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The Role of Digitalization in Data-Driven Decision Making in Supply Chain Management

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ABSTRACT

The article presents the results of a study aimed at identifying the current and potential roles of digital platforms in supply chain management. The research reviews existing theoretical approaches and developments in this area, as well as analyzes case studies of successful digitalization. The authors demonstrate how the transition of digital platforms to working with Big Data sources is transforming their role in the management process. Previously, at the stage of digital reporting, there was a gap between operational logistics functional management and expert analytical work with aggregated indicators. However, new systems that provide for the processing, storage, and analysis of data, as well as the visualization of this information and the results of its analysis, make it possible to link strategic goal-setting, KPIs, and supply chain resilience management directly with data flows about functional business processes, creating a "digital twin" of the enterprise. Using structural-functional analysis and the case study method, the study examines management practices synthesizes a comprehensive approach to exploring the interrelation between technological and managerial innovations during the implementation of digital platforms. As a result, the paper proposes a model that outlines the role of digital platforms at different levels of management activity. It distinguishes between technological innovations (the development of digital platforms tailored to organizational needs) and managerial innovations (adaptive development of data-driven organizational management systems). The findings may be of interest both to academic researchers studying management challenges amid digital transformation and to practitioners conducting applied scientific and analytical studies of digital transformation outcomes in the express delivery industry and related sectors.

Keywords: supply chain management; digitalization; innovative technologies; logistics; operational logistics; data-driven decision making; management by objectives; digital twin

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INTRODUCTION

Innovative technologies play a key role in transforming operational logistics processes, enhancing their efficiency and competitiveness. In a rapidly changing business environment, a company's ability to adapt and implement cutting-edge solutions becomes a critical factor for success. However, the introduction of innovations into logistics processes often faces a number of challenges — at the center of which lie managerial decisions.

These decisions significantly influence the successful implementation of innovations, as they shape strategies for integrating new technologies. Managerial choices encompass both strategic analysis and planning, as well as concrete actions aimed at adapting a company's internal processes and infrastructure to technological advancements.

This article explores the positive impact of digitalization on supply chain management, highlights the digital platforms used for this purpose, and analyzes both existing challenges and the most effective approaches and strategies for overcoming them.

The adoption of new digital technologies is fundamentally reshaping traditional logistics operations and driving the sector's development [1]. Today, information systems are becoming a central component, allowing companies to integrate sensors and Internet of Things (IoT) devices for real-time supply chain tracking and management. This not only reduces costs but also improves the accuracy and predictability of logistics processes [2].

Artificial Intelligence (AI) is gradually being introduced to analyze vast amounts of data from multiple sources, helping optimize decision-making. Specifically, AI is used to design more efficient routing systems, leading to reduced transit times and lower last-mile delivery costs [3].

The use of blockchain technologies enables the creation of a highly transparent environment for data protection. This is particularly important in international logistics: on one hand, it provides the ability to track the movement of goods from manufacturer to end customer; on the other hand, it reduces the risk of fraud and strengthens trust between counterparties.

In addition, the role of autonomous vehicles and drones is growing, promising to reduce costs and shorten delivery times. These technologies open new horizons in supply chain management, making it more flexible and resilient. Collectively, such innovations contribute to greater efficiency and competitiveness for logistics companies.

It is important to emphasize that these are some of the most advanced innovative technologies, which may not be effective for every company. Their successful implementation depends largely on an organization's level of maturity and would require substantial financial and human resource investments [4].

THEORETICAL APPROACHES TO THE IMPLEMENTATION OF DIGITAL INNOVATIONS

In the past, it was widely believed that market success was inevitable for companies that adopted innovations and technologies across all their business processes. However, numerous examples of failed initiatives have demonstrated that implementing new technologies remains a complex challenge for many market players. True success lies in the continuous and systematic execution of innovations and improvements within a unified strategic direction. If a company encounters persistent management issues, it indicates the ineffectiveness of current approaches and the need to develop new principles that challenge outdated methods.

Theoretical Foundations of Successful Digitalization

Modern approaches to digitalization in management focus on actions aimed at improving and updating existing processes or eliminating inef-

fective elements. In the context of management systems, this involves a shift from traditional to modern and innovative methods. The implementation process typically unfolds in several stages [5]. At the first, preparatory stage, existing practices are analyzed to identify shortcomings that hinder performance improvement. At the second stage, management innovations are introduced — these are new ideas and concepts designed to address the identified problems effectively. This stage may include:

- developing a step-by-step plan with clear outcomes that reflect the desired state of the management system;
- introducing original managerial ideas generated within the organization and fostering an environment that encourages employee initiative;
- encouraging the free emergence and expression of innovative ideas with strong support from the company;
- strengthening a corporate culture that promotes continuous interaction and the exchange of ideas among team members;
- applying external best practices, studying case studies, and engaging expert consultants.

Despite the promising potential of digital technologies in logistics [6], there are certain "filters" —barriers in the form of internal and external obstacles — that hinder their implementation. A. A. Volkova, Yu. A. Nikitin, and V. A. Plotnikov identify several key challenges that must be overcome to ensure the successful digitalization of supply chain management [2].

