



Digital Business Transformation: Harmonizing Theory and Practice and Conceptualizing Platform-Based Approaches to Knowledge Management

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Abstract

The purpose of this study is to examine the problem of harmonizing theory and practice in the management of digital business transformation and to conceptualize platform-based approaches to knowledge management in this field. This objective determined the two-stage research design of the study. In the first stage, an in-depth analysis was conducted to assess how management solutions for digital business transformation are represented in Russian academic literature. Based on an empirical study of the contribution made by the academic community to addressing practical issues of digital business transformation, the authors identified the extent to which relevant research is represented in the literature and assessed the practical significance of its findings. Additionally, a comparative analysis of the views of Russian and foreign researchers was performed. This analysis revealed both the convergence of Russian and international perspectives on the development of digital business transformation theory and several points of differentiation. The study found that theoretical research cannot be fully developed without feedback from the business community, while business organizations require methodological support but are constrained by institutional limitations. After identifying the imbalance between theory and practice in digital business transformation and determining its causes, the second stage of the study focused on conceptualizing platform-based approaches to knowledge management in this area. Since the state is also a stakeholder in digitalization processes, the authors conceptualized the possibilities and prospects of applying a platform-based approach to the organization of cooperation between the academic and business communities in the field of digital business transformation. As a result, a configuration model of a platform ecosystem for interaction between the academic and business communities is proposed.

Keywords: digital business transformation management, platform-based solutions, innovation, ecosystems, business models

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企业数字化转型： 理论与实践协调问题及该领域知识管理平台化方法的概念化

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摘要

本研究旨在探讨企业数字化转型管理中理论与实践协调的问题，并对该领域知识管理的平台化路径进行概念化。基于这一研究目标，本文采用两阶段研究设计。第一阶段对俄罗斯科学文献中企业数字化转型管理解决方案的呈现情况进行了深入分析。通过实证考察学术界在解决企业数字化转型实践问题方面的贡献，作者确定了相关研究在文献中的呈现程度，并评估了其研究成果的实践意义。此外，本文还对俄罗斯研究者与国外研究者的观点进行了比较分析。分析结果表明，俄罗斯和国际学术界关于企业数字化转型理论发展的认识既存在趋同性，也存在若干差异点。研究发现，如果缺乏来自商业界的反馈，理论研究难以得到充分发展；与此同时，企业组织需要方法论支持，但又受到制度性限制。在识别企业数字化转型领域理论与实践之间的不平衡并确定其成因之后，研究第二阶段重点对该领域知识管理的平台化路径进行了概念化。鉴于国家也是数字化进程中的利益相关者，作者进一步概念化了在企业数字化转型领域运用平台化路径组织学术界与商业界合作的可能性和前景。作为研究结果，本文提出了学术界与商业界互动的平台生态系统配置方案。

关键词：企业数字化转型管理，平台化解决方案，创新，生态系统，商业模式

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Introduction

In the modern world, digital business transformation (DBT) is becoming not only a major factor in organizational competitiveness in a rapidly changing market, but also an integral part of strategic development. The adoption of digital technologies creates new opportunities to improve efficiency, optimize business processes, enhance customer experience, and address other strategic objectives. At the same time, despite the wide range of digital solutions that could support effective digital transformation, many companies still postpone DBT, citing various barriers. For example, according to PwC's 28th Annual Global CEO Survey, *Reinvention on the Edge of Tomorrow*, "42% of CEOs believe their companies will not be viable in 10 years if they do not transform their business models"¹ (i.e., carry out digital transformation. — Authors' note). PwC identifies three key barriers to transformation: poor decision-making quality, insufficient resource reallocation, and short planning horizons among executives.² Other studies have shown that DBT is hindered by managers' insufficient understanding of the purpose and value of digitalization, as well as by shortcomings in methods for assessing

the effectiveness of DBT implementation³. Additional obstacles include uncertainty surrounding digital transformation, fear of making mistakes, the absence of a strategy, fragmented information flows, and painful perceptions of innovation⁴. The greatest difficulties in DBT implementation are related to personnel adaptation, as reported by 85% of respondents in a study conducted by the HSE ISSEK. Difficulties associated with business system integration are also significant (75%), whereas budget constraints proved to be relatively insignificant, being mentioned by only 2% of respondents⁵.

These findings drew our attention to several important issues. The first is that, according to a number of surveys, including those mentioned above, a substantial share of DBT implementation problems is rooted not in technical issues, although such issues do exist and will always exist, but in the management of organizational development processes, that is, in strategic management competencies. Therefore, given the availability of numerous technical solutions, the wide supply of digital technologies on the market, and companies' ability to develop such technologies independently, the management of digital business

¹ <https://op-ex.ru/article/pereomyslenie-biznes-strategij-itogi-issledovaniya-pwc/>.

² Ibid.

³ <https://clck.ru/3MqAtj>.

⁴ <https://trends.rbc.ru/trends/industry/cmrm/639b1ceb9a7947560301215f>.

⁵ <https://issek.hse.ru/mirror/pubs/share/890550370.pdf>.

transformation becomes a highly significant, if not central, issue. It is precisely this issue that makes company executives hesitant to move to the active phase of DBT and assume responsibility for its outcomes. As a result, they postpone DBT or implement it only in isolated areas. In this regard, we focus specifically on the managerial aspect of DBT, considering digital solutions in business processes to be only one component of a broader process of digital business transformation. DBT involves rethinking the business model and developing a strategic vision that can enable a company to move to a qualitatively new level of development. This, in turn, requires structural changes in value creation processes. The decision to undertake DBT is made at the strategic level, but it also requires tactical decisions, consistency, and interaction. DBT unfolds across structural, temporal, functional, and other dimensions, both vertically and horizontally. Accordingly, management processes at all levels must be transformed and adapted to the conditions of digitalization and innovation.

The second concerns the fact that, having identified problems in the practical implementation and management of DBT, we assumed that representatives of business organizations may need to turn to academic developments in this field. Contemporary Russian academic literature may already offer applicable approaches to addressing these problems, but these solutions may remain unnoticed by practitioners. This provides grounds for studying the accessibility of theoretical and practical knowledge and its uptake by practitioners. It also raises the issue of the need to harmonize DBT theory and practice by creating opportunities for coordinated and balanced development and, subsequently, conceptualizing platform-based approaches to knowledge management in this field.

The third concerns the fact that survey results and previous studies indicate insufficient mutual attention between practitioners and theorists to the outcomes of each other's academic and practical work. In this regard, we believe that examining the conditions for harmonizing the development of theory and practice requires not only asking why the business community shows limited interest in applying theoretical research findings, but also demonstrating that contemporary academic literature contains concepts and models that can be considered and applied by business organizations and can therefore serve as a basis for meaningful business decisions. At the same time, our focus is not limited to technical issues. The study places greater emphasis on managerial aspects, which are particularly important under current conditions because they enable companies to make decisions on DBT and build a system for managing it. In other words, they help overcome concerns associated with DBT, provided that effective and methodologically sound DBT management concepts are available for practical use.

