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SYSTEM ORGANIZATION OF LOGISTICS IN CONSTRUCTION

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Topical issues of logistics in the system of organization of construction are considered. The analysis of the problems arising in the development and application of existing organizational technologies for the construction of facilities with complex infrastructure is carried out, organizational changes are identified and characterized, directions for optimizing construction production are identified. Logistic concepts are used to increase the organization (efficiency) of organizations based on synchronization, optimization and integration of flows in construction processes in order to increase work efficiency.

Keywords: building complex, logistics, information flow, logistic system, financial flows, integrated management.

Formulation of the problem. Consideration of the construction complex as a whole and its components makes it possible to conclude that construction can be attributed to a system that includes a set of interconnected and interdependent flows. The main ones are: flows of information, material, technical and financial resources, etc.

It is known that in order to achieve the necessary results to reduce the construction time of buildings and structures, improve their quality with reasonable costs, it is first of all necessary to optimize and rationalize these and other economic flows. In construction organizations and enterprises of the construction industry, interconnected and interdependent processes of movement of own and attracted resources to achieve their goals can be considered economic flows.

Construction as a system is perceived primarily through the logistics of construction. In order to build any buildings and structures, building materials are needed in the right amount,

Designs and products, raw materials and technological equipment, etc., which are provided for by the project for construction and installation works. The process of organizing construction production provides for a clear supply of these resources in a given volume, specified terms and of appropriate quality. The experience of various industries in the country and abroad shows that logistics is used to solve such problems.

The terminology dictionary contains the following definition of logistics. Logistics - the science of planning, control and management of transportation, warehousing and other material and intangible operations in the process of bringing raw materials to a manufacturing enterprise, in-plant processing of raw materials, materials and semi-finished products, bringing finished products to the consumer in accordance with the interests and requirements of the latter, as well as the transfer, storage and processing of relevant information.

The main objects of research are: logistics costs, information flow, logistics system, logistics function, logistics chain, logistics operations, material flow, etc. Logistics covers a number of interrelated sections, including supply logistics, production logistics, sales logistics, transport logistics etc. Within the framework of logistics systems, a number of tasks

and their complexes are solved, including forecasting the need for building materials and monitoring the state of stocks, collecting and processing orders, determining the sequence and link of moving the material flow along the logistics chain, etc.

Logistic construction systems should be considered in the context of the general theory of logistic systems.

By types of flows, logistics systems can be divided into the following: Material, financial, information flows and labor flows.

Logistic systems of material flows, or, in other words, material logistics flows mediate all movements of material resources of construction organizations and enterprises (firms) from their procurement to the sale of finished products (buildings and structures).

The logistics system of financial flows (or the financial logistics system) mediates all movements of financial resources related to the production and sale of construction products.

The logistics system of information flows (information logistics system) mediates the processes of both simple and advanced reproduction of a construction company.

The logistics system of labor flows (labor logistics system) mediates the diversity of their migration in a construction company.

In accordance with the differentiation of logistics by stages of the construction production cycle, we can consider such logistics systems as:

- ✓ procurement logistics systems that organize the procurement flows of material and technical resources and the production and technological equipment of construction sites, as well as the accompanying flows of financial, informational and labor resources;
- ✓ systems of entrepreneurial (production) logistics that organize the flows of resources of construction industry enterprises and a construction company in the process of production of building structures, products

and other materials, design and construction, installation and commissioning;

- ✓ distribution (sales) logistics systems that organize the flows of finished construction products, works and services provided to consumers, as well as the accompanying flows of finance, information and labor resources;
- ✓ systems of transport and warehouse logistics that organize cargo flows and internal storage flows of a construction company.

The classification of logistics systems of a construction company can be continued by other characteristics, for example, such as stages of the investment process, stages of the life cycle of construction products, etc.

The processes of forming logistics systems are the more complicated the more economically independent entities are included in the logistics chain. In this sense, macro-logical systems appear to be relatively more complex than micro-logical

According to the nature of organizational and economic integration of the subjects of the macro-logical system, vertical, horizontal and conglomerate systems are distinguished. Logistic activity is based on three principles: technology as a set of all technical means and equipment accompanying material resources, information as a set of all statistical and dynamic information about the movement of material and intangible flows in systems, the economy of an enterprise and industry.

The subject of logistics is the integrated management of all material and intangible flows in the systems.

Effective logistics management positively affects the financial condition of the enterprise. So, it solves four problems at once.

1. Reduces the circulation cycle of working capital. On the basis of ideal ordering systems and regular billing of customers, the company can significantly optimize the collection of funds and shorten the circulation

cycle of working capital on the part of receivables. On the other hand, proactive management of accounts payable helps to minimize the growth of working capital circulation time.