Introducing innovations in operational logistics involves a number of difficulties that managers must take into account. One of the main issues is the *lack of financial resources* (as mentioned earlier).

The implementation of modern technological solutions often requires significant investment, and not every company is prepared to bear such costs — especially when the return on investment is not immediately evident.

Another equally important factor is *resistance to change among employees*. Some logistics companies lack a clear digital strategy and continue to use outdated technologies and systems to interact with partners and manage processes. This is often due to an unwillingness or unpreparedness to adapt to changes in business operations. A strong corporate culture and a supportive innovation program can help overcome this barrier, but both require time and resources.

A general *lack of digital skills* among personnel is also a serious challenge. Experience shows that employees, managers, and clients of logistics firms often do not possess the necessary technical knowledge and expertise. This becomes a major obstacle to optimizing operational processes within the industry. To address this, efforts should focus on two key areas: the development of outsourced consulting services in technology and digital transformation, and the enhancement of professional training systems in the field of digital logistics.

Technical issues also pose a barrier to the adoption of digital innovations. These include unreliable network connectivity across the supply chain, limited capabilities of existing AI solutions (e.g., the immaturity of collision avoidance technologies limits the widespread use of drones), and IoT security concerns stemming from hardware and software design flaws.

Finally, the *lack of a clear understanding of company needs and priorities* can complicate the adoption of new technologies. Without a well-defined vision of their benefits and the specific problems they aim to solve, transformation processes risk becoming chaotic and ineffective. Managers must clearly define the goals and objectives that innovations are intended to achieve.

And finally, *regulatory and legal constraints* can also act as barriers to innovation implementation. Organizations may face the need to comply with new standards and regulations, particularly those related to data security and personal information protection.

Thus, to successfully overcome the barriers

outlined above, it is essential to apply balanced management, strategic planning, and careful consideration of a company's cultural and structural characteristics. This approach enables the effective execution of technological transformation in operational logistics.

The Role of Digital Innovation Technologies in Supply Chain Management

An analysis of the capital investments required for the practical implementation of digital innovation technologies by Russian companies in supply chain management reveals several key aspects of the process (see *Fig. 1*).

First and foremost is data quality, which serves as the foundation for the effective use of analytical methods. Second is a well-developed information management infrastructure, which ensures access to data and supports the use of algorithmic models and visualizations. Lastly, we must consider business processes, which, while critically important, typically come into play at a later stage — once trust in the technology has already been established.

Digital initiatives related to data management are generally divided into four subcategories: storage, processing, analytics, and visualization [8]. Noteworthy in this context are the works of A.A. Gavrilenko [4], S.M. Khairova, and M.K. Paravyan [9], which summarize the experience of Russian companies in implementing digital innovations in supply chain management. These studies emphasize that best practices in digitalization rely on a comprehensive approach to business process improvement, combining Total Quality Management (TQM) with supply chain management. This integration forms a foundation for system stability and resilience (see *Fig. 2*).

Digital platforms play a pivotal role in this algorithm by enabling the coordination of various flows — informational, financial, material, and

