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Орловский А. А., Дьяченко Е. В.
On the issue of improving the economic mechanisms for the development of global logistics chains

Orlovskiy A. A., Dyachenko E. V., *4th year students {Customs}*
Scientific adviser: Romanov P. S., *Doctor of Pedagogy, professor*
Leonov Moscow Region University of Technology, Korolev, Russia

In this scientific article, the main innovative approaches to the development of economic, logistics and electronic mechanisms of international logistics chains were considered. The experience of pharmaceutical companies was considered as examples of the use of such innovations. The cloud solutions they use can improve the efficiency of the entire supply chain system. The relevance of the aspects under consideration is due to the fact that in the modern world, within the framework of globalization, more and more attention is paid to the logistics component of companies and enterprises.

Keywords: pharmaceutical companies, logistics, cloud solutions, digitalization.

Currently, managers of pharmaceutical companies who understand and work with the help of digital technologies and their consequences can successfully implement digital strategies and, thus, increase profitability. A digitized organization is characterized by the use of digital means to carry out operational activities, which may include the purchase and sale of products and services, customer interaction, collaboration with internal and external stakeholders, and the execution of transactions inside and outside the organization [3]. The supply chain is defined as a series of interrelated actions that include coordination, planning and control of products and services between suppliers, manufacturers and customers [1]. Digital technologies in the supply chain compared to traditional technologies have changed the way employees of an organization interact with others compared to a conventional supply chain consisting of physical objects scattered geographically with linear cooperation.

Let's study the interviews of five participants from four different pharmaceutical organizations. They mentioned the digital tools implemented to digitize the supply chain in their organizations. The participants also discussed the criteria for overcoming the limitations when choosing these digital tools and technologies. Cloud ERP (Enterprise Resource Planning) systems, such as SAP (System Analysis Program), were chosen by the majority of participants as an accounting system, an interaction system and an innovation system. The SaaS (Software as a Service) cloud system also meets the criteria for their system-related needs. Data integrity has been one of the most important criteria in the pharmaceutical industry. Participants emphasized the need for analytical tools for big data analysis to ensure end-to-end visibility in supply chain systems.

To solve the problem associated with digital technologies, managers need strategies that they can use to eliminate or minimize these problems. The development of a business case with an assessment of the risks associated with specific digital tools, digital system integrators and applied technologies is necessary for each participant to express an opinion on the need to create a system of accounting, interaction and innovation during their transition to digital transformation of the supply chain. The document created by this system must be certified and verified at the highest level and must be accepted by regulatory authorities. SAP, which is an ERP software, was an automatic choice for all interviewees. The first interviewee explained that SAP as an accounting system helped him in the functionality of the digital supply chain, such as logistics, planning, planning, procurement, production, transportation, billing and finance. Tracking adverse events is one of the most important parameters in any pharmaceutical industry. Each participant explained that the tracking system created and configured in the SAP system helped managers to conduct business effectively. Another participant suggested using cloud services and SaaS cloud systems for a digital quality-related supply chain journey. He explained that the LIMS (Laboratory Information Management System) system, which is a cloud-based quality system, helped him transform manual analog processes into digitally recorded systems, which is necessary for good practice, quality guidelines and regulatory processes. It was also proposed to use HANA (High-performance Analytic Appliance), which is based on the cloud, to manage supply chain processes. The third participant spoke about the use of cloud services for business maintenance from the point of view of the client center. In addition, each participant strongly expressed an opinion on the need for a BDA (Background Data Analysis). According to the first opinion, analytics in combination with artificial intelligence, machine learning and automation of robotic processes is very useful in the innovation system. In this case, the company implements most of the data analysis functions from SAP. They also implemented Qlikview, which provided them with a platform for data analysis based on the SaaS model. In addition to this, the second interviewee spoke about using SAP data analysis tools for their transactional needs for end-to-end visibility of processes: he also used tableau and AERA (American Educational Research Association) data analysis tools to meet his supply chain needs. The latter said that data analysis helped the business to gradually introduce innovations.

Each participant discussed the need for strong business justifications to attract investment in the digitalization of the supply chain. The following factors are critical to creating a sound business case: implementing a digital initiative that promotes rapid business growth, using digital supply chain initiatives to support cost optimization, increasing supply chain flexibility through digitalization [3]. Three out of five respondents indicated the need for close cooperation with senior management regarding digital initiatives by preparing a business case. The rest

discussed the need to prepare indicators to predict the benefits for digital initiatives and present them together with business cases. In order to expand the scale, introduce full-fledged digital models, it is necessary to prioritize software tools and launch pilot projects to develop solutions.

Each participant suggested prioritizing these digital tools and then launching pilot projects on a smaller scale. On the one hand, they carry out digital projects in various sprints, and prototyping is a prerequisite for any sprint. On the other hand, a situation where there is a large-scale deployment with large investments in technology, their pilot testing is only to eliminate errors and make sure they have chosen the right approach before they start operating around the world.

The results of this survey are consistent with the conceptual framework of constraint theory, which suggests working with the rest of the system as soon as the constraints are determined. The restriction prevents the system from achieving its goals, and there may not be hundreds or thousands of restrictions in the supply chain system. An effective digital forecasting strategy can help pharmaceutical organizations cope with internal constraints when the market requires more than the organization can produce. Optimized demand-driven digital strategies can also help mitigate external constraints when output exceeds market capacity. Forecast, source from supplier, production and delivery to end users are not considered as independent processes from the point of view of theory. To achieve the desired goals, each of these areas must be coordinated with each other and must be integrated into common digital supply chain strategies. Different strategies have helped supply chain managers to work with different constraints and then identify different digital means to overcome these constraints.

IoT (Internet of Things) devices can transmit real-time data, and in the pharmaceutical industry, these advantages are crucial because processes are often complex. When it comes to expensive medicines, for example, especially with more personalized medicines that are developed specifically for specific patients, IoT sensors that track the temperature and condition of these medicines during their storage and transportation can be incredibly important. The delivery time and quality assurance of these custom medicines are absolutely important. In short, the stakes are higher, both financially and in terms of patient safety [2].

Digital tools such as IoT, ERP, cloud, machine learning, artificial intelligence helped business managers who participated in the study. Each organization used SAP, which is one of the digital tools as a system of accounting, interaction and innovation. Organizations have made extensive use of the Internet of Things during transportation and cold chain processes. Cloud computing has also helped organizations reduce costs, ensure data security, and improve the efficiency of the entire supply chain system. Since most pharmaceutical executives emphasized the importance of data integrity and information exchange between internal and external stakeholders, the cloud helped them in these aspects.

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