estimation of the digital potential of food organizations

Source: suggested by the author

3. Customer interaction: service quality and customer satisfaction, online sales;

Business environment: level of competition, financial stability of the business, innovative products.

Since the listed indicators are of a different nature and can be estimated both by its quantity and quality, their formalization is proposed, which take values from 0 (at the lowest value of the indicator) to 1 (in the ideal case).

Figure 1 shows a diagram for assessing the digital potential of organizations in the food sector.

Data shown in Figure 1 demonstrates a low level of assessment indicators (business environment, customers interaction) for the food sector which requires the development of appropriate measures to activate and grow them.

Thus, the organization digital potential is its ability to perform activities to create, introduce, develop and implement information and communication technologies in the context of the transformation of business processes, business models in order to ensure strategic competitive advantages in the markets, financial stability and performance.

In the economic literature, most of the methods are based on the analysis of statistical data related to the assessment of the level of informatization, automation and digital maturity of organizations (readiness of organizations to internal and external changes associated with digitalization).

As reflected in the statistical results of Figure 1, the food industry exhibits relatively underdeveloped performance in two core evaluation dimensions, namely the business environment and customer interaction, indicating an urgent need for targeted optimization and promotional strategies to boost digital development in these weak areas. On this basis, organizational digital potential can be defined as the comprehensive capacity of enterprises to carry out digital construction practices. Specifically, it refers to the ability to create, introduce, iterate and implement information and communication technologies amid the continuous upgrading of business processes and operating models, so as to consolidate core competitive advantages in the market, maintain stable financial operation and sustain excellent operational performance.

Existing economic research primarily adopts statistical analysis as the mainstream research paradigm to measure corporate digital development. Most prevailing evaluation methods rely on empirical statistical data to assess enterprises' informatization level, automation degree and overall digital maturity, which essentially reflects how well organizations adapt to internal operational adjustments and external environmental changes driven by digitalization trends.

Digital maturity acts as a core metric to measure the digital preparedness of national institutions and market organizations for embedding digital solutions into daily operational workflows. From a corporate perspective, digital maturity benchmarks an enterprise's digital development level against industry-leading standards through standardized evaluation criteria, which directly determines its capacity to deliver high-quality customer value propositions. Academically, it is also interpreted as an organization's adaptive capability to keep pace with technological innovation while capturing and sustaining competitive edges in the digital era (Klein & Todesco, 2024). Current research divides digital maturity evaluation into two core research paradigms. The first paradigm focuses on diagnosing enterprises' inherent readiness to launch and advance digital transformation initiatives, while the second concentrates on examining the practical application effect of digital technologies and exploring how such technological adoption reshapes corporate business models and enhances market competitiveness.

A complete digital maturity evaluation system covers multiple core operational dimensions of modern enterprises, including strategic planning and business model design, organizational culture and talent literacy, customer experience and relationship management, operational processes and digital technology infrastructure, as well as customer value embodied in corporate products and service systems. In practical industrial application, systematic digital maturity assessment serves multiple strategic purposes. It enables enterprises to objectively identify their current digital development level across key functional modules such as organizational structure, core resources, critical business processes and technical facilities. Based on the diagnostic results, enterprises can clarify key development priorities, set phased development objectives aligned with overall digital strategies, and formulate targeted implementation roadmaps to support the steady advancement of digital strategic layout.

Global top consulting institutions have long committed to exploring digital maturity evaluation systems, focusing on analyzing the digital development level of various organizations and tracking their dynamic changes during digital transformation. A series of mature and widely recognized evaluation frameworks have been established to quantify the progress and practical effectiveness of corporate digital upgrading. The classic Digital Maturity Model adopts a multi-dimensional evaluation perspective, covering six core organizational dimensions including customer operation, business strategy, technical infrastructure, production systems, organizational structure and corporate culture. The whole evaluation system is refined into 28 sub-items and 179 specific quantitative indicators, enabling comprehensive and fine-grained digital capability assessment.

The Digitization Piano framework focuses on the key links of corporate value chain operation, covering business models, organizational structures, human resource allocation, operational processes, IT infrastructure capabilities, product service systems and customer interaction mechanisms. It evaluates the digital development level of each module through targeted professional questions, with the core purpose of identifying the gap between enterprises' actual digital status and expected transformation goals. Developed by the German National Academy of Sciences and Technology, the Acatech Industry Maturity Index 4.0 realizes industrial digital maturity evaluation from four key dimensions of resources, information systems, corporate culture and organizational structure, fully considering the phased development characteristics of enterprises and the operational logic of industrial business processes (Acatech, 2022). In addition, the Digital Transformation Index proposed by Arthur D. Little constructs a comprehensive evaluation system based on seven core modules, including strategic leadership, product and service iteration, customer management optimization, operational and supply chain upgrading, corporate governance, information technology construction, as well as workplace and cultural development.