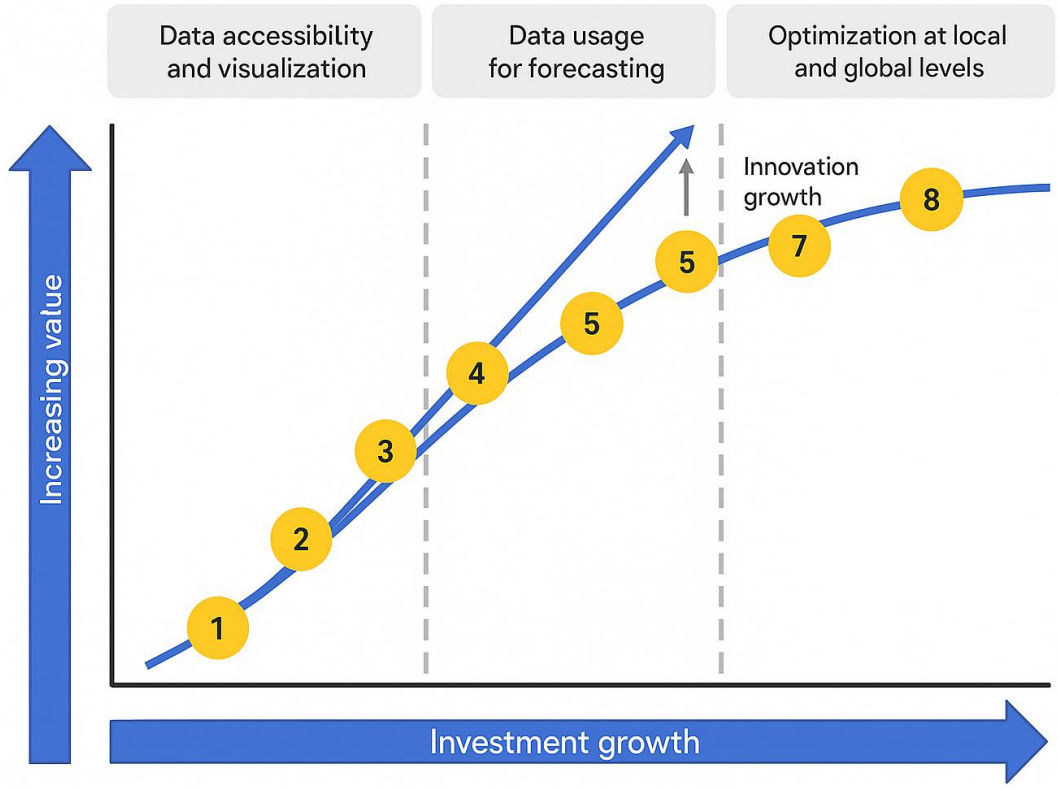

Fig. 1. **Capital Investment in Digital Initiatives Compared to Realized Value**

Source: compiled by the authors based on data [7].

human. Leveraging data visualization and analytics technologies, companies can thoroughly monitor and analyze each aspect of their operations in real time. This, in turn, allows for more informed managerial decision-making focused on improving the overall efficiency of the supply chain. Through integration with "smart enterprises," organizations can optimize operational processes and thereby enhance their competitiveness in an increasingly dynamic market environment.

SUPPLY CHAIN MANAGEMENT MODEL USING DIGITAL INFORMATION TECHNOLOGIES

Building on the core arguments of the aforementioned authors, we propose a more refined and comprehensive approach by distinguishing three key components: functional business processes, their digital twins, and the expert-analytical management layer.

Functional (line-functional) business processes encompass the movement of inventory (material flows), the associated payments (financial flows), and the work of personnel (both internal and outsourced) across the supply chains. These processes are managed by line-functional managers, who are responsible for ensuring operational continuity and efficiency.

The digital twin of a business refers to a digital database that mirrors the functional business processes. In the current era of Big Data technologies, these databases are populated by employees directly involved in operations, unlike earlier reporting systems, which were often filled out by personnel not directly connected to the actual business processes. Companies can implement different approaches to creating a digital twin — from balance-based systems that link various segments of the supply chain to detailed tracking of product batches or even individual items (including via blockchain technologies). From a supply chain management perspective, the most critical aspect is the accuracy and align-

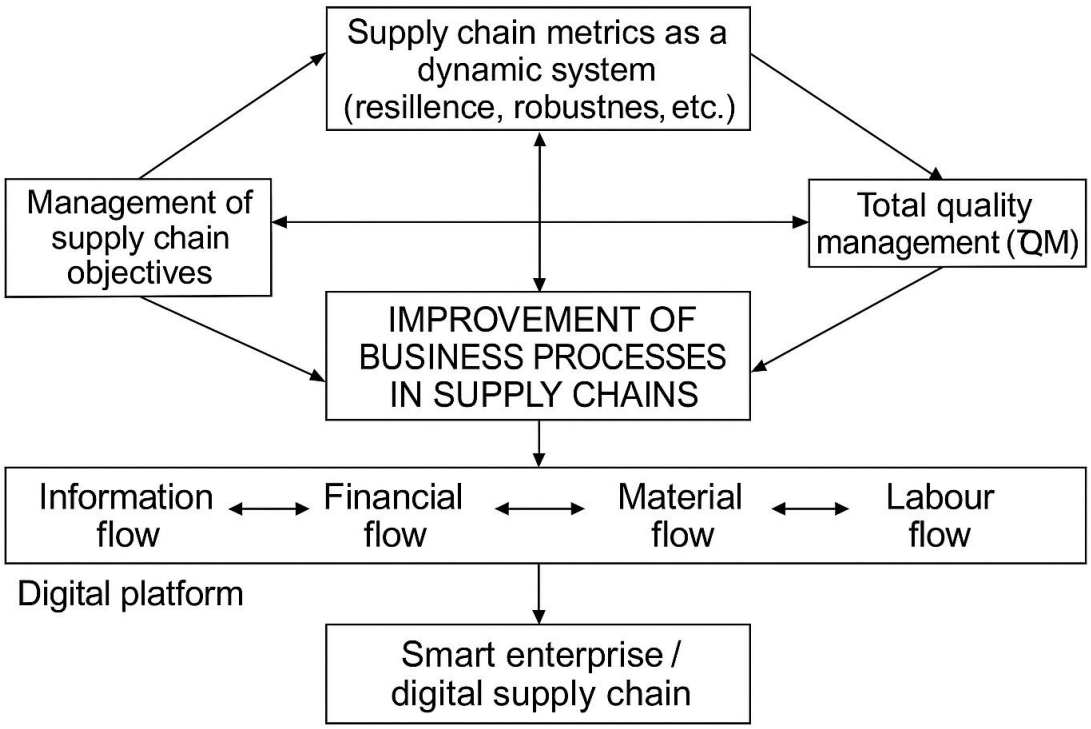

Fig. 2. **Flowchart "Business Process Improvement in Supply Chains"**

Source: compiled by the authors based on data [9].

ment of the digital model with the real-world processes. For example, if a product batch is marked as shipped, does it truly mean it has physically left the warehouse? Discrepancies of this kind can distort decision-making for all stakeholders who lack direct access to operational processes (except for line-functional managers).

