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IMPROVING THE MANAGEMENT OF INTERNATIONAL SUPPLY CHAINS ON THE BASIS OF LOGISTICS

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Pysmak V. O. Improving the Management of International Supply Chains on the Basis of Logistics

The theoretical bases of supply chain management with the use of the logistics conception are considered. A separate emphasis is given to exploring the essence of the concept of «supply chain management», a semantic analysis of the concept is provided. The conceptual difference between the concepts of «logistics» and of «supply chain management» is substantiated. The specificity of supply chain management at the international level is researched. The basic models of supply chain management are considered, their main advantages and disadvantages are allocated. A scheme of the organization and management of supply chains is presented, which allows to integrate the main business processes and improve the quality of the logistics chain course. The implementation of logistics management of supply chains with the use of the category management methods is proposed. The problems above the marked subjects, requiring theoretical and methodical decision, are allocated.

Keywords: logistics, supply chain, international activity, synergistic effect, logistics conception.

Fig.: 1. **Tbl.:** 1. **Bibl.:** 12.

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Письмак В. О. Удосконалення управління міжнародними ланцюгами поставок на основі логістичної концепції

Розглянуто теоретичні засади здійснення управління ланцюгами поставок у міжнародному сполученні із застосуванням логістичної концепції. Особливу увагу приділено дослідженню сутності поняття «управління ланцюгами поставок», проведено семантичний аналіз поняття. Обґрунтовано концептуальну різницю понять «логістика» й «управління ланцюгами поставок». Досліджено специфіку управління ланцюгами поставок на міжнародному рівні. Розглянуто основні моделі управління ланцюгами поставок, виділено їх основні переваги та недоліки. Наведено схему процесу організації та управління ланцюгами поставок, що дає змогу більш повно інтегрувати основні бізнес-процеси та підвищити якість проходження логістичного ланцюгу. Запропоновано здійснення логістичного управління ланцюгами поставок із застосуванням методів категорійного менеджменту. Виділено проблеми вищезокресленої тематики, що потребують теоретичного та методичного вирішення.

Ключові слова: логістика, ланцюг поставок, міжнародна діяльність, синергетичний ефект, логістична концепція.

Рис.: 1. **Табл.:** 1. **Бібл.:** 12.

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Письмак В. А. Совершенствование управления международными цепями поставок предприятий на основе логистики

Рассмотрены теоретические основы осуществления управления цепями поставок с использованием логистической концепции. Отдельный акцент уделен исследованию сущности понятия «управление цепями поставок», проведен семантический анализ понятия. Обоснована концептуальная разница понятий «логистика» и «управление цепями поставок». Исследована специфика управления цепями поставок на международном уровне. Рассмотрены основные модели управления цепями поставок, выделены их основные преимущества и недостатки. Представлена схема процесса организации и управления цепями поставок, что позволяет интегрировать основные бизнес-процессы и повысить качество прохождения логистической цепи. Предложено осуществление логистического управления цепочками поставок с применением методов категорийного менеджмента. Выделены проблемы выше обозначенной тематики, требующие теоретического и методического решения.

Ключевые слова: логистика, цепь поставок, международная деятельность, синергетический эффект, логистическая концепция.

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A significant impact on activities of modern enterprises is made by globalization processes that are characterized by a considerable increase of competition and the use of innovative technologies and products. Under such operating conditions, the main emphasis in management processes is placed rather on the effectiveness of their management with the use of advanced means of communication and cooperation with clients and contact audiences than on the availability of material resources. Therefore, at the moment, there needed such models for managing and organizing the material flow that are able to quickly adapt to the needs of the market and to reorganize the structure of an enterprise depending on the available resources and objectives of the enterprise. That is why, to date, the task of forming effective supply chains and organizing their effective management is being brought to the forefront. In addition, under current conditions of rapid globalization, modern enterprises have to expand their sales markets and enter foreign markets. Therefore, it is the study of issues of improving management of international supply chains that is relevant.

Research on issues related to the theory and practice of forming and managing supply chains is highlighted in works of such foreign and domestic scientists as Donald J. Bowersox, David J. Closs, James B. Henry, Robert W. Nason, Donald A. Taylor, James S. Johnson, Donald F. Wood, Daniel L. Wardlow, Paul R. Murphy, H. Mathe, D. Tixier, J. R. Stock, D. Waters, M. Christopher, B. Anikin, A. Hadzhynskiy, V. Dybskaya, and many others.