Digital transformation represents an innovative modern business operation mode, which relies on digital information technology iteration and is fundamentally restricted by enterprises' digital maturity, namely their adaptability to internal and external digital changes. In addition to technical and institutional factors, the overall digital development level of an organization is closely dependent on its financial support capacity, which provides essential resource guarantees for digital facility construction, technological introduction and innovative transformation. Essentially, digital transformation is the comprehensive adaptation of traditional business entities to the operational rules of the digital economy, and it can be analyzed from multi-layered research perspectives. At the societal level, it drives the reshaping of social value concepts, cultural systems, interpersonal relationships and institutional frameworks. At the industrial level, it promotes technological innovation and empowers the iterative upgrading of economic operational mechanisms. At the corporate level, it triggers profound changes in market competition patterns, industrial development logic, business processes and profit models.

Benefiting from the continuous innovation of modern project management and data analysis technologies, more enterprises have established professional innovation and digital transformation departments. These institutions focus on exploring, verifying and incubating new business directions, innovative products and digital solutions, becoming the core engine of corporate digital upgrading. In this context, the digital maturity model serves as a practical analytical and management tool, which can scientifically assess the current digital skills and comprehensive capabilities of organizations, and support enterprises in formulating targeted improvement strategies to make up for digital shortcomings.

For industrial enterprises, comprehensive situational assessment and systematic data analysis constitute the primary and foundational stage of digital transformation. Combined with SWOT, PEST and in-depth strategic analysis, enterprises can clarify clear transformation objectives, so as to build a scientific and feasible digital transformation development framework. While the core goal of industrial digital transformation is to optimize production and operation modes and improve the economic benefits of industrial activities, it also aims to generate multi-dimensional synergistic effects through coordinated digital initiatives, realizing the holistic upgrading of industrial operational quality and comprehensive benefits.

The Business Digitalization Index (BDI) is a prevalent quantitative tool adopted to measure the adaptive speed and practical effect of enterprises' digital transformation. Its evaluation system covers the full range of corporate digital application scenarios. The index quantifies enterprises' digital development level by examining the application of digital transmission and storage tools including cloud platforms, corporate mail, instant messaging tools and operational automation systems. It also incorporates the practical deployment of emerging digital technologies such as artificial intelligence, the Internet of Things and 3D printing, as well as

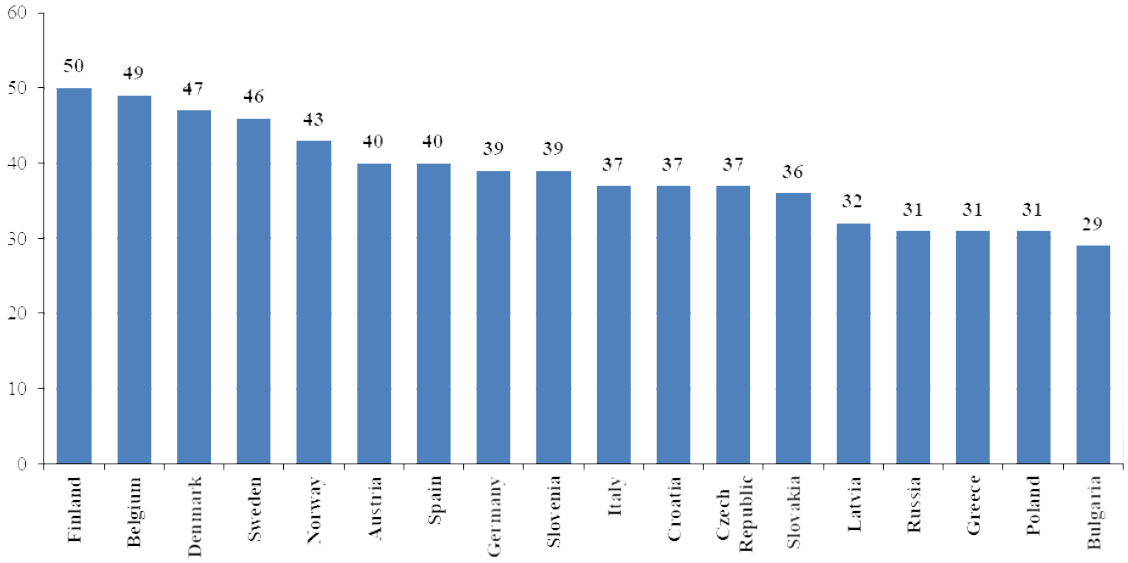

Figure 2 | Business digitalization index of various countries

Source: Eustat. *Digitalization indicators of the European Union and the Basque Country, by country. 2025*

