

TRENDS AND PROSPECTS FOR THE DEVELOPMENT OF DIGITALIZATION OF LOGISTICS AND SUPPLY CHAIN MANAGEMENT

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Abstract. *The article reveals the role and place of information technology in modern conditions of development of logistics and supply chain management, shows the prospects for the development of information technology in logistics and supply chain management in the context of digitalization of the economy, substantiates the need for digitalization of logistics and supply chain management in order to increase the efficiency of logistics systems of business entities and business processes of supply chains, based on the positive results achieved in the activities of leading companies, it was proposed to accelerate the implementation of the digitalization process of the logistics systems of business entities and business processes of supply chains.*

Information technology, global digitalization of the economy, digital logistics, big digital data, digital transport corridor, innovative digital technologies

Today it is difficult to imagine the viability of any sphere of human activity without the use of information technology, and logistics is far from an exception. In modern conditions of globalization of the economy, logistics is unthinkable without the active introduction of information technology in it. Information support is one of the most important components of logistics and supply chain management. Information support in the form of information flows contributes to the effective management of supply chains by providing targeted movement of material, financial and service flows in real time. Information support plays a crucial role in the process of production and sale of products, from the purchase of raw materials to the delivery of goods to the final consumer, including aftersales service. This explains the prospects for the development of information technology in logistics and supply chain management in the current conditions of global digitalization of the economy.

Thanks to information technology, information flows are organized in logistics and supply chain management that accompany material, financial and service flows to ensure their targeted movement and is an essential link for the

enterprise's logistics system and supply chain management system, including the supply, production and sale of finished products.

Information technologies used in logistics and supply chain management represent a set of scientific and engineering knowledge implemented in techniques for optimizing the operation of the enterprise's logistic subsystems and the logistics business processes of supply chain participants to increase their competitiveness, especially in the field of satisfying constantly growing demands and consumer demands [1, p. 19].

The main trends in the development of information technology in logistics and supply chain management is the globalization of the information business and the associated convergence of the information software and hardware environment. The mission of information technology here is to provide logistics and supply chain management with the necessary information resources to implement the basic logistic concept of optimization of business processes presented in the supply chain.

The main task of information technology in this case is to create the necessary conditions for making managerial decisions that contribute to improving the efficiency of logistics and supply chain management.

The digital transformation of logistics and supply chain management has spawned a new logistics term – digital logistics. Digital logistics should be understood as the digitalization of material flows, which includes intelligent systems for managing and tracking these material flows at all stages of movement with unmanned accompanying technologies and full automation of the relevant workflow (electronic goods and transport documents) in ensuring movement within the country and in international traffic with fast customs clearance of goods in cross-border traffic. Digitalization of logistics should be based on the creation of a reliable internal digital basis in the logistics systems of a business entity, the introduction of new business models and services to ensure the efficiency and cost effectiveness of supply chain management [2].

Digital logistics also includes the use of drones to deliver goods to the right place, the right time and at the lowest cost.

The practice of introducing digital logistics in many companies with a worldwide reputation in the direction of the network economy, based on the distribution of production processes by geography, has shown a reduction in logistics costs to 10 % in the final cost of their product (work, services).

With the digitalization of logistics, a prerequisite for the successful development of any transport and logistics company and the attraction of additional profit when organizing domestic and international transportation is the introduction of digital technologies in its activities. Recent studies by PricewaterhouseCoopers International Limited (PwCIL) have shown that 90 % of the transport and logistics companies in the world believe that in the near future, data processing and analysis systems using information systems and technologies will become a key transformation factor in the industry. At the same time, 50 % of

companies admit that the most serious organizational problem is the lack of a culture of using digital technologies [3].

It should be noted that the logistics and transit system of the Republic of Belarus puts forward the introduction of digital logistics by creating digital European corridors of electronic documentation accompanying goods in order to expedite their passage on the Belarusian-Polish border. The digital transport corridor is informational support for cargo transportation based on paperless workflow, including transport and customs documents. Of course, digital corridors must be linked to the company's intelligent transport systems.

In the concept of developing the logistics system of the Republic of Belarus until 2030, the following tasks were set in the field of digitalization:

- transition to electronic document management technologies for sustainable distribution chains;
- the formation of a single digital platform of logistics systems based on the integration of interaction with international information systems;
- unification of standards for information exchange of data between participants in the logistics system;
- the use of electronic forms of shipping and commercial documents for international transport by various modes of transport;
- development of an electronic exchange trading system in the field of logistics services [4, p. 239].

As part of the fourth phase of the digital revolution, Industry 4.0 – Cyberphysical Systems, digital logistics and supply chain management play an important role. The transition to digital production and Internet commerce makes us look at logistics as a tool for managing value chains and determine the focus of changes that should occur in logistics and supply chain management under the influence of the transition to cyber production. If we take into account the changes already caused by information technology – changes in the structure of companies, the boundaries of companies / sectors / sectors of the economy, a set of key competencies, business models and business strategies, then the digitalization of logistics and supply chain management in these realities acquires strategic importance for unification business processes into a single infrastructure of the digital economy, and on a global scale.