In addition to line-functional managers, supply chain system managers —those responsible for the operation of the supply chain as a whole —also engage with the digital twin. Their activities are guided by three types of objectives: quality management, supply chain coordination, and —most importantly as a refinement to earlier models —strategic management. Integrating strategic oversight into the system enables a more proactive and forward-looking approach to supply chain innovation and optimization.

Performance management goals (performance metrics), which reflect a company's efforts to reduce the likelihood of supply chain disruptions and the resulting damage (such as delays, losses, breakdowns, etc.), are most closely linked to the functional management of business processes.

Supply chain stability goals determine the system's ability to continue operating amid the unforeseen circumstances that inevitably arise in practice. If one of these goals were pursued to an absolute extent, the other could be neglected — but such an approach is unrealistic. Therefore, supply chain management involves reasonable duplication and redundancy to address the most significant risks. Optimization toward these goals is made possible primarily through the use of digital information systems that enable forecasting both risks and the supply chain's resilience to them [10].

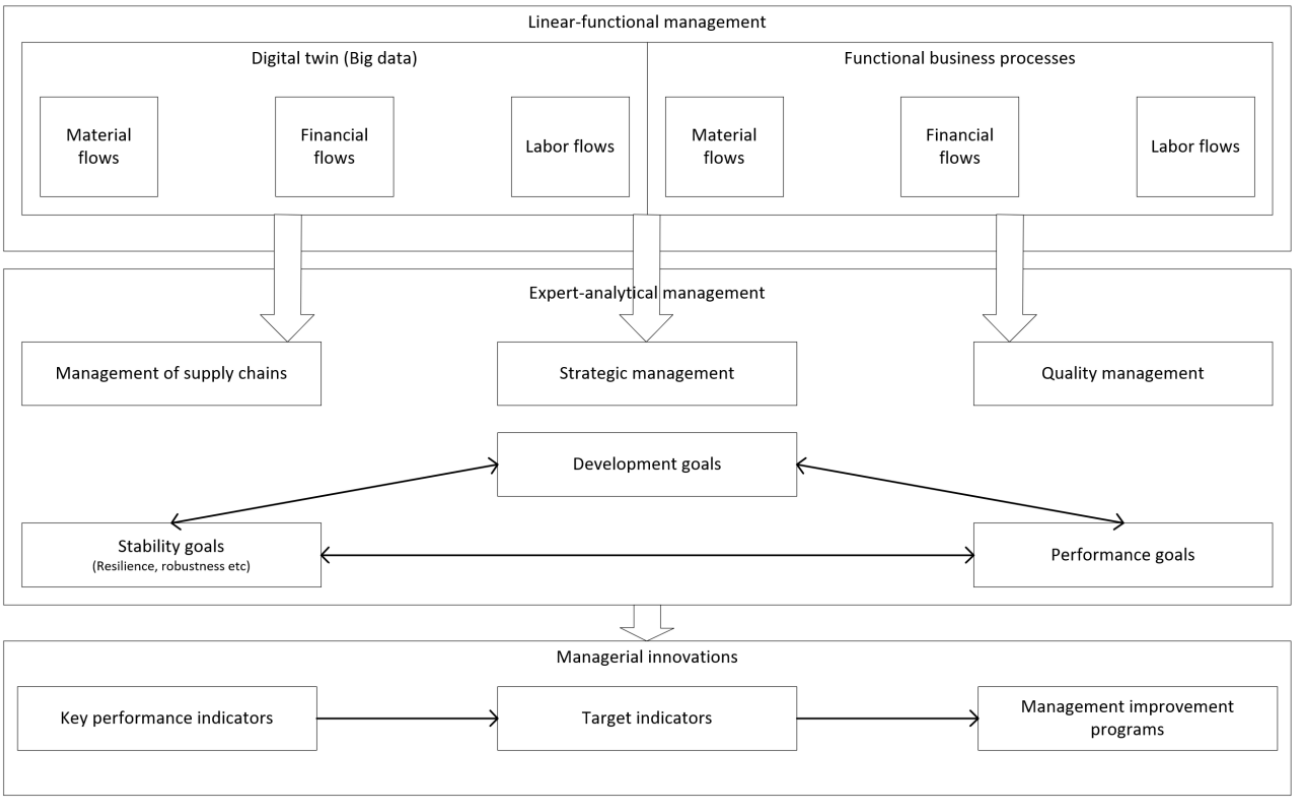

Fig. 3. **Supply Chain Management Model Using Digital Information Technologies**

Source: compiled by the authors.

Finally, in our view, the third fundamental component of supply chain management is *development goals*, which reflect the strategic outlook of the market, the company, and its partners. The supply chain system should not only ensure stable operation under current conditions but also act proactively, evolving in line with the company's plans (see *Fig. 3*).

Specialists and managers responsible for this area combine their tasks of ensuring stability, development, and execution with the data available in the digital twin of the enterprise's operations. As a result, benchmarks are established — indicators calculated based on the digital twin — that set targets (desired values) and form the basis for action plans to achieve them. These plans are then detailed into specific transformations of the functional business processes, whether through changes to procedures or structural links, the addition of new supply chain elements, or the elimination of existing ones, and so on.