electronic office and document management systems. Meanwhile, the evaluation scope extends to enterprises' internet marketing and business development tools, digital information security and anti-virus systems, and further assesses the initiative of enterprise management in digital learning and the overall digital competency level of internal staff, achieving a systematic and comprehensive quantitative evaluation of corporate digital adaptation capabilities.

Figure 2 shows the business digitalization index of various countries in 2025.

As reflected by the data in Figure 2, European countries including Finland, Belgium, Denmark, Sweden, Norway, Austria, Spain, Germany, Slovenia, Italy, Croatia, the Czech Republic, Slovakia, Latvia and Russia boast a relatively mature level of business digitalization. Serving as the core technical pillar of the digital economy, digital transformation restructures the value-added composition of products by embedding digital and intelligent elements into the whole product creation chain through the application of digital technologies.

In European economies, innovative industrial entities account for roughly 50% of the overall industrial structure. A systematic analysis of the innovation practices of industrial organizations reveals diverse dimensions of innovation that drive industrial upgrading and development. Product innovation focuses on developing new offerings and optimizing the quality attributes of existing products, while process and technological innovation centers on the research and development of new technologies, equipment upgrading and production renovation. In terms of production development, production innovation aims to scale up production capacity, realize production diversification and modernization, and adjust the internal production structure of enterprises.

Beyond technical and production upgrades, innovation also covers multiple operational and managerial dimensions. Economic innovation optimizes the planning modes of all business activities and improves incentive mechanisms for industrial operation. Organizational innovation introduces brand-new organizational models to workplace arrangement and external cooperative relations of enterprises, and managerial innovation targets the optimization of organizational frameworks, decision-making mechanisms and overall enterprise management systems. Meanwhile, information innovation contributes to the optimization of internal and external information flows, enhancing the reliability, accessibility, openness and acquisition efficiency of various types of information resources. Marketing innovation focuses on the targeted optimization and adjustment of product sales and distribution strategies to adapt to market changes.

Furthermore, innovation extends to social and ecological fields closely linked to industrial development. Social innovation is committed to improving working conditions, optimizing work attributes, building a positive workplace psychological atmosphere, and perfecting enterprise social security systems, whereas ecological innovation focuses on ecological protection and environmental quality improvement to realize green industrial development. Notably, all these types of innovation are closely linked and mutually reinforcing in practice. Technological innovation reshapes the operational logic of production processes and drives the reorganization of production models, which in turn lays a solid foundation for the generation and iteration of economic and managerial innovation.

International and national statistical standards classify industrial economic activities into four categories based on