Taken together, these considerations provide a basis for examining contemporary academic literature in terms of the extent and nature of research on DBT. This led us to formulate the first research task of the present study; the second task is discussed below. To this end, we conducted a study based on statistical and economic-mathematical methods, systematic literature analysis, and data visualization.

1. Conditions for Harmonizing Theory and Practice: Examining the Academic Community's Contribution to Addressing Practical Issues of DBT

The conditions for harmonization were identified by analyzing how academic research contributes to addressing practical DBT issues. The empirical analysis of publications and the comparison of approaches adopted by Russian and foreign researchers were carried out using the systematic literature review method described in [Kitchenham, Charters, 2007]. Based on this method, seven stages were identified that determined the research design: (1) substantiating the need for a systematic literature review; (2) formulating questions for in-depth study; (3) developing criteria for forming a representative sample; (4) generating search queries; (5) evaluating the sample; (6) addressing the research questions; and (7) comparing the results with those obtained from the analysis of foreign publications.

1.1. Substantiating the Need for a Systematic Literature Review (Stage 1)

At the first stage, we analyzed publications related to DBT and its management. Using the capabilities of the eLibrary, we formed a sample of academic publications published between 2000 and 2025 that mention DBT. The sample was formed based on the search results for Research Question 0: "The total number of Russian academic publications on digital transformation." The search query returned 12,337 results in the full texts of all articles; the systematization is presented in Figure 1.

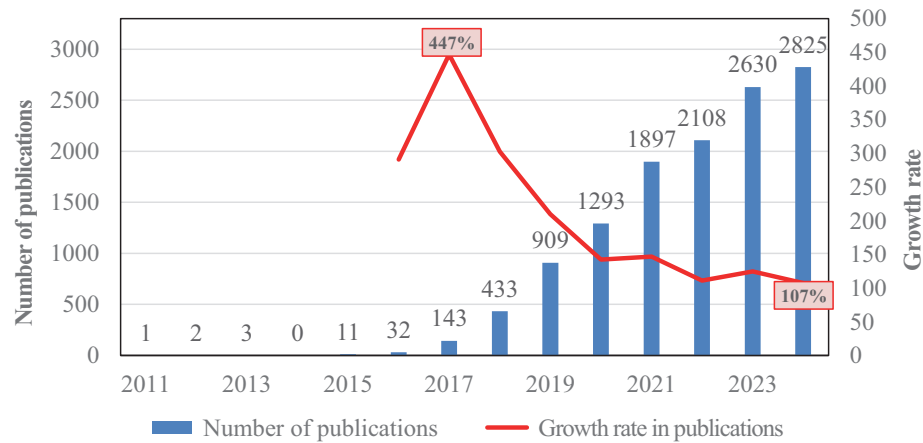
The analysis showed that the growth rate of publications addressing DBT-related issues has been declining. The smallest increase was recorded in 2024, when the number of publications exceeded the 2023 level by only 7%: 2,825 publications compared with 2,630, respectively. Given the continuing relevance and significance of DBT research, this slowdown may be explained by a stabilization of interest in the topic. At the same time, it may also indicate a decline in researchers' interest in DBT itself, which could be associated with limited demand from practitioners for the results of academic research in this field.

The study results also indicate the need to examine research on DBT in Russian academic literature from both quantitative and qualitative perspectives. For this purpose, a word cloud was generated using data visualization methods. The word cloud was based on the keywords used in the analyzed publications and is shown in Figure 2.

As Figure 2 shows, artificial intelligence is the most frequently mentioned term in the analyzed publications. Other common keywords include strategy, efficiency, the state, organization, bank, etc.

At the same stage, the solutions to DBT-related problems proposed in a number of publications were systematized, as shown in Table 1.

The first-stage results clearly demonstrated the need for a systematic literature review and provided the basis for the in-depth analysis carried out at the subsequent stages.



Source: compiled by the authors based on eLibrary data.

Fig. 1. Publications on Digital Business Transformation in eLibrary, 2010–2024

1.2. Formulating Research Questions for In-Depth Analysis (Stage 2)

To identify which DBT barriers are discussed in Russian academic literature, a set of relevant research questions was formulated:

- Question 1: What key barriers hinder successful DBT in Russia?
- Question 2: What factors contribute to the success of DBT in Russian companies?
- Question 3: Which technologies and tools are most effective for DBT in Russia?
- Question 4: What new business models and strategies are emerging from digital transformation in Russian companies?



Source: prepared by the authors using eLibrary data.

Fig. 2. Word Cloud for Research Question 0 Based on eLibrary Data, 2010–2024

Table 1
Solutions to Key Problems of Digital Business Transformation Discussed in the Analyzed Publications

Problem area	Identified DBT-related problems	Proposed solutions discussed in the publications
Low digital maturity in key sectors of the economy	Difficulties in integrating digital solutions into existing production processes	Development of a digital strategy aligned with business objectives; investment in digital infrastructure, including a unified digital platform, corporate networks, and data warehouses; gradual automation; and development of a digital ecosystem [Puzanova, 2023]
	Rising production labor costs due to insufficient automation and robotization of production processes	Automation of business process management through an intelligent operational delegation system [Rodina, 2020]
	Inability to implement digital enterprise management systems because of complex business processes	Reorganization of business processes and job structures; reassignment of roles and workplaces; development of communication channels to reduce organizational resistance; and revision of job descriptions to ensure process control and transparency [Lapshin, 2024]
	Low digital maturity among suppliers and distributors	Technological integration through corporate consolidation and cluster-based integration [Rodina, 2020]
	Insufficient integration of internal services and platforms	A digital transformation readiness assessment matrix [Batishchev, Solovev, 2025]; application of the Adizes methodology [Seliverstov, Lazarev, 2025]

Table 1 – remainder

Problem area	Identified DBT-related problems	Proposed solutions discussed in the publications
Low level of service digitalization	Difficulties in using digital platforms for service provision	Business process integration [Belyaev, Kuznetsova, 2020]; user experience management [Kuznetsov, Sokolova, 2021]; data security measures [Gromov, Smimov, 2020]
	Insufficient use of tools for collecting and analyzing customer feedback	Use of digital channels [Akberdina, 2022]; intelligent CRM for customer relationship management [Abulkhanova et al., 2024]
Incomplete household Internet coverage and digital inequality	Difficulties in managing enterprises digitally due to lack of Internet access/connectivity in remote areas	Simplification of information system standards [Lichman, 2019]
	Limited market coverage due to restricted access to digital services among socially vulnerable groups	Assistive technologies [Korzhuik, Burdyak, 2024]
Import substitution and technological sovereignty	Inability to continue using certain technologies because access to them has been restricted by foreign companies	Technology foresight; development of new cooperation networks, including parallel imports; and support for corporate-level inventive activity [Safiullin, Elshin, 2023]
	Insufficient awareness of Russian alternatives to foreign technologies unavailable in Russia	Development of educational platforms; cooperation with universities and research centers [Abulkhanova et al., 2024], support for corporate-level inventive activity [Safiullin, Elshin, 2023]
Accelerated development of digital technologies	Lack of innovative ideas and technologies for improving internal business processes	Development of managerial and employee competencies; implementation of remote employee management systems; process reengineering [Poddubnaya, Tananaeva, 2022]
	Difficulties in assessing the effectiveness and feasibility of implementing a digital solution	Economic impact assessment methodology [Petrenko, 2022]
Training personnel in digital technologies	Shortage of specialists in specialized digital tools	Development of educational platforms; cooperation with universities and research centers [Abulkhanova et al., 2024]
	Rapid technological change leading to the obsolescence of specialists' knowledge	Participation in the design of university curricula; development of an internal educational platform [Lokhmachev, Apenko, 2024]
Cybersecurity and information security	Difficulties in identifying and neutralizing threats to corporate information security	Development of information security risk management standards [Spiridovich, 2025]

Source: compiled by the authors based on the publications cited in the table.