Analyzing the significant contribution of domestic and foreign scientists, it should be noted that there is no systematic and comprehensive solution to the problem of supply chain management in the international context using the logistics concept.

The aim of the article is a comprehensive analysis of models for managing international supply chains under modern conditions and formulation of an algorithm for improving management of international supply chains based on the logistics concept.

Due to the fact that the concepts of “supply chain” and “logistics” have been formed in science only recently, the terminology apparatus is somewhat imperfect and requires additional analysis. To date, it presents a mix of technical, economic and management terms, so an important step is to define the principles of systematization and classification of basic terms (keywords) that can ensure the completeness and harmony of the conceptual apparatus for the purposes of logistics research and practical activity [1].

With the collapse of the Soviet Union, in the post-Soviet space, the state monopoly of foreign trade was liquidated, so a transition to the market type of economy took place. In connection with the constantly growing competition among enterprises that were functioning at that time in the market, there began the search for tools that would help optimize the expenses and improve the competitiveness of an enterprise. In the early 1990s, the management of enterprises began to pay attention to the logistics concept. Besides, among foreign authors of that time there emerged an idea that it is quite difficult to provide the desired level of competitiveness and business profitability using only logistics tools. Therefore, there increasingly encountered the concept of “supply chain management”, the first use of which is associated with the names of R. Oliver and M. Webber, who in 1982 proposed to consider material flows within the framework of an integrated strategy, namely the one called “supply chain management”. As a primary source of application of the above-mentioned concept, there can be mentioned the works of J. W. Forrester (1961) in the sphere of interaction and cooperation and D. J. Bowersox (1969) in the field of stocks, production and distribution of goods. Most scientists believe that the emergence of the concept of supply chain management is caused by the desire to reduce the degree of uncertainty based on cooperative methods and multi-level inventory management. We will analyze the above term in order to determine its main semantic component.

Table 1

The semantic analysis of the concept of “supply chain management”

	Author	Keywords	Definition of the concept
	1	2	3
Supply chain management is ..	European Logistics Association [2]	The organizing, planning, controlling, and regulating of the commodity flow	The organizing, planning, controlling, and implementing the commodity flow, starting with the receipt of an order and purchase of raw materials and then, through production and distribution, bringing it up with the optimal resource spend to the end user
	American Production and Inventory Control Society [2]	The designing, planning, controlling, and monitoring of activities in a supply chain	The designing, planning, controlling, and monitoring activities in a supply chain in order to create a net value and build a competitive infrastructure
	D. M. Lambert [3]	Integration of key business processes	Integration of key business processes, starting from the end user to original suppliers, which provides products, services, and information
	D. Ivanov [4]	Resources of industrial, logistics, and trading companies	Studies resources of industrial, logistics, and trading companies as well as the decisions of individuals taken with respect to interorganizational interaction processes for using resources throughout the value chain.
	K. Tankov [5]	Relations of chain participants in space and time	Relations of chain participants in space and time in the process of forming an integrated supply function from material resources to intermediate and finished products, which, in turn, forms an integrated logistics flow from the flow of customer orders to the commodity and financial flow

	1	2	3
	J. T. Mentzer [6]	Management of a group of organizations	Managing a group of three or more organizations directly connected to each other by input and output flows of commodities, services, finance, and information.
	I. Nakonechnyi [6]	The complexity of and difficulties in creating value	The complexity of and difficulties in creating value, starting from the stage of obtaining raw materials, and ending with the transfer of the finished product to the client.

Thus, the concept of “supply chain management” is multifaceted and complex. Supply chain management should be understood as a certain concept based on the organization of supply, production and marketing processes, associated with them logistics storage and transportation operations, with regard to the long-term cooperation of all participants in the process, and as building strategic alliances. Quite often in the modern literature there is an opinion about the identity of the concepts of “logistics” and “supply chain management”. We will analyze these concepts in order to refute the above idea. First of all, the main goal of logistics management is logistics optimization of intra-organizational processes; in its turn, supply chain management is carried out to expand corporate optimization. With logistics management, partners are chosen by setting a competitive price, and mostly short-term contracts are used, while supply chain management implies choosing partners through negotiations and making long-term strategic alliances, but it is more risky than logistics management methods. Also, the main feature of supply chain management is controlling the interaction channels rather than chain links.

