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GENESIS OF CONCEPTUAL APPROACHES TO «LOGISTICS» CATEGORY

Abstract. The article deals with the current theoretical and methodological approaches to forming «logistics» category, which is considered as a science and a practical area of business. A retrospective and development evolution of the researched category in military, mathematical and economic aspects is given. Attention is drawn to the fact that in economic science, the genesis of «logistics» category is closely related to forming market relations in industrialized countries. Three main conceptual approaches were studied, which form the definition of the term «logistics» and generally determine the directions of further scientific developments, the nature of logistics use in practice: associativity with material and technical support of production and other types of activities, sales of products; scientific organization of managing infrastructural flow processes by means of their integration, optimization of costs and rationalization of production processes; scientific organization of managing any flow processes in any sphere of human activity. A critical analysis of the considered approaches was carried out from both a scientific and a practical point of view. The differences of F. Kotler's ideas on market logistics compared to mainstream approaches in the marketing aspect are outlined. The interrelationship of the theory, methodology, object and subject of logistics with certain types of activities, material and goods and related information and financial flows is stated. Attention is focused on the dominant paradigmatic idea – global integration and optimization of flow processes. It is justified that the development of information technologies had the greatest impact on logistics, and logistics itself is now increasingly influencing the development of various spheres of human activity. The genesis of approaches to «logistics» category is summarized: stages, conceptual features and definitions of examined term. It was concluded that in modern conditions, logistics is mainly aimed at increasing the efficiency of integration of any flow processes that have features of spatio-temporal sequence, therefore attempts to globalize logistics fields of application not only in the economy, but also in the science in general, culture, and art etc. are natural.

Key words: logistics, conceptual approach, integration, optimization, flow processes.

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ГЕНЕЗИС КОНЦЕПТУАЛЬНИХ ПІДХОДІВ ДО КАТЕГОРІЇ «ЛОГІСТИКА»

Анотація. Стаття присвячена актуальним теоретико-методологічним підходам до формування категорії «логістика», яка розглядається як наука та практична сфера бізнесу. Наведено ретроспективу та еволюцію розвитку досліджуваної категорії у військовому, математичному та економічному аспектах. Закцентовано увагу, що в економічній науці генезис категорії «логістика» тісно пов'язаний із становленням ринкових відносин у промислово розвинених країнах. Досліджено три основні концептуальні підходи, які формують дефініцію терміну «логістика» та визначають загалом напрямки подальших наукових розробок, характер

використання логістики на практиці: асоціативність з матеріально-технічним забезпеченням виробничої та інших видів діяльності, збутом продукції; наукова організація управління інфраструктурними потоковими процесами шляхом їх інтеграції, оптимізації витрат та раціоналізації процесів виробництва; наукова організація управління будь-якими поточними процесами у будь-якій сфері людської діяльності. Здійснено критичний аналіз розглянутих підходів як із наукового, так і з практичного погляду. Окреслено відмінності з погляду ідей Ф. Котлера до ринкової логістики порівняно із мейнстрім-підходами у маркетинговому аспекті. Констатовано взаємозв'язок теорії, методології, об'єкту та предмету логістики з певними видами діяльності, матеріально-товарними та супутніми їм інформаційними і фінансовими потоками. Закцентовано увагу на домінуючій парадигмальній ідеї – глобальній інтеграції та оптимізації поточних процесів. Обгрунтовано, що найбільший вплив на логістику мав розвиток інформаційних технологій, а сама логістика нині все більше впливає на розвиток різних сфер людської діяльності. Узагальнено генезис підходів до категорії «логістика»: етапи, концептуальні ознаки та дефініції досліджуваного терміну. Зроблено висновок, що в сучасних умовах логістика спрямована переважно на зростання ефективності інтеграції будь-яких поточних процесів, які володіють ознаками просторово-часової послідовності, тому закономірними є спроби глобалізації сфер застосування логістики не тільки в економіці, але й у науці загалом, культурі, мистецтві тощо.

Ключові слова: логістика, концептуальний підхід, інтеграція, оптимізація, поточні процеси.

Introduction. Different researchers understand different definitions of logistics, although they all associate logistics with the problem of managing the flow of goods and information directed from the point of production to the point of consumption. In one form or another, logistics is implemented at every enterprise, regardless of the field of operation. The share of logistics costs in absolute terms is constantly growing; this component is currently about 10% of GDP [4].

Logistics is, on the one hand, a science, and on the other, a practical area of business. Despite the ancient historical origin and a large number of domestic and foreign scientific publications on logistics, significant experience of its use in business practice [3], it is worth noting that logistics as a science is still in the stage of formation and development. This is manifested in different and rather contradictory methodological approaches to the meaningful content of logistics, in the use of methods and tools, as well as the interrelationships of logistics with other related areas.