New digital technologies embrace the development of functionality in the field of global communication and information flows in the supply chain. The most important innovation in this area is the ability to digitalize key business processes (including logistics), supported by sensors, robotics, and content information. Digitalization accelerates the implementation of business processes in supply chains, providing greater reliability and transparency of information for making informed decisions. This will lead to a significant cost reduction based on the prevention of potential risks and the elimination of operations that do not add value to customers. The continuum of digital technologies that make up the main functionality of digital logistics and supply chain management includes big data

processing and analytics, the Internet of things, technology of distributed transaction registries, cloud services, electronic supply chain management, etc.

Innovative digital technologies in logistics and supply chain management, including miniature sensors and artificial intelligence, connect the physical and digital worlds together, transforming traditional linear supply chains into smart last supply chains based on digital supply chains. The latter, working together with blockchain technology and the Internet of things, are transforming the world of modern logistics and supply chain management. That is why end consumers get the opportunity to track the shipment of goods in real time, view the stages of the vehicle on a single electronic map [5].

The use of the Internet of things will be more effective when smart pallets and containers will greatly facilitate the tracking of transported goods or their search in the warehouse.

In logistics and supply chain management, the implementation of the Internet of things technologies allows us to solve such urgent problems:

- reduction of freight costs and delays;
- increasing the transparency of transportation and minimizing the human factor;
- optimization of repair and maintenance of vehicles;
- Uberization of transportation, which will allow you to abandon intermediary forwarders.

Big digital data and logistics are created for each other, so today logistics is positioning itself to make better use of this wealth of information. Big digital data is revolutionizing many areas of the business community, and logistics analytics is one of them. The complex and dynamic nature of logistics development and supply chain management, as well as dependence on many moving parts that can create bottlenecks anywhere in the supply chain, make logistics an ideal option for using big digital data.

For example, the logistics of big digital data can be used to optimize routing, streamline production functions and ensure transparency of the entire supply chain in the interests of logistics companies.

Logistics and supply chain management are ideal for leveraging technological and methodological advances in big digital data. They relate to data sets whose size exceeds the capabilities of typical database software tools for collection, storage, management and analysis.

IBM, a large international company, defines big digital data as having four key attributes:

1. Volume: data scale;
 2. Speed: the analysis of streaming data, that is, the speed with which data arrives at the enterprise and the time it takes to process and understand this data;
 3. Diversity: various forms of data (structured and unstructured);
 4. Reliability: data uncertainty (refers to the quality or reliability of the data)
- [6].

How are big digital data applied to supply chain management business processes? Despite the largest growth in data analytics seen in the subsequent understanding of customers, analytics can have applications throughout the supply chain. Supply chains that span the development of big data capabilities must first recognize the benefits that big data solutions can provide to their operations. These decisions must be made on the cost-effectiveness of prioritizing certain parts of their operations. Holistic solutions for big digital data, applied to the entire supply chain, can entail high costs, making decision makers in the supply chain more selective in setting up solutions for specific business operations [7].

To summarize, we come to the conclusion that modern information technologies make it possible to automate decision making at all stages of logistics and supply chain management. In turn, providing information through automated and regulated notifications is critical to building and maintaining a competitive supply chain. And, thanks to the use of big digital data technology, transport and logistics companies can better manage traffic by daily analysing information about transport and logistics operations. The introduction of the Internet of Things technologies in logistics and supply chain management allows solving such urgent tasks as reducing freight costs and delays. It should also be noted that innovative technologies in logistics and supply chain management today are the most important tool to improve the functioning and competitiveness of business entities, and therefore it is necessary to regularly analysis their activities in order to modernize and improve them. For business entities, the use of certain information technologies to digitalize their logistics system and manage supply chains can simplify some business processes and increase their profitability.

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УДК 338.2

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ЭКОНОМИЧЕСКАЯ ЭФФЕКТИВНОСТЬ И ПЕРСПЕКТИВЫ ИСПОЛЬЗОВАНИЯ ГАЗОМОТОРНОГО ТОПЛИВА

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Аннотация. В статье на основе проведенного сравнительного анализа эффективности применения традиционного бензинового топлива и газомоторного топлива обосновывается целесообразность и наибольшая эффективность применения альтернативного топлива в виду его большей экономичности и экологичности.

Альтернативное топливо, газомоторное топливо, сравнительная экономическая эффективность

COST EFFECTIVENESS AND PROSPECTS FOR THE USE OF NGV FUEL

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***Abstract.** The authors present Based on a comparative analysis of the effectiveness of using traditional gasoline fuel and gas engine fuel, the article substantiates the feasibility and highest efficiency of using alternative fuel in view of its greater efficiency and environmental friendliness.*

Alternative fuel, gas engine fuel, comparative economic efficiency