1.3. Criteria for Forming a Representative Sample (Stage 3)

To generate the search queries, criteria were developed for including articles in the representative sample. These criteria were as follows:

1. Language. To avoid misinterpretation of terms in different languages, only Russian-language articles were included in the sample.
2. Indexing. The articles had to be indexed in the Russian Science Citation Index (RSCI) and available through the eLibrary.ru portal.
3. Reliability. The sample included only articles that: (1) were published in journals recommended by the Higher Attestation Commission; and (2) had at least one citation.
4. Relevance. Given the rapid development of digital technologies, the sample was limited to publications published over the past five years, from January 2020 to February 2025.

1.4. Generating Search Queries (Stage 4)

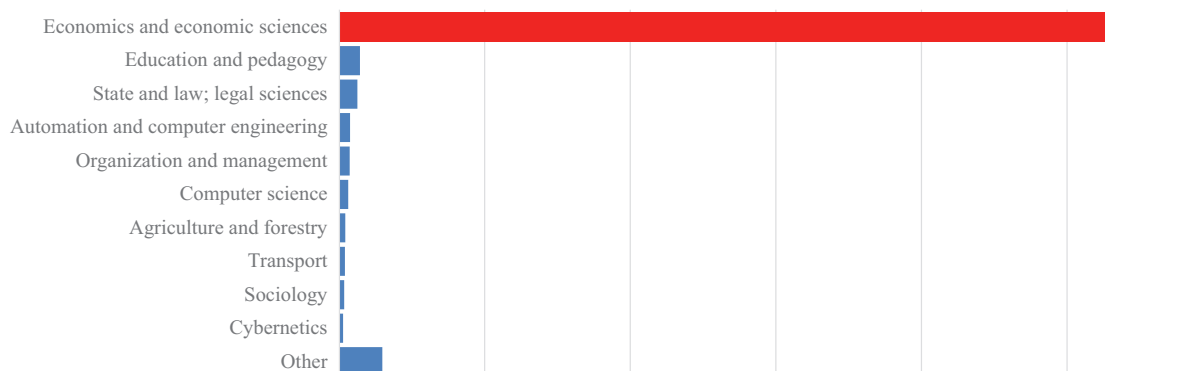
The queries presented in Table 2 returned 137 publications. However, because some publications appeared in more than one subgroup, the final number of publications was lower than the sum of the results returned by the individual queries. For several reasons, including the impossibility of manual filtering and limited access to some publications, the sample had to be reduced to 101 publications. Another reason was that digital transformation is discussed not only in publications in economics and management. Recognizing the importance of these publications as well, we present the thematic distribution of publications retrieved by the query “digital business transformation” in eLibrary for 2010–2024 (Fig. 3).

As shown in Figure 3, 15% of the publications do not fall within the categories of management and economics. The same pattern was also observed in the sample of publications selected through targeted search queries.

Table 2
Research Questions and Search Queries

Research question	Full-text search query	Results
Question 1: What key barriers hinder successful digital business transformation in Russia?	("digital business transformation" OR "enterprise digitalization") AND ("barriers" OR "obstacles" OR "limitations") AND ("Russia" OR "Russian companies" OR "Russian market")	67
Question 2: What factors contribute to the success of digital business transformation in Russian companies?	("digital business transformation" OR "enterprise digitalization") AND ("success factors" OR "key factors" OR "successful practices" OR "drivers" OR "success") AND ("Russia" OR "Russian companies" OR "Russian market")	16
Question 3: Which technologies and tools are most effective for digital business transformation in Russia?	("digital business transformation" OR "enterprise digitalization") AND ("technologies" OR "tools" OR "solutions") AND ("effectiveness" OR "innovation") AND ("Russia" OR "Russian companies" OR "Russian market")	94
Question 4: What new business models and strategies are emerging from digital transformation in Russian companies?	("digital business transformation" OR "enterprise digitalization") AND ("new business models" OR "innovative models" OR "digital transformation strategies" OR "new models" OR "new platforms" OR "new solutions") AND ("Russia" OR "Russian companies" OR "Russian market")	33

Source: compiled by the authors.



Source: compiled by the authors based on eLibrary data.

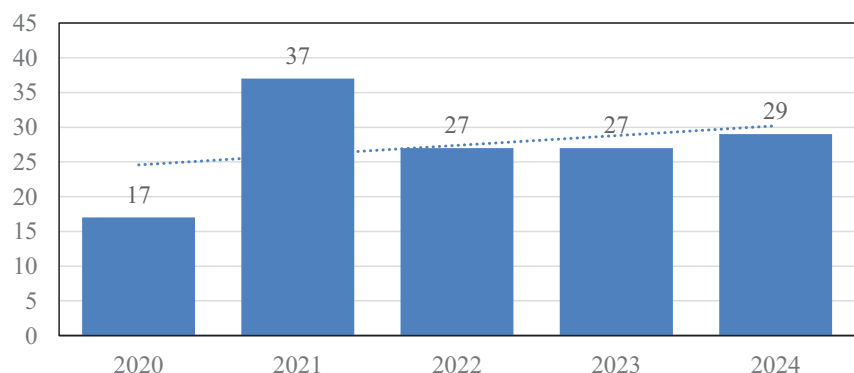
Fig. 3. Thematic Distribution of Publications Retrieved by the Query «Digital Business Transformation» in eLibrary, 2010–2024

1.5. Sample Evaluation (Stage 5)

To provide a preliminary assessment of the sample quality, we examined its key characteristics. Figure 4 shows the dynamics of publications over the study period.

As shown in Figure 4, the number of publications increased from 17 in 2020 to 29 in 2024, which is reflected in the linear trend for 2020–2024.

A further indication of the relevance and growing popularity of DBT research is the increase in the number of DBT-related web search queries. As shown in Figure 5, their number more than doubled between 2020 and 2024, rising from 25,740 in 2020 to 57,843 by the end of



Source: compiled by the authors.