The scientific foundations of the term "logistics" were laid by G. Jomini and G.V. Leibniz. A number of foreign and domestic scientists devoted their publications to researching theoretical and methodological basis of logistics: Kotler F., Murphy P., Wood D., Krykavskiy Ye., Larina R., Leheza D., Marchenko V. and others.

The purpose of the article. To investigate genesis and evolution of the development of conceptual approaches to the content of "logistics" category formulation and to clarify its features at theoretical and methodological level.

Results. The term «logistics» comes from the ancient Greek word (in Latin transcription «logistiks»), which means «the art of calculation» and was originally traced in treatises on military affairs. In retrospect, it is possible to distinguish three aspects of the term «logistics»: military, mathematical and economic.

The origins of logistics were often tangential to the art of war, as logistics developed and improved over time, and military operations were planned and conducted in different countries at different time periods. The founder of military logistics is considered to be Alexander of Macedon, who managed to conquer huge territories in a relatively short time, using, among others, logistics. For example, he chose the route of the troops in the direction of the rivers, that helped to supply the weapons, food and uniforms to the army on time. During the times of the Roman Empire, there were separate «logistics» workers who were engaged in delivering and distributing food for the legionaries. During the reign of the Byzantine emperor Leo VI, the term «logistics» first appeared in the quartermaster service as the art of managing the supply of an army, including the preparation for each military campaign. Napoleon was also actively interested in logistics, and the first author of a scientific work on logistics was French military theorist G. Jomini (1836) [1].

The second aspect of the term «logistics» is mathematical. The application of logistics in mathematics has only a scientific direction. German philosopher, mathematician and linguist Gottfried Wilhelm Leibniz called mathematical logic as «logistics». The term was officially adopted as mathematical logic at Geneva Conference in 1904 [5, p. 8].

Since logistics is one of the components of the economic system, its development is directly related to general evolutionary trends. In economic science, the genesis of «logistics» category is closely related to the formation of market relations in industrialized countries.

At the beginning of the 60s of the 20th century the countries with a developed market economy did not pay due attention to forming the ways for optimization of managing material flows, because there was a market system that was dynamically developing and growing. The main vector of management was aimed at saturating the market, and not at finding reserves in the rational organization of production. Consumer demand for goods mostly exceeded producers' supply, that is, there was a seller's market. After a certain period, the reserves for increasing the production potential were exhausted and the producers began to experience difficulties in selling their products at the offered prices. Accordingly, the emphasis shifted towards the formation of the buyers' market. With the transformation of market relations, the content of «logistics» category also changed.

Logistics, as a concept and field of activity, was formed in the 60s and 70s of the 20th century. The term itself became widely used in business sphere only in the late 1970s. Production and mass use of computers, emergence of opportunities for information transmission ensured the powerful development of information systems both at the level of individual enterprises and by territorial coverage. Accordingly, it made it possible to transfer information about cargo requisites being transported, especially at the international level. The use of information technology made it possible to raise the efficiency of material flow management to a new level.

In logistics as an object of scientific research, several vaguely demarcated conceptual approaches can be singled out, which largely determine both the direction of further scientific developments and the nature of using logistics in practice.

According to the first conceptual approach, logistics is associated with certain spheres of activity, mainly with social production. At the same time, the thesis regarding the significant transformation of the production sphere under the influence of logistics forms and management methods must be necessarily noted. As a result, traditional activities acquire a new meaning, which is adequately reflected in various types of logistics. In particular, purchasing activity is transformed into «purchasing logistics» or «supply logistics», production activity – into «production logistics», sales activity – into «distribution logistics», accordingly, the same is observed with regard to transport and warehouse activities. Traditional economic, managerial and even purely technological concepts, typical for specified spheres of activity, as well as the services themselves, were accordingly named «logistics». Accordingly, economic structures or their subdivisions, which implement similar logistics tasks and functions, turn into «logistics systems» of different levels.

It is necessary to note a certain inferiority of the considered approach from both scientific and practical point of view. Among several competing concepts this approach reflects an attempt to identify modern forms of material and technical support of production with other types of activities, as well as product sales with logistics. The considered conceptual approach, in our opinion, is meaningless and unpromising because:

- focuses on improving the local results of activities regardless of the final result – satisfaction of consumer requirements due to optimal costs (we emphasize the marketing aspect);
- ignores the existing modern achievements of logistics in terms of production and material infrastructure integration;
- contributes to the scientific distortion of logistics, giving pseudo-novelty to trivial and outdated provisions of the economy and organization of supply and sales, using as protection the foreign origin of the word "logistics" with references to the semantics and history of its use in English language.

Therefore, automatic referring to logistics only by definition and by analogy with international experience is not completely incorrect and unpromising, as it does not contribute to the implementation of specific and meaningful measures regarding the actual application of modern forms and methods of logistics. At the same time, it is precisely this false concept of logistics that gained significant popularity among practitioners, and sometimes in the scientific environment.