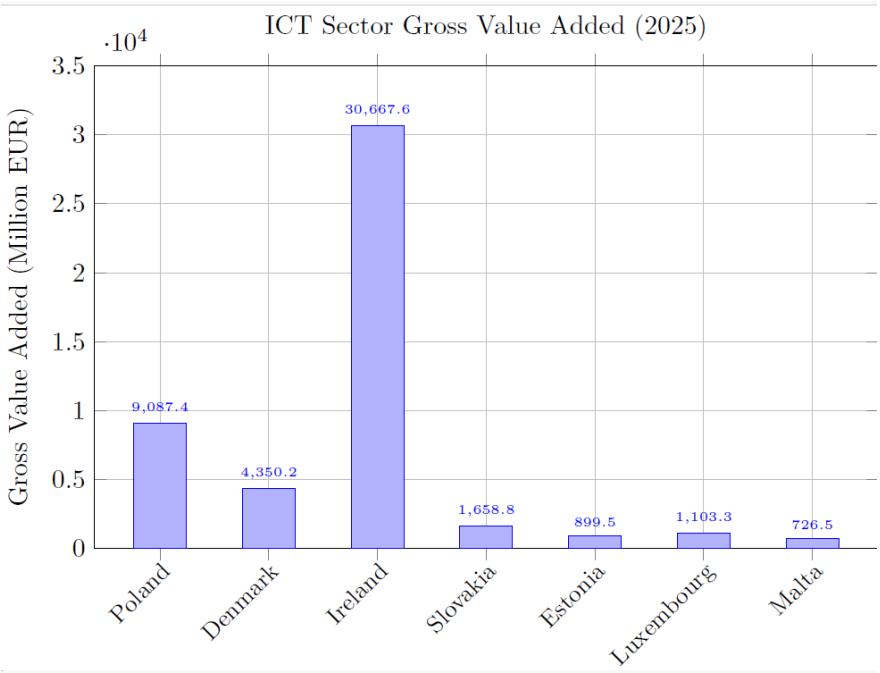

Figure 3 | The share of the ICT sector in the gross value added of various countries

Source: Indicators of the digital economy: statistical collection, 2025 Eurostat.

technological efficiency levels: high-tech industries, upper-medium-tech industries, lower-medium-tech industries and low-tech industries, among which high-tech and upper-medium-tech sectors are collectively defined as high-end industrial production fields. The high-tech industry covers the manufacturing of basic pharmaceutical products and medicinal preparations, computing, electronic and optical equipment, as well as aircraft and supporting aviation equipment. Upper-medium-tech industries primarily include chemical product manufacturing, electrical equipment manufacturing, general machinery and equipment manufacturing, automobile, trailer and semi-trailer manufacturing, and the production of other transportation equipment and facilities.

Figure 3 shows the share of the ICT sector in gross value added in 2025 for various countries.

The key areas of digital transformation include changing organizational culture, transforming business models and products, and ensuring the growth of enterprise flexibility. The role of organizational culture in digital transformation has been identified as a critical success factor, influencing how employees adopt and adapt to new digital tools and processes (Bulińska-Stangrecka & Bagieńska, 2023). At the same time, the need for highly qualified employees is increasing, especially for specialists in digital technologies, data analytics and graduates in the field of science, technology, engineering and mathematics. The development of digital competencies among personnel is essential for successful transformation, as human capital remains a key enabler of digital innovation (Sousa & Rocha, 2024). Modern methods of personnel search and training programs, formed taking into account the goals and objectives of Industry 4.0, are of decisive importance at the present stage and in the future.

It is advisable to evaluate the effectiveness of digital transformation of enterprises in high-tech industries by stages of the digital transformation strategy. When evaluating the effectiveness, it is necessary to take into account the costs of implementing investment projects for the digitalization of economic processes within the considered stages of the product life cycle and the cumulative effect received by the organization as a whole. Furthermore, digital transformation contributes to organizational resilience by enabling firms to adapt more effectively to disruptions and changing market conditions (Ivanov & Dolgui, 2023).

One of the advanced approaches in the context of innovative development is the concept of business performance management (Business Performance Management, BPM) is a set of integrated cyclic management and analysis processes, as well as modern technologies that have the relation to both financial and operational activities of the organization. BPM allows an organization to define strategic goals, and then – evaluate the effectiveness of your activities in relation to these goals and manage the process of achieving goals, at the same time key BPM. The processes are related to the implementation of the organization's strategy and include financial and operational planning, consolidation and reporting, modeling, analysis and monitoring of key performance indicators.

Thus, BPM represents a holistic, process-oriented approach to managerial decision-making, aimed at improving the ability of an organization to assess its condition and

manage the effectiveness of its activities at all levels by bringing together all stakeholders in its activities within a common integrated management environment.

With the development of strategic management, each of the above concepts was refined and improved by other scientists and specialists. So on the basis of combining and developing such theories as Balanced Scorecard (BSC), Comprehensive Quality Management (Total Quality Management, TQM), Management Performance Management (PM), Competence Management (CM) K.H. Rampersad has developed a universal system of indicators (Total Performance Scorecard, TPS), extending the concept of balanced. K. H. Rampersad defines the universal system of indicators as "a systematic process of continuous, consistent and regular improvement, development and training, which is aimed at sustainable the growth of the results of the activities of employees and the organization", noting at the same time, that the basic components of this holistic theory of management are improvement, development and training, which are closely related to each other and a balance must be maintained between them (Rampersad, 2003)

The TPS system consists of the following five elements: a personal system of balanced indicators, an organizational system of balanced indicators, universal quality management, management performance and competence management, Kolb learning cycle.