Fig. 4. Number of Publications in the Sample by Year

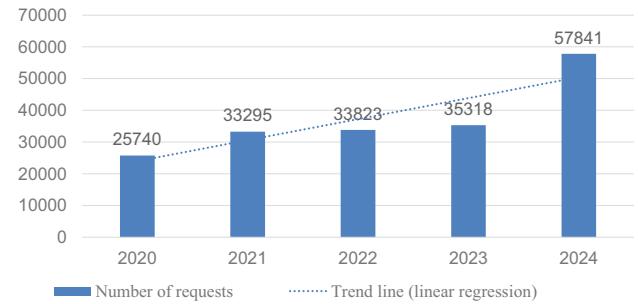
2024. This largely reflects the direction of demand from practitioners.

The representativeness of the sample is supported by the results of the keyword analysis presented in Table 3. The table shows the ten most frequently mentioned keywords in the sampled publications and the twenty most frequently mentioned keywords in the papers citing the publications included in the sample. These keywords indicate the most popular related research areas associated with DBT, including digitalization and the digital economy, as well as the role of digital technologies, including artificial intelligence technologies, under new economic conditions⁶.

Table 3
Most Frequently Mentioned Keywords in the Sampled Publications and in Papers Citing Them

Keyword or phrase	Publications
<i>Ten most frequently mentioned keywords in the sampled publications</i>	
Digitalization	62
Digital transformation	47
Digital economy	35
Digital technologies	20
Artificial intelligence	11
Innovation	9
Automation	8
Business	8
Information technology	6
Industry 4.0	6
<i>Twenty most frequent keywords in papers citing the sampled publications</i>	
Digitalization	202
Digital transformation	134
Digital economy	95
Digital technologies	95
Innovation	56
Artificial intelligence	54
Entrepreneurship	28
Management	27
Economy	27
Sustainable development	26
Business processes	23
Information technology	22
Small and medium-sized enterprises	22
Human resource management	22
Small business	20
Big data	19
Government support	18
Technologies	17
Automation	16
Economic security	16

Source: compiled by the authors.



Source: compiled by the authors based on Yandex Wordstat data.

Fig. 5. Number of «Digital Business Transformation» Search Queries According to Yandex Wordstat, 2020–2024

1.6. Addressing the Research Questions (Stage 6)

After the final sample of publications had been formed and briefly reviewed, the next step was to extract the data and standardize them in tabular form to facilitate further analysis and interpretation. To this end, each article included in the sample was processed by the authors to identify answers to the research questions.

Question 1: “What key barriers hinder successful digital business transformation in Russia?” The analysis of the first research question produced the results presented in Table 4.

Table 4
Results of the Analysis of the Research Question «What Key Barriers Hinder Successful Digital Business Transformation in Russia?»

Barrier	Description	Sources
Restricted access to technologies due to the withdrawal of Western companies and sanctions	Sanctions have caused businesses to lose access to certain tools and technologies	[Kedrov, 2024a; 2024b; Selezneva, 2021; Khovrin, 2024; Shkvarya, 2024; Yudin, Tarabukina, 2024]
Rising information security risks	Increase in cybersecurity incidents	[Veretekhin, 2023; Kedrov, 2024a; 2024b; Loshinskaya, 2024]
Shortage of IT specialists and IT competencies	Persistent shortage of qualified IT specialists	[Bazhenov et al., 2021; Veretekhin, 2023; Gorina, 2024; Gulina, Musina, 2024; Digilina, Igoshin, 2024; Kedrov, 2024a; 2024b; Loshinskaya, 2024; Khovrin, 2024;]
Slow import substitution	Import substitution is progressing too slowly, while domestic solutions often remain inferior in quality to foreign technologies	[Digilina, Igoshin, 2024; Gorina, 2024]
Widespread reliance on outdated technologies	Businesses continue to use outdated technologies that are difficult to integrate with modern solutions	[Digilina, Igoshin, 2024]

⁶ This analysis is useful both for developing a coherent understanding of digital technologies and DBT and for ensuring terminological continuity. It also highlights the significance of the contribution made by the authors whose publications were included in the sample.

Table 4 – remainder

Barrier	Description	Sources
Short life cycle of modern technologies	Accelerating technological progress causes technologies to become obsolete relatively quickly	[Digilina, Igoshin, 2024; Loshinskaya, 2024]
Lack of unified standards and methodology for business digitalization	Companies face a fragmented landscape of approaches, technologies, and tools for implementing digital solutions	[Digilina, Igoshin, 2024; Loshinskaya, 2024]
Limited business resources	Lack of financial, time, or technological resources for effective digital transformation	[Adamenko, Zolotukhina, 2021; Selezneva, 2021; Veretekhin, 2023; Digilina, Igoshin, 2024; Isaenko et al., 2024]
Need for advanced IT infrastructure	Successful digitalization and effective operation in the current environment require reliable and scalable IT infrastructure	[Selezneva, 2021; Veretekhin, 2023; Digilina, Igoshin, 2024; Loshinskaya, 2024]
Lack of Internet access in remote regions	Limited Internet access in remote regions is a significant barrier to business digitalization, as companies cannot use certain technologies effectively without a reliable connection	[Gulina, Musina, 2024; Isaenko et al., 2024; Loshinskaya, 2024]
Resistance from traditional businesses and individuals	Resistance to changes associated with the adoption of digital technologies	[Vylgina et al., 2021; Loshinskaya, 2024]
Underdeveloped domestic market for IT solutions and technologies	The domestic market lacks a sufficient number of local developers, providers, and IT services	[Yudin, Tarabukina, 2024]
Relatively low labor costs	Businesses postpone investment in digital transformation because they can continue relying on low-cost labor	[Yudin, Tarabukina, 2024]
Digital inequality	Unequal access to digital technologies, the Internet, and IT resources	[Gulina, Musina, 2024; Shkvarya, 2024]
Low business adaptability to change	Companies struggle to respond quickly and effectively to new challenges	[Vylgina et al., 2021; Selezneva, 2021]
Limited understanding among business owners and managers of the potential of digital transformation	Business owners and managers may not fully understand how specific digital solutions can improve business performance	[Vylgina et al., 2021]

Source: compiled by the authors based on the publications cited in the table.

Question 2: “What factors contribute to the success of digital business transformation in Russian companies?” The analysis of the second research question produced the results presented in Table 5.

Table 5
Results of the Analysis of the Research Question
«What Factors Contribute to the Success of Digital Business Transformation in Russian Companies?»

Driver / Success factor	Description	Sources
Forced digitalization during the pandemic	The COVID-19 pandemic and the growing popularity of e-commerce	[Vylgina et al., 2021; Markova, Romantsova, 2021; Olekhovich, Sazhneva, 2021; Digilina, Igoshin, 2024]
Sanctions pressure on the Russian Federation	Restricted access to technologies and discontinuation of technical support	[Digilina, Igoshin, 2024; Yudin, Tarabukina, 2024]
Government support	Tax incentives, maintenance of the IT company register, national projects, educational projects, and development of digital portals	[Gorina, 2024; Kedrov, 2024a; 2024b; Loshinskaya, 2024; Shkvarya, 2024; Yudin, Tarabukina, 2024]
Increasing customer expectations and demand for personalization	Customers are becoming increasingly demanding in terms of the quality of goods and services	[Rebyazina et al., 2020; Loshinskaya, 2024; Shkvarya, 2024]
Growing adoption of a data-driven approach to management	Increasing use of new tools in managerial decision-making, including BI analytics	[Shusharo, 2024]
Competition under globalization	As Russian companies enter international markets, they are forced to adopt digital technologies to remain competitive	[Shkvarya, 2024]
Investor interest in AI and DBT	Interest from both public and private investors	[Markova, Romantsova, 2021; Shkvarya, 2024]
Technological progress	The development and improvement of technologies make them increasingly attractive to business	[Markova, Romantsova, 2021; Shkvarya, 2024]
Business awareness of the importance of DBT for improving company competitiveness	The results of a number of surveys show growing business interest in DBT	[Loshinskaya, 2024]

Source: compiled by the authors based on the publications cited in the table.