In the period from the 1980s to the mid-1990s, logistics acquired the status of «way of thinking» – a concept based on the deep integration of all branches of economic activity into a single resource system. It is not the product that becomes dominant, but the process in the form of a flow (material, financial, information, and others), which is an important novelty of methodological approach at that time; so, there was a change in the paradigm of logistics.

According to the second concept, while considering commodity flows as the main object of research, the priority issue is the integration of production and material infrastructure (supply, sales, transportation, storage, communication, information and financial support, etc.). This concept is more progressive, as it reflects a new evolutionary stage, objectively forming the introduction of management as a separate component in the logistics concept [6]. This is explained by the trend of the world economy globalization and its gradual reorientation towards the consumer market. Since the 1960s, in almost all economically developed countries, sales, as an important part of the production infrastructure, as well as the organization of transport, information and capital flows, have become a single service function. End-to-end functions of management and regulation of material flows distribution are implemented in production companies, starting from the moment the material arrives in the warehouse until the material flow leaves the enterprise in the form of finished products. At the same time, the management of previously independent processes, such as purchasing and supply, cargo unloading, cargo-transport and customs-warehousing operations, inventory control and other activities, is unified. Thus, the experience of organizing logistics services is formed.

According to the second concept, logistics can be defined as a scientific organization through the integration and cost optimization of infrastructure flow processes. The weak component of this approach is its partial limitation, which is largely interrelated with the still quite widespread idea of sales marketing, according to which material production remains the most prioritized and dominant stage in the reproduction process, and all other infrastructure depends on material production. It is obvious that with such an approach to the general concept of logistics, its division into the functions of procurement, production, transportation, storage and distribution looks paradoxical. This gradual («horizontal») flow fragmentation underlines the main essence of the idea of logistics – complete coverage and rationalization of common flow processes. However, such a conditional division is expedient if it involves making the subject of logistics not only the rational organization of logistics itself. First of all, it concerns preparation for the formation of optimal solutions of the distribution logistics center. At the same time, according to this conceptual approach, logistics simply claims to replace certain components of applied economic science.

In the above context, it is necessary to single out the ideas of F. Kotler, since logistics is also directly interconnected with marketing. He compares market logistics with distribution logistics. The phrase «market logistics» is used in the sense of «planning», «implementation», «controlling» over the physical flows of materials and finished products, starting from the points of origin and ending with the points of destination, in order to satisfy consumers' requests [2, p. 475]. With this definition, F. Kotler limits the field of logistics, not reflecting its basis – namely, the overall integration of all types of flows.

At the same time, two examined conceptual approaches organically interconnect the theory, methodology, object and subject of logistics with certain types of activities, material and goods and related information and financial flow.

The third modern conceptual approach to «logistics» category is a scientific organization of managing any flow processes in any sphere of human activity that have a spatio-temporal sequence. This approach includes, among other things, the military sphere, medicine and health care, tourism and sports, jurisprudence, banking services, etc. by optimizing them to improve the final results of these activities. We believe that this conceptual approach to logistics is the most progressive, as it has a number of advantages of both scientific and practical nature. At the same time, the second scientific and productive conceptual approach, which is considered as a special case of economic logistics, is not denied. Accordingly, the latter one can have its own «specializations», but they are formed not according to the stages of movement and transformation of a single material flow, but according to the fields of application. For example, depending on the field of application, logistics can be industrial, transport, warehouse, marketing, construction, financial, information, etc. Each of these spheres of economic activity has its own logistics chains, networks, problem situations, modeling and methods of solving its own specific tasks. At the same time, many modern researchers and practitioners single out such a resource as «time» as a priority factor in logistics.

Table 1 shows the development of conceptual approaches to the term *logistics*.

New logistics forms and methods, relevant and typical for spatio-temporal flow processes in various types of activities, will certainly mutually replenish the logistics arsenal, preserving the main paradigmatic idea of logistics – global integration and optimization.

Table 1

Genesis of conceptual approaches to «Logistics» category

Stages	Main conceptual feature	Category definition
1	material commodity	Material and technical support of production and other types of activities, as well as product sales
2	horizontally integrated process in a flow form	Scientific organization of managing infrastructural flow processes through their integration, optimization of costs and rationalization of production processes
3	field of application, time criterion	Scientific organization of managing any flow processes in any sphere of human activity

Conclusions. The analysis of conceptual approaches to «logistics» category existing in economic science shows that they largely reflect various stages of its genesis under the influence of newly acquired features of systemic science. The development of information technologies had the greatest impact on logistics, and logistics itself is now increasingly influencing the economy.

In modern conditions, logistics is mainly aimed at increasing the efficiency of integration of any flow processes that have features of spatial and temporal sequence. Accordingly, it is natural to try to globalize logistics fields of application not only in the economy, but also in the science in general, culture, art, etc.

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