At the present stage of development of logistics and supply chain management, one of the most pressing problems is the correct selection of models for the forming and managing logistics processes and supply chains. Nowadays, there are practically no unified approaches to design of supply chains. This is due to the uniqueness and specificity of each supply chain depending on many factors, such as the integration of participants in the chain, industry specificity, and competition. But despite this, there are universal models of supply chains reflecting a certain sequence of functions, which are implemented in a particular industry. Among the most common models there can be singled out CASE, CALS, SCOR, EFQM, VRM, and others.

The basis for the CASE model (Computer Aided Software / System Engineering) is the cycle of business process reorganization, which includes the following stages [7]:

- ✦ organizational stage, which regulates the work on the improvement of business processes;
- ✦ study of processes and identification of bottlenecks;
- ✦ analysis of proposals for reorganization;
- ✦ implementation of the proposed improvements.

The main advantages of this model are a high level of technological support for processes of development and maintenance of software, and product quality improvement.

The CALS model (Continuous Acquisition and Life Cycle Support) is aimed at supporting the continuity of

supply of a product and its life cycle. The main goal of the implementation of CALS technologies is to increase the efficiency and competitiveness of an enterprise due to a significant reduction in the terms of mastering the production of new types of products, improving the quality of products and technical documentation accompanying the release of these products. When implementing this model, the following technologies should be used:

- ✦ technologies for analysis and reengineering of business processes, allowing to switch to electronic document circulation;
- ✦ technologies for representing data in electronic form;
- ✦ data integration technologies.

The advantage of this model is the shortening of the terms of project implementation, information integration of processes, integrated logistics support of products. But the main drawback is the possibility for its application only in industry.

The SCOR (Supply Chain Operations Reference) model is the most common model in logistics. The model considers the processes of planning, sourcing, making, delivering and returning. This model enables companies to interact using the language of common standards, technologies, communications, rules and learn from other companies, adopting their experience.

The advantages of the model are a high level of standardization as well as inclusion of interaction between participants of the chain and the market. The disadvantage is the orientation towards individual companies, limiting the modeling of the planning and organization processes [8].

The EFQM (European Foundation for Quality Management) model is a popular model that helps identify shortcomings in activities and stimulate the necessary integrated solutions to achieve business excellence. The main criteria for this model are [9]:

- ✦ leadership;
- ✦ strategy;
- ✦ people;
- ✦ partnerships;
- ✦ resources;
- ✦ processes;
- ✦ products and services.

The advantages of the model are the opportunity to perfect performance by improving all aspects of the organization's activities and targeting all stakeholders. The disadvantages are the inability to cover the entire value chain and the detailing available only at the organization level.

The VRM (Value Reference Model) supports the coherence of processes in a supply chain and allows enterprises integrating product development, supply chain integration, and global customer success.

The VRM provides [9; 10]:

- ✦ the standardized language and the interconnection of processes throughout the chain;
- ✦ visualization of the entire value chain;
- ✦ identification of key performance indicators for the entire value chain;
- ✦ a detailed plan, including strategy, operations, and tactics.

The model has the main advantage — providing coverage of the entire value chain, as well as product development processes, and customer relations. But to date, there are almost no examples of practical implementation of this model, so it is difficult to identify its main disadvantages [11; 12].

Thus, after analyzing the models, it can be stated that almost all models include the stage of management of existing supply chains missing the stage of designing supply chain efficiency. But there are no specific mechanisms for managing supply chains based on the logistics concept that would have a complex nature and design mechanism.

Due to the fact that within supply chains competition has not regional but global character, in order for enterpris-

es to function and be competitive, they should pay special attention to designing and managing supply chains. To formulate the basic algorithm for designing supply chains, it is, first of all, necessary to agree on the main goals of a business. Taking into account the fact that chains differ from each other depending on the business specifics, it is necessary to design a common universal scheme for building a supply chain.