Question 3: “Which specific technologies and tools are most effective for digital business transformation in Russia?” The results of the analysis of the third research question are presented in Table 6.

Table 6
Results of the Analysis of the Research Question
«Which Technologies and Tools Are Most Effective
for Digital Business Transformation in Russia?»

Technology	Description	Sources
Cloud computing	Remote, on-demand access to shared computing resources	[Krakovskaya et al., 2022; Kedrov, 2024a; 2024b; Loshinskaya, 2024]
Big data	Technologies and methods for processing and analyzing large-scale datasets	[Krakovskaya et al., 2022; Veretekhin, 2023; Kedrov 2024a; 2024b; Loshinskaya, 2024]
Artificial intelligence and neural networks; predictive analytics	Data-driven models and algorithms used to identify patterns, generate predictions, and support decision-making	[Krakovskaya et al., 2022; Gorina, 2024; Loshinskaya, 2024]
BI analytics	Systems for data visualization and analysis	[Shusharo, 2024]
ERP systems	Integrated information systems for managing an organization's core business processes	[Gorina, 2024]
BPM systems (business performance management)	Process-oriented systems for monitoring performance indicators	[Shusharo, 2024]
Electronic document management	Digital systems for creating, managing, storing, and exchanging documents	[Krakovskaya et al., 2022]
Blockchain	A decentralized digital ledger technology that enables secure and transparent transaction recording	[Markova, Romantsova, 2021; Krakovskaya et al., 2022]
3D printing	Additive manufacturing technology used to create three-dimensional objects from a digital model	[Krakovskaya et al., 2022]
Mobile technologies	Devices, applications, and networks that enable access to information and services through mobile devices	[Krakovskaya et al., 2022]
Autonomous technologies	Technologies that enable devices, vehicles, or machines to operate without direct human control	[Krakovskaya et al., 2022]
Industrial robots	Automated systems designed to perform manufacturing and production tasks	[Krakovskaya et al., 2022]
Internet of Things	A network of connected physical devices that collect, exchange, and process data	[Selezneva, 2021]
Customer experience management systems	Systems for managing and improving customer interactions, interfaces, and user experience to increase conversion rates	[Veretekhin, 2023]
Virtual and augmented reality technologies	Technologies that enable interaction with digital objects and information in physical or fully virtual environments	[Markova, Romantsova, 2021]

Source: compiled by the authors based on the publications cited in the table.

Question 4: “What new business models and strategies are emerging from digital transformation in Russian companies?” The results of the analysis of the fourth research question are presented in Table 7.

Table 7
Results of the Analysis of the Research Question
«What New Business Models and Strategies Are Emerging from
Digital Transformation in Russian Companies?»

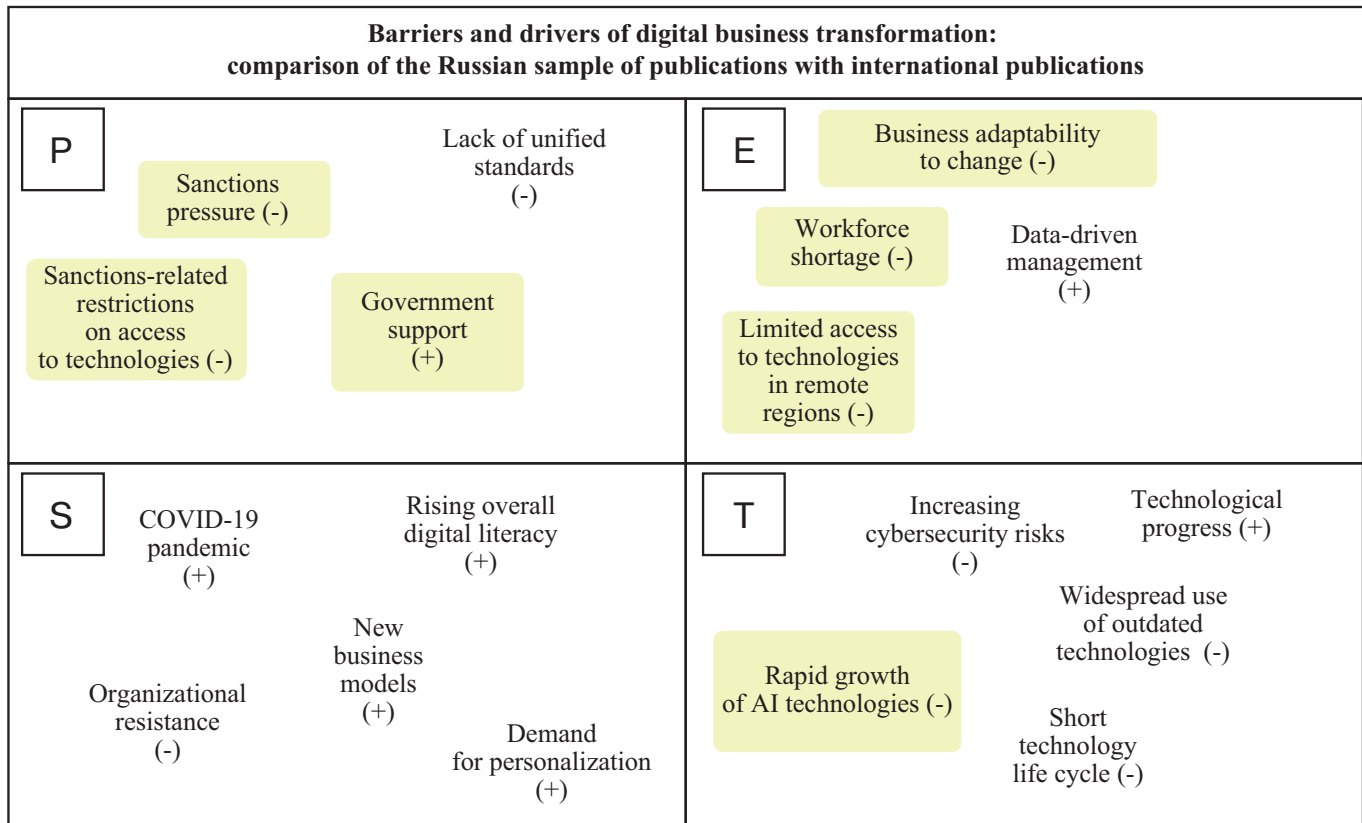
Business model	Description	Sources
Advertising-supported model	Monetization is based not on selling goods or services to users, but on providing advertising space	[Digilina, Igoshin, 2024]
Freemium (SaaS)	Basic services are provided free of charge, while access to premium features is offered for a fee	[Digilina, Igoshin, 2024]
E-commerce	Sale of goods and services through digital channels	[Digilina, Igoshin, 2024]
Sharing model	Provision of a service for a specified period without transfer of ownership	[Rebyazina et al., 2020; Digilina, Igoshin, 2024]
Virtualization and digital twins	Modeling an organization's operations to identify failures and growth areas	[Krakovskaya et al., 2022]

Source: compiled by the authors based on the publications cited in the table.