According to K. H. Rampersad, in other similar management systems, insufficient attention is paid to the important initial stage of formulating personal goals and correlating them with individual behavior and with the accepted goals of the organization, vital for achieving-sustainable organizational and strategic development. The purpose of this the approach, according to K. H. Rampersad, is to achieve the maximum level of responsibility and dedication of employees, as well as to encourage individual learning, group learning, and creative skills development (Ibidem).

This approach also contributes to the formation of motivation, creative thinking, enjoyment of work and dedication to work, increased responsibility, inspiration and enthusiasm.

Therefore, to use a universal system of performance indicators means managing and making decisions based on the facts and figures related to the realization of the vision. Application of this theory is effective only when it is based on a strategic development process in which the vision and mission, key success factors, performance indicators, learning and planning processes of both the individual and the organization complement each other. Together they contribute to implementation of continuous improvement at all levels of the organization and development of human potential of employees.

Modern digital organization is one that actively integrates technology into products and services, uses IT solutions to actively interact with customers, technologies to make decisions and improve business processes. In general, digitalization is a continuous process aimed at improving the efficiency of functioning and sustainable business development. For business development, it is necessary to constantly introduce advanced technologies, improve the quality of service, the level of automation, as well as use modern tools for analyzing and evaluating the effectiveness of both individual investment projects and digital potential. Demanded direction is the development of an algorithm for intellectual analysis of business processes, which ensures a gradual transition from a questionnaire, reports to intelligent systems in order to make a profit and economic growth.

The development of economic digital transformation follows a set of core operational and strategic orientations to drive industrial upgrading and corporate competitiveness. Primarily, continuous investment in digital transformation and technological innovation serves as a fundamental driving force, with over half of ICT spending allocated to related construction and research initiatives. To consolidate market competitiveness, all institutional organizations are required to formulate targeted and systematic digital transformation strategies to guide long-term development. Meanwhile, enterprises and institutions need to fully integrate software training and automated operation tools into daily management and business processes to optimize operational efficiency, and organizational leaders will actively invest in formulating industry-specific implementation strategies to promote the grounded application of digital transformation plans. In terms of technical infrastructure iteration, distributed cloud technology, which realizes the all-weather and accessible coverage of public cloud services across multiple regional scenarios, will be widely popularized. It is projected that 70% of organizations will adopt unified hybrid management technologies, tools and standardized processes, clarify core business performance assessment indicators, and comprehensively upgrade and optimize internal IT infrastructure. Beyond cloud infrastructure, blockchain technology acts as a key transformative tool for business operation mechanisms, restructuring interactive relationships within business activities and delivering transparent, safe and reliable data exchange throughout the entire business ecosystem. In addition, the popularization and accessibility of professional knowledge application constitute an important part of digital transformation. By simplifying operational experience and usage thresholds, organizations can help practitioners efficiently master and apply professional technical and business tools as well as specialized system platforms in daily professional work, further releasing the practical value of digital technologies.

Conclusions

This study has provided a comprehensive examination of theoretical and methodological approaches to assessing digital potential and digital maturity in business structures under conditions of innovative development. The analysis reveals that digital potential is a multidimensional construct encompassing technological infrastructure, intellectual capital, organizational culture, and the capacity for business model transformation. The proposed modular assessment

framework, integrating four groups of private indicators—digital transformation, intellectual capital, customer interaction, and business environment—offers a practical tool for evaluating enterprise readiness for digital transformation.

The comparative analysis of digital maturity models demonstrates that leading global consulting firms and academic institutions emphasize the alignment of strategy, organizational culture, and technological capabilities. Empirical data from the Business Digitalization Index (2025) confirms that Nordic and Western European countries maintain leadership positions in business digitalization, reflecting sustained investment in digital infrastructure and human capital development. The analysis of ICT sector contributions to gross value added reveals significant heterogeneity across European economies, with Hungary, the Czech Republic, and Sweden demonstrating strong performance.

A critical finding concerns the centrality of human factors in digital transformation. Effective digitalization requires not only technological modernization but also fundamental changes in organizational culture and systematic development of digital competencies among personnel. The Total Performance Scorecard framework underscores the necessity of aligning personal goals with organizational objectives to foster employee engagement and continuous learning.