Thus, the implementation of modern technologies (the digitalization of the supply system) becomes the foundation for subsequent managerial innovations. The introduction of a digital system is a one-time decision, usually made for many years ahead, since retraining personnel entails significant costs and substantially slows down business processes. In contrast, building innovative management technologies in supply chain management based on digital infrastructure is a long-term, gradual, and adaptive process — external changes will continuously push the business toward new managerial decisions.

It is evident that, digitalization of supply chain management is not limited to selecting the most suitable software product (or suite of products) available on the market — around it, a new management technology gradually takes shape, where innovations can play a more significant role than simply improving information exchange.

THE PRACTICE OF IMPLEMENTING DIGITAL INNOVATIVE TECHNOLOGIES IN SUPPLY CHAIN MANAGEMENT BY RUSSIAN COMPANIES

The use of digital tools for visualizing managerial decisions significantly enhances organizational efficiency [11]. For the successful implementation of innovative technologies —such as Big Data, IoT, and Blockchain —in operational logistics, decisions made through simpler yet powerful data analytics and visualization tools like Tableau, Microsoft Power BI, SAS, and others prove critical [12]. These tools enable companies to respond promptly to changes and optimize business processes. The application of such software not only facilitates strategic decision-making but also supports the adoption and integration of new technologies.

A key distinction between digital platform models lies in their capacity to store and process Big Data (i.e., the presence of data warehouses), as well as the level of computational power available to handle the required information flow.

Technical and Managerial Capabilities of Leading Business Digitalization Platforms in Supply Chain Management

Since 2022, global market leaders in business digitalization platforms —such as Tableau, Microsoft Power BI, and others —have ceased selling new licenses and even suspended support for previously sold ones. In this context, our primary focus will be on identifying the distinctive features of these products (based on their use by foreign companies) compared to their domestic counterpart — the Russian platform Yandex Cloud. Our research question is whether such digitalization remains relevant under sanctions-related restrictions and whether Yandex Cloud can provide the same functionalities that underpin success in international practice.

Tableau is a leading data visualization platform that enables comprehensive analysis of

large volumes of information and the creation of required reports and real-time dashboards. However, the product does not include its own data storage capabilities and relies on building analytical infographics based on other solutions. This approach is effective when a company already possesses a Big Data source and primarily requires a tool for visualizing that information.

Regarding versatility, Tableau —as with any similar solution — is not confined to specific functional business processes. This means the platform can visualize any data format presented in the required technical form, regardless of its domain —be it financial figures, hours, speed in km/h, etc. Flexibility concerning information sources means that at enterprises where functional business processes across various activities are digitized to differing extents and through different software systems, Tableau can be used to construct a unified analytical base for subsequent visualization.

Microsoft Power BI is a suite of data analysis and business intelligence tools that enable the presentation and visualization of complex information in an accessible format. The software package does not include a built-in goal management system; however, it supports integration with Microsoft Azure and allows the creation of custom add-ons in various programming languages, enabling users to tailor automated goal management solutions for different types of objectives.

The *Azure* cloud platform aggregates data from functional operational systems and transfers it to business analytics platforms such as Power BI. Unlike Tableau, which accesses external data sources directly, Azure integrates information from external sources into a centralized Big Data repository, thus providing both backup storage and the ability to analyze data through specialized tools. Real-time extraction and transformation of operational data are facilitated by services such as Azure Stream Analytics and Azure Data Lake Analytics.

In the current context, where Russia faces extensive sanctions, issues of import substitution and the development of domestic technological solutions have become especially critical. Due to restricted access to international technologies and products, it is essential for Russian enterprises to pivot towards homegrown developments. This shift not only minimizes risks associated with political and economic fluctuations on the global stage but also supports the growth of the local information technology industry.

In this regard, the functional capabilities of IT platforms such as Yandex Cloud/DataLens — which demonstrate considerable similarity to MS Power BI/Azure — deserve attention. These platforms provide infrastructure for integrating large data flows into a unified digital environment, along with powerful visualization and analytics tools.

Yandex DataLens is a self-service analytics tool (part of the Yandex Cloud ecosystem) that enables companies to efficiently work with heterogeneous data from multiple sources. The platform collects information from operational and business systems, CRM databases (e.g., PostgreSQL), events generated by websites and mobile applications, as well as external open sources and streaming data (managed through the Apache Kafka broker).

Data integration is implemented through the construction of a unified data repository based on robust infrastructure solutions within the Yandex Cloud ecosystem, such as managed database services (ClickHouse, PostgreSQL) and streaming analytics platforms. This setup enables the handling of large volumes of information in real time, significantly reducing both the costs and time associated with infrastructure deployment and equipment maintenance.

Data visualization within the system is facilitated through interactive dashboards and visual reports, which are accessible to a wide range of users thanks to a user-friendly interface. Beyond

standard visualization tools, the service offers advanced geospatial analytics capabilities based on the Yandex.Maps cartographic platform, assisting companies in making strategic decisions related to the opening of new locations or planning territorial expansion.

Yandex DataLens enables effective management of business process quality by analyzing KPIs, identifying non-obvious trends, and uncovering bottlenecks. The platform empowers organizations to implement both operational and strategic management based on up-to-date information presented in a convenient and interactive format.