1.7. Comparing the Results of the Study of Russian and International Publications (Stage 7)

At the seventh stage, we compared Russian and international researchers' views on DBT. The comparison was based on review articles on the topic. Drawing on these reviews, we formed an international publication sample that included 217 articles indexed in Web of Science (Clarivate) between 2010 and 2020 [Kraus et al., 2022] and 106 publications indexed in Web of Science (Clarivate) and Scopus between 2015 and 2023 [Sagala, Henri, 2024]. The results of the comparison are presented in Table 8.

As follows from Table 9, Russian and international academic literature generally share similar views on DBT. This indicates convergence in the development of academic thinking and basic concepts of DBT. At the same time, several specific features distinguish Russian and international publications in terms of their approaches to DBT implementation and management. The following points of differentiation were identified in Russian publications: (1) less attention is given to educational programs; (2) strategic aspects



Note. The minus sign “-” denotes barriers; the plus sign “+” denotes drivers. The P quadrant refers to political factors; E, to economic factors; S, to social factors; and T, to technological factors.

Source: compiled by the authors.

Fig. 6. Barriers and Drivers of Digital Business Transformation from the Perspective of Russian and Foreign Authors

of DBT are emphasized less often; (3) low labor costs are often identified as a barrier to DBT; and (4) the influence of geopolitical factors and sanctions pressure is frequently discussed.

Based on the analysis, a summary diagram was developed to show the areas where research interests overlap and diverge. The PEST analysis method was used for this purpose (Fig. 6).

Figure 6 should be interpreted as follows. First, all barriers and drivers were grouped into four PEST categories: political, economic, social, and technological. Within each category, the factors were further classified according to whether they facilitate or hinder DBT. Second, each barrier and driver was additionally examined for a clearly pronounced Russian-specific context.

The analysis also reveals convergence across the stages of the study. The theoretical issues examined generally correspond to the practical problems identified at Stage 1, confirming the hypothesis that conditions exist for harmo-

nizing DBT theory and practice. However, these conditions cannot be considered sufficient on their own; further development of the interaction between DBT theory and practice is needed.

2. Conceptualizing Platform-Based Approaches to Knowledge Management in DBT and Their Logical Foundations

The study results indicate that Russian scholarship on DBT and its management is relatively well developed. While following global trends, it retains national specificities that are largely shaped by geopolitical factors. Although the strategic dimension of DBT remains underdeveloped, despite a number of studies in this area, Russian academic literature provides a systematic examination of DBT-related problems, technologies, barriers, and drivers, as well as assessments of future prospects and general recommendations. The qualitative analysis of the sampled

Table 8
Comparison of Results Based on Samples of Russian and International Publications

Criterion	Publications in Russian academic literature	Source numbers in [Kraus et al., 2022]	Similarity (S) / Difference (D)
Growth of business interest in DBT during the COVID-19 pandemic	[Vylgina et al., 2021; Markova, Romantsova, 2021; Olekhovich, Sazhneva, 2021; Digilina, Igoshin, 2024]	9, 54, 107, 162, 165	S
Emergence of new business models	[Rebyazina et al., 2020; Krakovskaya et al., 2022; Digilina, Igoshin, 2024]	5, 7, 21, 26, 39, 46, 67, 112, 120, 125, 135, 138, 144, 146, 162, 183	S
Improvement in product quality driven by DBT	[Markova, Romantsova, 2021; Loshinskaya, 2024]	18, 21, 59	S
Growing need for business flexibility	[Vylgina et al., 2021; Selezneva, 2021]	2, 20, 56, 164, 193	S
Resistance to change and management challenges in the context of DBT	[Vylgina et al., 2021; Digilina, Igoshin, 2024; Loshinskaya, 2024]	44	S
Importance of awareness of new technologies	[Vylgina et al., 2021]	15, 31, 39, 42, 51, 191	S
Importance of developing an organizational learning system and knowledge management	—	15, 30, 54, 108	D
Importance of adopting a strategic approach to DBT management	—	7, 17, 34, 37, 64, 99, 116, 203	D
Lack of Internet access in remote regions	[Gulina, Musina, 2024; Isaenko et al., 2024; Loshinskaya, 2024]	—	D
Low labor costs as a barrier	[Yudin, Tarabukina, 2024]	—	D
DBT under sanctions-related restrictions	[Digilina, Igoshin, 2024; Yudin, Tarabukina, 2024]	—	D

Source: Compiled by the authors based on the publications cited in the table and [Kraus et al., 2022].

publications showed that Russian academic literature offers both general DBT implementation models and practice-oriented approaches and frameworks. It is also clear that most of the problems hindering the practical implementation of DBT could be addressed, or at least mitigated, by drawing on the approaches, models, and recommendations already available in academic research. However, a number of problems continue to impede DBT in Russian corporations, even though they could be addressed, or at least partially mitigated, if relevant academic research were taken into account. This fact, together with the results of the study

of researchers' and practitioners' views on digitalization processes [Matkovskaya, Kataev, 2024], suggests that the current level of interaction between Russian academic and practitioner communities on DBT is insufficient to achieve DBT objectives. As a result, the issues analyzed, systematized, and addressed by researchers from the standpoint of methodology and tools are not translated into the activities of Russian corporations. This may be because the current formats for disseminating academic knowledge on DBT, on the one hand, provide answers to most of the questions raised by business, but, on the other hand, as the

study of business literature has shown, the business community rarely, and indeed increasingly rarely, relies on the approaches proposed by the academic community. At the same time, it would be inaccurate to claim that business organizations simply ignore research findings, since objective circumstances also play a role⁷. The unresolved disconnect between theory and practice will undoubtedly lead to further divergence between academic research and practice and is therefore counterproductive.

At the same time, if practitioners paid greater attention to academic publications and were more actively involved in formulating DBT-related research tasks, including those related to managing this process at all stages, this would support both the development of academic research and the practical implementation of DBT. In this regard, raising the issue of creating conditions for harmonizing academic perspectives on digitalization and DBT with the approaches adopted by business organizations may help advance progress in this area. Harmonization, however, does not imply that researchers should address companies' routine operational challenges or that businesses should serve merely as testing grounds for academic ideas. Rather, it involves establishing mutually beneficial cooperation between the academic and business communities.

In this context, the role of the state should also be considered. In this study, it is examined from two perspectives. The first is that the state is also a key stakeholder in the development of digitalization processes and DBT. In Russia, the state has initiated regulatory legal acts and strategic plans designed to promote the dynamic development of digitalization and has supported their implementation. Table 9 shows how the provisions set out in these regulatory legal acts correspond to the problems they are intended to address.