2. Lowering the company's business risks. Effective optimization of the total logistics costs incurred, despite some uncertain global logistics processes, helps manage and prevent the erosion of corporate budget and gross margin. When choosing a supplier, companies often look for only the lowest price per unit of raw materials supplied, but forget to take into account the risks inherent in the global supply chain system.
3. Achievement of profitable growth. Since the impact on the strategic management of the logistics service changes financial results, it focuses not only on reducing costs, but also on the growth of revenue and market share.
4. Obtaining the expected income from sales. The company's shareholders expect to receive projected sales on an ongoing basis. Most of the future supply and demand information is needed to identify the risks associated with the logistics and supply system that affect revenue generation. In addition, the ability to monitor the implementation of the financial plan is closely related to the ability of the logistics management to fulfill the approved business plan.ment system, which are necessary to increase sales and market share.

Logistics covers both the sphere of production and the sphere of exchange of material goods (subsystem of material and technical supply and marketing of products). It aims to create and control the activities of a unified system of production and marketing management, financial and economic calculations and the processing of necessary information.

Being one of the largest subjects of final consumption of material resources, the construction complex should be most interested in effective forms of their acquisition in rational use.

The solution to these problems in relation to different types of resources has its own specifics. For machines and equipment to be installed, used in the process of carrying out construction work, the leasing form of acquisition is most effective. Its development in Russia in the conditions of limited investment resources and the payment crisis is especially important. In addition, for machines and equipment to be installed, it is the organization of supplies with the maximum approximation to the time of delivery of equipment for installation.

For materials, building structures and parts, the rationalization of material flows with the goal of minimizing the costs associated with them is of paramount importance, which determines the feasibility and necessity of using logistics as an effective scientific toolkit for managing the formation and movement of material flows.

The highest level of competition is observed in the building materials market compared to other capital goods markets.

Enterprises of the building materials industry and the construction industry have significant reserves of unused production capacities, and many, in the name of their full load, are ready to cooperate with customers, based on meeting the increased requirements from the demand side.

In the investment process, a significant part of the material flow is formed inside the building complex and completely depends on the actions of the links and units of this complex, their choice of rational decisions and their consistent implementation.

The material flow in construction, starting outside it, ends with the moment of using material resources in the process of creating (updating, repairing) fixed assets. In industry, the material flow does not end with the creation of finished products in this production, but only its movement is transformed into another production as an element of working capital. Therefore, the use of logistics does not apply to the product of labor.

Having a clearly expressed productive heterogeneity in the process of the construction cycle, the composition of the materials at each stage of the cycle changes (with the installation of foundations, erection of walls, roofing, interior work, construction of communications, etc.). Therefore, for each stage of the construction cycle, adequate logistics solutions are necessary. If in industry the starting point for a logistic solution is a product, then in construction this is the stage of the construction cycle.

The material flow in construction is constantly changing its spatial orientation as the movement of work from one object to another or branches in space with the simultaneous construction of several objects. From this it follows that according to the same materials the work producer must use different logistic solutions, which does not exclude their coincidence in similar conditions.

An important part of the search for effective solutions in the field of material and technical support is the construction of rational logistic solutions, i.e., the determination of the composition and nature of the activities of economic structures involved in the movement of material flow. Under certain conditions, it is advisable to lengthen the logistics chain and include resellers in it. In particular, this refers to the process of material and technical support of small business, which has been widely developed in Ukraine precisely in construction.

Specific for the construction of the intermediate link of the logistics chain are the units of production and technological equipment.

Conclusions. In conclusion, the following should be noted.

The transition to a market economy has fundamentally changed the nature of relations in the construction industry, including in the area of its material support. The state of demand from the construction complex and the pricing policy of suppliers have become the main factors in the conjuncture of the building materials market. In a market economy, the

main problem for suppliers was the organization of sales of products, and for consumers - the minimum cost of their purchase.

The construction complex (the largest subject of final consumption of material resources) is faced with the task of choosing effective forms of their acquisition and rational use. For machines and equipment in solving these problems, a large role belongs to the development of leasing, for materials and building structures - the effective organization of material flows, which is associated with the application of logistics methods in material support.

References:

1. Adamov N.A., Kemenov A.V. (2012). *Logisticheskij mekhanizm regulirovaniya investicionno-stroitel'nyh processov: Monografiya* [Logistic mechanism of regulation of investment and construction processes: Monograph] M., Publishing house "Economic newspaper", 232. [in Russian].

2. Dorohina E. (2009). *Riski stroitel'nyh predpriyatij: aktual'nye voprosy upravleniya* [Risks of construction enterprises: current management issues] RISK: Resources, information, procurement, competition, no 1, 4-7. [in Russian].

3. Kemeiov A. V. (2012). *Logistika stroitel'nogo kompleksa: problemy teorii i praktiki: Monografiya* [Logistics of the building complex: problems of theory and practice: Monograph] M., Publishing house "Economic newspaper", 320. [in Russian].

4. Krivoshej V.A., Kozenkov D.M. (2012). *Kapital'noe stroitel'stvo kak vazhnejshij vid investicionno-stroitel'noj deyatel'nosti* [Capital construction as the most important type of investment and construction activity] Economic online magazine, no 3, 196-205. [in Russian].

5. Dattakumar R., Jagadeesh R. (2003) A review of literature on Benchmarking. Benchmarking: An *International Journal*, Vol. 10 No. 3, 2003., pp.176-209

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