Thus, technically, Russian companies have the capability to digitize their business processes (including supply chain management) using Yandex Cloud/DataLens. However, certain characteristics of implementing domestic products should be noted:

- solutions guaranteed by the Yandex platform may be limited compared to more mature international counterparts; nevertheless, the tools provided are sufficient for conducting basic corporate-level analytics and visualization in the context of supply chain management;
- companies utilizing DataLens/Cloud may encounter some restrictions when integrating with products not directly supported by Yandex. In contrast, Microsoft platforms offer broader compatibility with various services;
- the pricing policy and payment model offered by Yandex can be more economically advantageous for Russian organizations, especially under the constraints of international sanctions.

Thus, despite the technical comparability of Yandex solutions, questions remain regarding their compatibility with functional data sources and integration into management processes. Being closer in nature to Microsoft Power BI than to Tableau, Yandex products are poorly suited for unifying existing functional systems with their own Big Data streams into a single digital environment. Moreover, compatibility issues may also arise when consolidating functional systems built on Microsoft-based solutions.

To analyze the prospects for practical implementation of digital platforms, we will examine international experience through several case studies and compare it with examples from Russian practice utilizing Yandex Cloud. In each case, we will identify how such tools are applied within different business structures and what advantages they offer. These examples will allow for a deeper exploration of the relationship between the role of digital platforms in both line-functional (operational logistics) and integrated supply chain management.

Best Practices in Using Digital Platforms for Supply Chain Management

One notable example of successful implementation of this technology is the use of Tableau by the American multinational financial conglomerate JP Morgan Chase.[1] The marketing operations team, financial managers, and branch managers gained the ability to analyze client data to track customer preferences and integrate this information across various business areas, such as product strategy and promotion decisions, as well as improving customer service experiences. This enabled the acceleration of detailed reporting processes, established an effective bridge between IT and business units, and facilitated the development of applications for risk analysis and regulatory compliance.

Another positive example is the deployment of digital innovative technologies based on Microsoft Power BI (as a business analytics software) and Microsoft Azure (cloud services) at London Heathrow,[2] one of the world's larg-

[1] Top Tableau Case Studies — JP Morgan, Lenovo & Lufthansa. Data Flair. 2021. URL: https://data-flair.training/blogs/tableau-case-studies/ (accessed on 23.01.2025).

[2] Power BI Case Study — How the tool reduced hassles of Heathrow & Edsby. Data Flair. 2021. URL: https://data-flair.training/blogs/

est international airports. The airport's ground operations face stringent efficiency requirements to ensure uninterrupted service. With a daily passenger flow exceeding 200,000 and the potential for unforeseen disruptions caused by weather, delays, or cancellations, seamless coordination and synchronization across all departments are essential. This requires adaptability, flexibility, and well-organized internal and external supply chains.

To address these challenges, a unified digital system was created at Heathrow to handle large volumes of information generated by functional systems and convert them into user-friendly infographics for managerial decision-making. The platform integrates data streams from key operational areas such as check-in zones, baggage tracking, and flight scheduling. Notably, Power BI operates as a centralized system that informs different airport departments of anticipated changes in passenger flow, enabling better preparation for servicing.

Clearly, an important aspect of integrating such technologies is a thorough understanding of the IT tool's intended role in addressing the company's specific needs. Prior to implementation, it is essential to carefully assess whether the software's functionality aligns with the requirements and how it fits into the broader set of challenges to be solved.

The case of the online retailer KazanExpress.ru, which chose Yandex Cloud as its analytics platform, demonstrates how Russian companies successfully adapt to new realities through local solutions.[3] After a comprehensive evaluation of four BI systems, the company opted for Yandex DataLens due to its compliance with all declared requirements and its integration within the Yandex Cloud ecosystem, providing a full cycle of data management.

KazanExpress is an e-commerce marketplace offering goods with free one-day delivery in 60 Russian cities. Prior to implementing the BI solution, the company lacked a unified approach to data collection and analysis. The finance department used multiple sources to generate reports in Microsoft Excel — a time-consuming, non-automated process prone to errors. This motivated the company to seek a new business intelligence system that met specific criteria: support for diverse data sources (such as PostgreSQL and ClickHouse), unlimited users, flexible access controls, and rapid deployment.

The implementation of the Yandex Cloud digital platform enabled KazanExpress to achieve the following positive outcomes:

1. Improved operational efficiency. The creation of an analytics dashboard allowed managers, sales staff, and partners to access key information such as store ratings, revenue volumes, order quantities, and product reviews. This reduced the time required to locate such data by 50% and simplified the decision-making process.

2. Increased development speed and flexibility. The analytics dashboard was configured in just a few days (no more than five), whereas alternative systems might have required over two weeks. Rapid adjustments and testing saved up to 70% of the time typically spent on implementing changes.

3. Widespread data accessibility and use. Initially, only about 10 internal employees used the dashboards; later, access was extended to over 100 active sellers, which boosted both their engagement and work efficiency by 30%.