The second key aspect concerns the decisive role of the Russian state in advancing digitalization and DBT. By actively initiating these processes and creating favorable conditions for their development, the state can play a crucial role in addressing the identified problem: the insufficient harmonization of theory and practice in DBT. The implementation of digital solutions appears to be an effective means of achieving substantial progress in this area.

In this regard, and taking into account the study results, which confirm both the need and the possibility of creating conditions for the development of digitalization, the effective use of accumulated knowledge, and stronger cooperation between academia, business, and the state, the second task of this study was to conceptualize platform-based approaches to knowledge management in DBT. This task can be addressed by developing a distributed platform-based information system.

In analyzing the problems addressed in this article, we also proceed from the assumption that the existing gap between theory and practice in DBT creates barriers to the ef-

fective implementation of innovation in this field. The issue is not only that academic research often focuses on general models and strategies without considering the specific features of individual industries and companies. It is also that academic publications often remain outside the field of view of the business community or may be disregarded under the influence of established stereotypes. At the same time, working with practical tasks that arise in business may be not only of interest to contemporary researchers, but also important for implementing the proposed recommendations and methodological approaches to organizing digitalization. In other words, it is necessary to identify ways to create conditions for the co-development of theoretical research on DBT management and the practical aspects of its implementation.

The solution to the harmonization problem lies in creating conditions that serve the interests of all participants. Business organizations need methodological support based on advanced management knowledge that can help them successfully implement digital initiatives. Academic and educational institutions, in turn, need opportunities to apply, test, and refine their developments. At the same time, the specific nature of the issue under study should be taken into account. In a number of fields, theory traditionally – and often significantly – outpaces practice. In the context of digital solutions, however, practice may substantially outpace theory, while still requiring systematization and the development of comprehensive approaches and non-standard solutions that academic and educational institutions are able to provide.

The potential benefits for business organizations are substantial and wide-ranging. They include not only access to synthesized, refined, and systematized knowledge and to methods for justifying decisions on complex interdisciplinary problems, but also the development of a broader set of competencies, including critical thinking skills, through expanded network interaction. The state is also clearly interested both in DBT as such and in the practical return on investment in R&D.

In this regard, we propose a model for organizing interaction between academic and educational institutions, business organizations, and the state, largely following the approaches set out in the Triple Helix concept [Etzkowitz, Leydesdorff, 2000; Etzkowitz et al., 2000]. The implementation of a platform-based approach to organizing cooperation between the academic and business communities in DBT with state participation, or the platform project itself, can be presented conceptually as a scheme reflecting the configuration of the interaction platform (Fig. 7).

As shown in Figure 7, the platform architecture is shaped, on the one hand, by three groups of participants: academic and educational institutions, including universities, academic institutes, corporate research units, students, and researchers; business organizations, including

⁷ Such circumstances include the limited transparency and visibility of academic infrastructure for the business community. For example, access to a particular academic article may require registration with eLibrary, CyberLeninka, or other databases, including international ones. Although registration itself is not particularly difficult, business organizations rarely use these resources, partly because they are often unaware of this possibility. In addition, search engine results usually provide access to academic articles that are, at best, three or four years old.

Table 9
Provisions of Regulatory Legal Acts and the Problems They Are Intended to Address

Source	Provision	Macro-level problem addressed
Presidential Decree 2024	Achieve digital maturity in key sectors of the economy and the social sphere, including healthcare, education, and public administration	Low digital maturity in key sectors of the economy
	Increase the share of widely used socially significant services available electronically to 95%	Low level of service digitalization
	Increase the share of households with broadband Internet access to 97%	Incomplete household Internet coverage; digital inequality
	Increase investment in domestic IT solutions fourfold compared with the 2019 level	Import substitution and technological sovereignty
Presidential Decree 2019	Accelerate the development of artificial intelligence in the Russian Federation, conduct AI research, improve user access to information and computing resources, and strengthen the system for training personnel in AI technologies	Accelerated development of digital technologies
Presidential Decree 2022	Organize the training and retraining of personnel in the development, production, technical support, and maintenance of radio-electronic products and telecommunications equipment	Training personnel in digital technologies
	Establish the timeframe and procedure for critical information infrastructure entities to transition predominantly to trusted software and hardware systems at their significant critical information infrastructure facilities	Information security

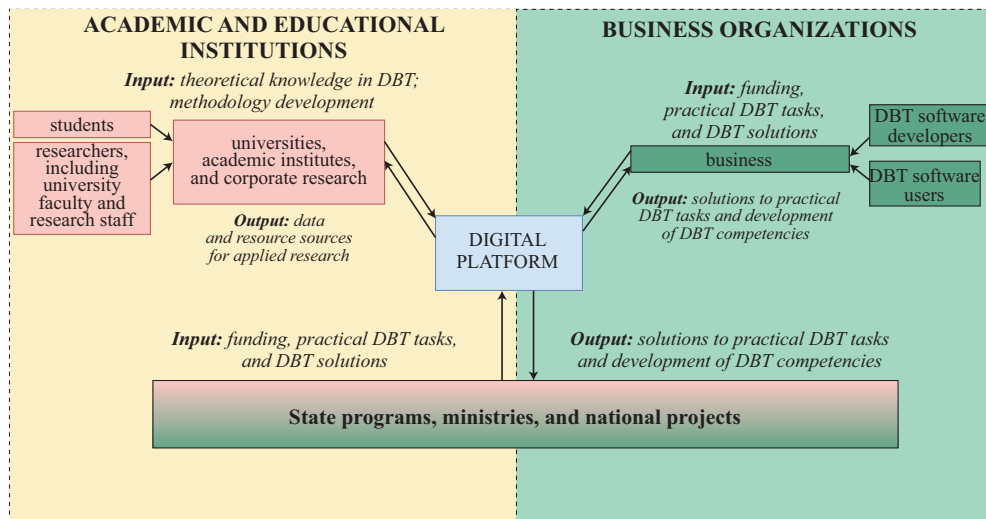
Notes:

1. The content of the table is determined by the scope and context of the present study.
 2. The 2024 Presidential Decree refers to Decree of the President of the Russian Federation No. 309 dated May 7, 2024, “On the National Development Goals of the Russian Federation for the Period up to 2030 and for the Outlook up to 2036.” <http://publication.pravo.gov.ru/document/0001202405070015>.
 3. The 2022 Presidential Decree refers to Decree of the President of the Russian Federation No. 166 dated March 30, 2022, “On Measures to Ensure the Technological Independence and Security of the Critical Information Infrastructure of the Russian Federation.” <http://publication.pravo.gov.ru/document/0001202203300001>.
 4. The 2019 Presidential Decree refers to Decree of the President of the Russian Federation No. 490 dated October 10, 2019, “On the Development of Artificial Intelligence in the Russian Federation.” <https://base.garant.ru/72838946>.
- Source:* compiled by the authors based on the presidential decrees cited in the table.