The first step is undoubtedly determining the purpose of the project, that is, the improvement of the existing chain or the building of a new one. Further, the micro and macro environment assessment is conducted for the purpose of carrying out the SWOT analysis, identifying the main risks and threats. Assessment of the external environment is an important stage, in fact, it forms prospects for the functioning of the enterprise as a whole. In turn, the detected risks or threats can be controlled or generally minimized. At the third stage, it is expedient to determine the specifics of supply chains, set the main goals of their operation. Thus, for all chains managed on the basis of the logistics concept, the main goal is to ensure the availability of the necessary product of the appropriate quality in the right amount in a certain place at a specific time for a particular customer, with the optimal costs. In turn, cost optimization, of course, leads to an increase in profits. Thus, we will present an algorithm for constructing a system for managing international supply chains based on the logistics concept (Fig. 1).

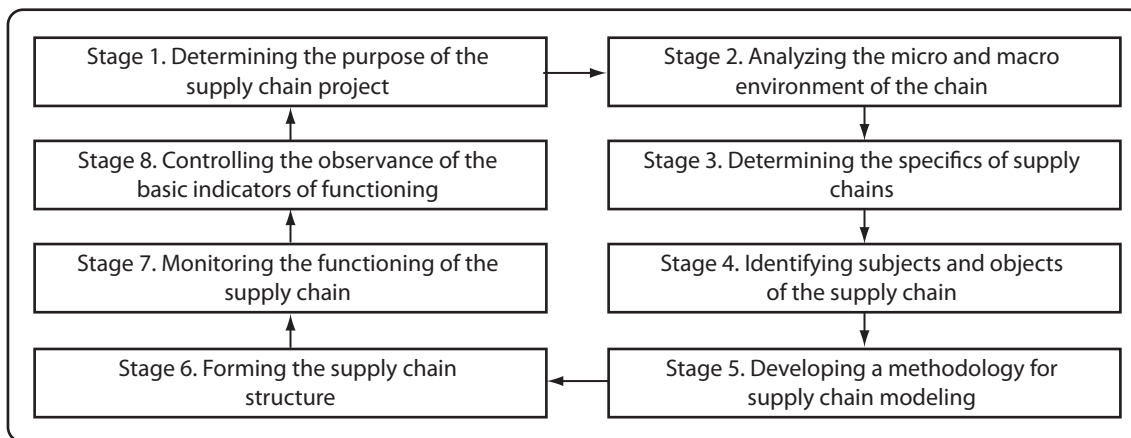


Fig. 1. The algorithm for the improvement of the system for managing international supply chains based on the logistics concept

In the given scheme-algorithm an important role is played by Stages from 4 to 8, since at Stage 4 the main links in the chain, the participating organizations are determined and the proper structure of the chain is formed. Stage 5 is the key one in choosing a successful chain modeling system, i.e., forming the main criteria for the assessment of supply chains and the basic principles of chain management. Stage 6 involves the creation and assessment of alternative supply chain configurations and the selection of the optimal supply chain model. Stages 7 and 8 provide for controlling the correctness of building the chain and the possibility for introducing certain changes in the repeated improvement of the chain.

In turn, the main idea of the logistics concept, which presents the basis of this algorithm, includes the following key points:

- ✦ analysis of the environment to further optimize the entire supply chain and ensure cost savings by reducing project risk;
- ✦ development of the modeling methodology, which provides for the creation of the necessary conditions for building the most optimal and efficient system for managing supply chain.

It should be noted that, given the existing problems in the functioning of supply chains, it is advisable to implement interaction and mutually beneficial cooperation

within chains using the principles of category management, the basic concepts of which are the rules for forming the product range and maintaining the required level of commodity stocks in order to maximize the satisfaction of the demand of end consumers. The main tasks performed by category management are optimization of stock reserves and product flows based on selling high demand products in the market at an optimal price; a clear breakdown of all product groups into categories; studying the consumer demand for each of the product categories; developing a clear assortment policy; determining the product positioning in the market and pricing policy; optimizing the whole chain of goods movement, etc. [13]. The use of this type of tools in the international context makes it possible to implement the maximum optimization process taking into account the logistics concept.

Summarizing the above, we can conclude that the need for a logistics approach in managing international supply chains is due to the fact that it is logistics instruments under market conditions that can effectively build and regulate economic relations throughout a supply chain from producers to end users. It is revealed that the improvement of supply chain management requires the development of a supply chain modeling methodology. ■

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