4. Expanded analytical capabilities. Following the successful deployment of the initial dashboard, the company continued to apply similar Yandex Cloud services to further enhance operational analytics, geoanalytics, and machine learning, improving forecasting accuracy by 20%.

power-bi-case-study/ (accessed on 23.01.2025).

3 Yandex.Datalens — the company's experience in executed projects. BI Consult. 2021. URL: https://datafinder.ru/products/yandexdatalens-opyt-realizovannyh-proektov-kompanii (accessed on 23.01.2025).

Table

Implementation of Management Innovations in Case Studies of Digital Platform Adoption for Supply Chain Management

Case	JP Morgan Chase	Heathrow	KazanExpress
Integration with existing systems	Tableau is integrated with company systems and has successfully replaced previously used tools (Excel, SQL Server, Cognos, Business Objects)	MS Power BI integrates with airport operational systems (check-in, baggage tracking, flight schedules, etc.) via Microsoft Azure platform	Yandex DataLens integrates with existing PostgreSQL, ClickHouse databases, and CRM systems without requiring significant infrastructure changes
Use of Big Data storage	No unified Big Data storage is used; self-service data analysis by company functional units	Azure Data Lake Analytics and Azure SQL Database are used to collect, process, and analyze large volumes of data in real time	Yandex Managed Service for ClickHouse and Yandex Cloud infrastructure are used to process large volumes of data (hundreds of gigabytes of website and app events)
Completeness of digital twin implementation	Digital twin is not fully implemented. JP Morgan Chase uses Tableau as a self-service analytics and data management tool, but not all functional system indicators are streamed digitally in real time	High level of digital twin implementation at Heathrow. Many functional system indicators (check-in, baggage tracking, flight schedules, weather, etc.) are digitized and processed in near real time using Power BI and Azure services	High level of digital twin implementation at KazanExpress. Yandex DataLens integrates with multiple data sources, enabling management of key metrics and real-time geoanalytics. Full live monitoring of current data and business process statuses is implemented (e.g., warehouse stock, returns, user actions)
Use for quality management (KPI)	Analytics of customer metrics (call centers, website) and business data are used to assess efficiency and customer experience	Airport performance indicators (queues, passenger movements, flight operations) are visualized and reported clearly to monitor management quality	Real-time monitoring of key metrics, product quality control, and prompt response to issues are applied
Use for strategic management	Platform supports strategic decision-making, improves customer relationships, identifies target campaign audiences, and launches new products	No direct indication of use in strategic management	Strategic data analysis and visualization support network expansion, client segment processing, and trend identification
Use for resilience management	No direct indication of use in systemic dynamics analysis or resilience management	Power BI helps teams proactively respond to potential disruptions and sudden changes in passenger flow	No direct indication of use in systemic dynamics analysis or resilience management

Source: compiled by the authors.

This case demonstrates how well-planned BI implementations can significantly improve supply chain management. Such positive examples are especially important for Russian enterprises aiming to increase their competitiveness in the market.

Prospects for the Implementation of Digital Platforms in Supply Chain Management by Russian Companies

The case discussed above confirms that the adoption of digital innovative technologies in supply chain management represents a significant advantage for domestic companies in terms of improving business processes and achieving sustainable development amid contemporary challenges. Key factors for the successful application of these technologies include a strong focus on data quality, a well-developed infrastructure for data processing, and integration with local solutions — often necessitated by the constraints of sanctions policies.

The examples of foreign companies further illustrate the critical importance of selecting platforms that align with the specific business requirements and enable rapid innovation deployment. This, in turn, substantially enhances operational efficiency and accelerates the implementation of solutions. Enterprises find it easier to perform integrations based on predictive analytics and increase information accessibility to a broader range of users.

Let us now compare the extent to which the areas of managerial innovation identified in our proposed model (see *Fig. 3*) are realized in each of the studied cases (see *Table*).

The data indicates that, in each case, many but not all capabilities of the digital platform are realized. This shortcoming —an incomplete fulfillment of digitalization potential —is largely explained by the specifics of each company's activities and the priorities set by its management.

For example, Heathrow Airport deals with extremely complex and vulnerable supply chains, which, due to the nature of its business (involving numerous stakeholders — airlines, ground transport, service providers, passengers, etc.— and high risks of unplanned disruptions), cannot be reliably shielded. Therefore, the airport uses its system, among other purposes, for systemic analysis. However, given its spatial localization (which is not typical for the other organizations reviewed), strategic analysis of digital flows is less relevant. Decisions such as building a new terminal or revising partnership terms tend to be made on an ad-hoc basis, relying on specially constructed models tailored to each case.

The choice of a platform should be driven not only by its popularity or the positive experiences of other companies but also by its ability to effectively address the tasks aligned with the company's business strategy in both the short and long term. None of the examined platforms include a built-in automated goal management system; therefore, digitalization should be preceded by analytical work on defining objectives and selecting corresponding digital indicators.

The reviewed examples demonstrate that the chosen digital solution must primarily be well compatible with existing functional services, both technically and in terms of staff training. Implementation typically occurs gradually, with different departments (and external users) joining the system as they become ready. This phased approach is especially critical for digital platforms in supply chain management, where seamless coordination of numerous functional units and external partners is essential.