Based on the findings, the following recommendations are proposed: **1)** Enterprises should adopt integrated assessment frameworks that combine quantitative metrics with qualitative evaluations of organizational culture, leadership commitment, and change management capacity. Such comprehensive approaches enable more accurate identification of digitalization gaps and strategic priorities; **2)** Organizations must invest systematically in human capital development, focusing on digital competencies, creative skills, and continuous learning programs. The alignment of individual and organizational goals, as emphasized in the TPS framework, is essential for achieving sustainable transformation; **3)** Policymakers should support digitalization through targeted investments in digital infrastructure, innovation ecosystems, and educational programs that develop STEM competencies. Cross-country comparative analysis indicates that sustained public investment correlates with higher levels of business digitalization; **4)** Future research should focus on longitudinal studies tracking digital transformation trajectories, sector-specific digitalization patterns, and the relationship between digital maturity and organizational resilience in the context of economic uncertainty.

Declarations: The authors include editorial board members of this journal. A strict recusal policy was applied with independent peer review, and no preferential treatment was provided.

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Author Contributions: Tsyganov Alexander: Conceptualization, Methodology, Investigation, Formal analysis, Visualization, Writing–original draft; Mickiewicz Bartosz: Data curation, Writing–review & editing, Supervision.

References

1. Acatech. (2022). Acatech Industry Maturity Index 4.0: Digital transformation of industrial companies. National Academy of Science and Engineering.
2. Baiyere, A., Salmela, H., Nieminen, H., & Kankainen, T. (2025). Assessing digital capabilities for digital transformation — The MIND framework. Information Systems Journal, 35(1), 6–38. https://doi.org/10.1111/isj.12519
3. Bulińska-Stangrecka, H., & Bagieńska, A. (2023). The role of organizational culture in digital transformation: A systematic literature review. Journal of Organizational Change Management, 36(4), 589–612. https://doi.org/10.1108/JOCM-08-2022-0237
4. Cennamo, C., & Santaló, J. (2024). Digital transformation and competitive advantage: A dynamic capabilities perspective. Strategic Management Journal, 45(2), 321–348. https://doi.org/10.1002/smj.3562
5. Eustat. (2025). Digitalization indicators of the European Union and the Basque Country, by country. 2025. Retrieved April 1, 2026, from https://en.eustat.eus/elementos/ele0006100/ti_digitalization-indicators-of-the-european-union-and-the-basque-country-by-country-2025/tbl0006186_i.html
6. Eurostat. (2025). ICT sector share of gross value added (isoc_bde15ag) [Statistical dataset]. European Commission. Retrieved April 1, 2026, from https://ec.europa.eu/eurostat
7. Garzoni, A., De Turi, I., Secundo, G., & Del Vecchio, P. (2023). Fostering digital transformation through intellectual capital: A systematic review. Journal of Intellectual Capital, 24(2), 421–447. https://doi.org/10.1108/JIC-12-2021-0325
8. Ivanov, D., & Dolgui, A. (2023). Digital supply chain management and Industry 4.0: A review and research agenda. International Journal of Production Research, 61(2), 553–575. https://doi.org/10.1080/00207543.2022.2144687
9. Klein, V. B., & Todesco, J. L. (2024). Digital maturity and organizational performance: A systematic review and future research directions. Technology in Society, 76, 102–118. https://doi.org/10.1016/j.techsoc.2023.102456
10. Li, F., Nucciarelli, A., & Roden, S. (2023). Digital transformation and innovation ecosystems: A cross-country comparative analysis. Research Policy, 52(3), 104–119. https://doi.org/10.1016/j.respol.2022.104711
11. Rampersad, H. K. (2003). Total performance scorecard: Redefining management to achieve performance with integrity. Butterworth-Heinemann.
12. Schumacher, A., Nemeth, T., & Sihn, W. (2022). Digital maturity assessment in manufacturing enterprises: A systematic literature review. International Journal of Production Research, 60(1), 342–363. https://doi.org/10.1080/00207543.2021.1987556
13. Sousa, M. J., & Rocha, Á. (2024). Digital transformation and human capital development: A systematic review. Journal of Business Research, 172, 114–128. https://doi.org/10.1016/j.jbusres.2023.114456
14. Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Dong, J. Q., Fabian, N., & Haenlein, M. (2023). Digital transformation: A multidisciplinary reflection and research agenda. Journal of

Business Research, 166, 114–129. https://doi.org/10.1016/j.jbusres.2023.114129

15. Vial, G. (2024). Understanding digital transformation: A review and a research agenda. Journal of Strategic Information Systems, 33(1), 101–118. https://doi.org/10.1016/j.jsis.2023.101789

16. Westerman, G., Bonnet, D., & McAfee, A. (2024). The digital transformation playbook: Rethinking your business for the digital age. MIT Sloan Management Review, 65(2), 34–45.