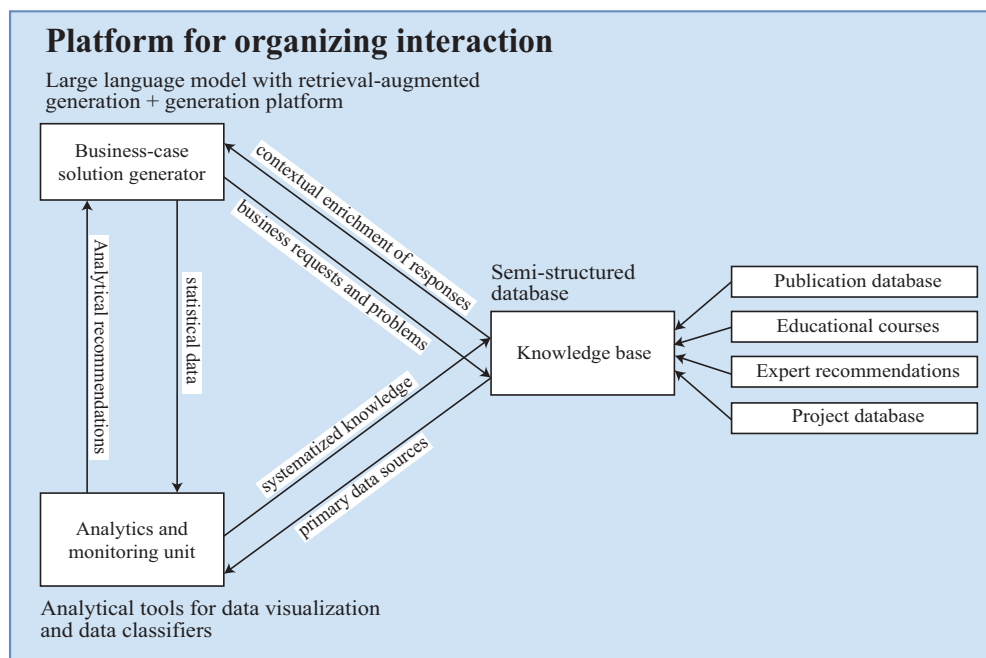
developers and users; and the state, represented by ministries and agencies, state programs, and national projects. The latter serve both as a source of funding and as one of the sources of practical DBT-related tasks and solutions. On the other hand, the architecture consists of several functional blocks: a knowledge base, that is, a systematized library containing a database of publications, educational courses, and expert recommendations in DBT; a business case solution generator, where a populated and continuously updated knowledge base can be used to develop a large language model with retrieval-augmented

generation that helps business organizations find solutions to DBT-related issues; an interaction platform for formulating and discussing tasks, carrying out joint projects, and submitting requests for analysis or applied research; and an analytics and monitoring unit comprising tools for tracking DBT trends, changes in digital technologies, and innovative DBT management strategies.

The proposed configuration model is conceptual and universal in nature. At the same time, the development of initiatives within this framework may be uneven due to patent-law restrictions and intellectual property protection re-



a) Relations among participants



b) Digital organization of interaction among platform participants

Source: compiled by the authors.

Fig. 7. Implementation of a Platform-Based Approach to Organizing Cooperation between the Academic and Business Communities in Digital Business Transformation with State Participation

quirements. For this reason, the degree of openness of the platform remains a subject for further research and may be determined through contractual arrangements. To substantiate the feasibility of such a system, we note that similar practices have already proved effective. For example, in 2024, the Moscow Innovation Cluster launched a service designed to connect science and business^{8, 9} to date, this ser-

vice has supported the launch of more than 100 successful new products in several countries. The platform could also be commercialized in the future through a freemium model. It should be emphasized, however, that the approach presented here is only the starting point for further research into the possibilities of harmonizing DBT theory and practice and improving the management of this process.

⁸ <https://iz.ru/1771679/2024-10-09/v-moskve-otkrylsia-servis-dlia-vzaimodeistviia-nauki-i-biznesa>.⁹ <https://strategyjournal.ru/innovatsii/nauka-i-biznes-v-rossii-vzaimodejstvie-vyshej-shkoly-s-tehno-gigantami-v-sfere-ii/>.

Conclusion

This study focused on bringing the problem of harmonizing theory and practice in DBT management to the forefront and on conceptualizing platform-based approaches to knowledge management in this field. The findings show that interaction between the academic community and business organizations on DBT-related issues remains insufficient, although it has considerable potential. At the same time, despite the substantial body of research on DBT and the digitalization of economic processes, particularly in Russian academic literature, and despite the systematized information it contains on problems and solutions related to the practical implementation of DBT, research findings often remain outside the field of view of the business community.

By examining the contribution of the academic community to addressing practical DBT-related issues through an empirical analysis of publications and a comparison of DBT methods and models presented in Russian and international academic literature, we were able to identify the representation and significance of the approaches and models proposed in this literature. We also systematized DBT development problems and possible ways to address them, grouped the key barriers hindering DBT in Russia and the drivers supporting its development, and assessed the innovative potential and practical applicability of theoretically developed ideas. The study also showed that the Russian business community does not make sufficient use of Russian academic research, including existing and prospective conceptual models as well as practice-oriented solutions with clear applied relevance.

It is clear that business organizations need methodological support, while the academic community needs opportunities to implement its ideas and concepts. Given that the Russian state is also a stakeholder and an important participant in the digitalization of the economy, and building on Russian experience in implementing the Triple Helix concept [Etzkowitz, Leydesdorff, 2000; Etzkowitz et al., 2000], this article proposes a basis for developing a platform ecosystem for innovative cooperation in the implementation and management of DBT.

We believe that digital solutions in business processes are only one part of the broader DBT process. DBT involves rethinking the business model and creating conditions for a company to move to a qualitatively new level of development. This requires structural changes in value creation processes, both within the company and in its external environment. In addition, DBT involves engaging stakeholders at different levels in determining the nature, direction, and depth of digital transformations and in transforming the related infrastructure. This is because a major digital transformation by a particular actor often requires confirmation that other participants in its value chain are prepared for, receptive to, and capable of participating in digital transformation. All this requires systemic knowledge, competencies in interdisciplinary synthesis, and a modern methodological framework, including approaches based on the generalization of experience. This makes the involvement of the academic community necessary.

While similar developments are already under way, this study highlights and conceptualizes the issues discussed above from this particular perspective. In pursuing the goal of creating conditions for harmonizing the development of Russian management science and the practice of managing digitalization processes in Russian companies, we seek to create new opportunities for interaction between theory and practice, task formulation, and solution development within a digital platform.

Finally, this study is conceptually oriented toward building a functioning innovation ecosystem capable of shaping new trends in knowledge management at the meso- and macro-levels. DBT research also remains a promising area because of the growing number of new challenges and the acceleration of technological progress. A potential direction for further research is the automated collection and analysis of more comprehensive data in order to expand the period under consideration and examine changes in views on DBT over time using a broader sample that includes both Russian and international articles. Another promising direction is the further development of commercialization models for digital platforms that connect science and practice.

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