It is evident that, with the exit of leading foreign companies from Russia, successful import substitution and integration of local solutions can become a crucial part of the long-term development strategy for many domestic enterprises. However, a particularly important factor in choosing a Russian platform is its ability to interoperate with already existing

digital solutions. In cases of partial or complete incompatibility, preliminary efforts may be required to resolve these issues. Such risks must be assessed in advance, as their unexpected occurrence could paralyzeorganizational operations for an unpredictable period.

CONCLUSIONS

This study analyzed both existing theoretical approaches and practical experience in implementing modern digital platforms in supply chain management. The article demonstrates that contemporary digital technologies, by consolidating information about various functional (operational) business processes into a unified system, enable a shift from operational logistics to a broader context of supply chain management. The authors propose a model that reflects the role of digital platforms in this process. Such platforms facilitate the creation and visualization of complex sets of metrics aligned with sustainability and development goals, characterizing supply chains as dynamic systems. However, existing digital solutions lack an autonomous management apparatus (designed to achieve company goals), although the most advanced platforms allow for such tools to be added as extensions.

It is clear that necessary conditions for successful digitalization include the enterprise's prior planning of a system of goals and indicators (which will configure the analytical tools of digital platforms), as well as a clear understanding of the distinction between implementing innovative technology, deploying a digital platform, and realizing managerial innovations based on it.

The greatest benefits of digitalization lie not merely in changing information transmission methods within the company, but in the potential adaptive restructuring of management technologies as analysts and managers at various levels gain proficiency in using the digital platform.

REFERENCES

1. Volkova A. A., Nikitin Yu.A., Plotnikov V. A. Evolution of digital technologies used in logistics. *Upravlencheskoe konsul'tirovanie = Administrative Consulting*. 2022;(1):76–83. (In Russ.). DOI: 10.22394/1726-1139-2022-1-76-83
2. Zavgorodny A. F., Gorohov A. D. Digital transformation of modern supply chains and their transition to a single digital ecosystem. *Ekonomika i biznes: teoriya i praktika = Economy and Business: Theory and Practice*. 2022;(3–1):95–99. (In Russ.). DOI: 10.24412/2411-0450-2022-3-1-95-99
3. Dördüncü H., Oruç Z. S. Industry 4.0, digitalization, and Big Data: Perspective of logistics and supply chain management. *Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*. 2021;30(3):170–180. DOI: 10.35379/cusosbil.974810
4. Gavrilenko A. A. Development of innovations in logistics and their impact on business. *Vestnik nauki*. 2023;4(8):21–28. (In Russ.).
5. Gorbova I. N., Mikhalev I. I., Sukhanov D. A. Management innovations in the context of digitalization activities of business structures. *Estestvenno-gumanitarnye issledovaniya = Natural Humanitarian Studies*. 2022;(42):89–94. (In Russ.).
6. Fastovich G. G., Fomina L. V. Digitalization of logistics processes. *Pravo i gosudarstvo: teoriya i praktika = Law and State: Theory and Practice*. 2023;(3):44–46. (In Russ.). DOI: 10.47643/1815–1337_2023_3_44
7. Espinoza R., Thatcher J., Eldred M. Turning an offshore analog field into digital using artificial intelligence. In: SPE Middle East oil and gas show and conference (Manama, March 18–21, 2019).

Dallas, TX: Society of Petroleum Engineers; 2019. DOI: 10.2118/195027-MS
8. Matveeva E.P. Supply chain management in the context of digitalization: The experience of foreign oil and gas companies. *Vestnik Tomskogo gosudarstvennogo universiteta. Ekonomika = Tomsk State University. Journal of Economics*. 2023;(64):181–200. (In Russ.). DOI: 10.17223/19988648/64/13
9. Khairova S.M., Paravyan M.K. Tools for business processes transformation in supply chains in the context of digital economy formation. *Nauka o cheloveke: gumanitarnye issledovaniya = The Science of Person: Humanitarian Researches*. 2023;17(2):239–250. (In Russ.). DOI: 10.57015/issn1998-5320.2023.17.2.24
10. Alyasein O.I.Y., Ojha D., Sadeghi K.R. Supply chain digitalization, innovation capability, and organizational agility: The moderating role of institutionalization and supply chain integration. *Industrial Marketing Management*. 2025;125:215–225. DOI: 10.1016/j.indmarman.2025.01.008
11. Polyanin A.V., Golovina T.A. The concept of innovation management of industrial systems based on digital twin technology. *Nauchno-tekhnicheskie vedomosti Sankt-Peterburgskogo gosudarstvennogo politekhnicheskogo universiteta. Ekonomicheskie nauki = St. Petersburg State Polytechnical University Journal. Economics*. 2021;14(5):7–23. (In Russ.). DOI: 10.18721/JE.14501
12. Vereshchaka A.A. Theoretical and practical aspects of managerial decision making in the digital economy. *Vestnik Udmurtskogo universiteta. Seriya Ekonomika i pravo = Bulletin of Udmurt University. Series Economics and Law*. 2024;34(3):422–427. (In Russ.). DOI: 10.35634/2412-9593-2024-34-3-422–427

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