TECHNICAL SCIENCE AND ARCHITECTURE

**APPROACHES TO OPTIMIZATION OF LOGISTIC LASES
OF CONSTRUCTION SUPPLY BASED ON VALUE APPROACH***A. Ivko*¹DOI: http://doi.org/10.15350/L_26/11/4*Abstract*

The work of the logistics center of the construction company is considered. Approaches to the optimization of logistics chains of supply of construction sites are described. Logistics process is divided into two stages - the stage of organization of the logistics chain and the implementation stage of the logistics chain. The content of each stage is described. Criteria for optimizing the logistics chain at the organization stage are offered: the best price, the best price-quality ratio, the shortest delivery time, the compiled criterion, the ratio of reputation-price-quality. In order to determine the weight of the criteria in the compiled criterion by using the method of expert groups is proposed. Criteria for optimizing the logistics chain at the implementation stage are offered: the shortest delivery route, the shortest delivery time, the lowest delivery cost, the time-cost ratio. Valuable approach to the stages of organization and implementation of the logistics chain is proposed. The term of value is provided. Two dimensions of value are proposed - general (strategic) value and situational (tactical) value. Stakeholders of values in the logistics chain are defined. The methods of implementation of the stages of organization and implementation of the logistics chain, based on the value approach, are proposed.

Keywords: construction company, logistics chain, value approach.

Work logistics centers construction companies is to ensure that all construction sites of building materials, construction machinery, provision of warehousing and transportation. [1] The task of logistics is timely and fully meet the needs of the construction on the building site [2,3]. Most construction companies are characterized by the presence of several objects being built simultaneously, and then the task of logistics is much more complicated. The logistics center must build and configure complex logistics chains.

At the same time, logistics chains should also be effective in order to ensure the construction efficiency. This means that criteria should be developed for logistics chains that will evaluate their effectiveness or optimality.

To determine the efficiency criteria we break the logistics process into

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two stages - the preparatory, which we call the stage of organization of the logistics chain, and the main one, which we call the stage of implementation of the logistics chain.

At the stage of organization of the logistics chain is the conclusion of contracts with future suppliers. Procedurally this is realized through conducting tenders (tenders). To such a procedure, an optimality criterion may be put forward in the form of the timing of its conduct. Structural contracts can be broken down by lots and / or the number of contractors to provide better structure the supply of construction sites. The content of the procedure should be to optimize the selection of a better contractor by one or more criteria, which, in particular (except for organizations falling within the norms set forth in the Law of Ukraine "On Public Procurement" dated 12.25.2015, No. 922-VIII), may be:

1. The best price. The contractor is selected at the lowest price among the tender (tender) offered.

2. The best price-quality ratio. The contractor is selected for the best value for money, for each criterion the weight is given and the offers of potential contractors are weighed by the sum of two weighted criteria.

3. The shortest delivery time. In special cases, when urgency of supply is the most important, the contractor is chosen for the shortest delivery time.

4. A composite criterion, which may include reputation, price, quality, delivery date, payment terms, warranties, etc., is compiled. For each criterion, its weight must be determined, the winner is determined by the maximum value of the convolution of the weighted criteria.

In addition to the standard criteria we propose one of the varieties of the compiled criterion:

5. The best ratio is reputation-price-quality. Older criteria included criteria reputation, which proposes that the expert. Just as in the previous case, each of the criteria "reputation", "price" and "quality" corresponds to its weight and the winner is determined by the convolution of the three weighted criteria.

A separate issue is to determine the weight of the criteria for evaluating the proposals of potential contractors. The most appropriate method for this is the expert estimation method. As part of the implementation of this method, the expert group of at least seven experts. Candidates in the expert group are, in turn, evaluated according to their competence using a combination of different models - cross-rating, self-esteem, etc. As a result of the evaluation procedure of candidates for each party experts procedure gets the value of competence, these values are ranked, followed by the expert group includes a fixed number of experts (but not less than seven) with the highest performance values competence. After that, the competence of the experts who fall into the expert group is normalized, and each expert gets his weight score in the expert group, and the sum of the scores of all experts should be equal to units.

After forming an expert group, it should determine the weight of each of the criteria in the composite criterion for evaluating the proposals of potential contractors.

At the stage of implementation of the logistics chain, the optimality criterion, on which the chain will consist, should be selected. Consider the following

criteria.

1. The shortest way of delivery. The satisfaction of this criterion is to ensure the minimum length of supply lines and this standard involves the problem of optimization theory, namely the transportation problem (or Traveling Salesman Problem).

2. The shortest delivery term. The satisfaction of this criterion should ensure the choice of the required means of transport of goods (or combinations of such means).

3. The lowest cost of delivery. The criterion involves taking into account two factors - the cost of the goods being supplied and the cost of the transport route (transportation).

4. The term-cost criterion is compiled. The criterion involves determining the winner from the applicants on the basis of a combination of criteria of delivery terms and value, which can be considered separately as the value of the goods, and in a complex way, including the cost of the goods and the cost of its delivery to the construction site (in the latter case, one of the components may also be the cost of placing goods in stock). In this case, both criteria should be weighed - the expert group should determine the weight of the criterion of "terms" and the criterion "cost". In the simple case, which does not require the involvement of an expert group, each criterion is given a weight of 0.5.

Separately describe value-based approach [4,5] in relation to the stage along with the organization and implementation of the logistics chain. The essence of the approach is to determine the values of the participants in the process and maximize the aggregate value. We will define the value.

Value – category related subject (in our case - the participant or stakeholder process supplying) to system elements (object, process or communication between them), which determines the degree of importance of this element for this subject.

Based on the definition, value is subjective category, and also may have two dimensions - general (strategic) value and situational (tactical) value. General value is the result of the overall strategy of the subject vehicle values, the strategy should be formalized in a certain policy documents - mission, strategy, relationship etc. Situational value is formed at the present moment based on its specific features and aggregate of influences that here and now act on the subject of the values of the bearer.

Carriers values in the supply chain are the subjects of Parties and stakeholders of supply, namely:

- construction company-customer of logistics;
- customer of the construction project;
- investor of construction project;
- a logistics department of a construction company (in our case, a virtual logistics center);
- suppliers of building materials;
- transport service providers (transport companies);
- suppliers of construction machinery;

- suppliers of storage services for building materials or equipment (companies providing storage facilities).

Virtual Logistics Center involves the use of a pool of contractors – several (plural) suppliers, each of which construction company may enter into a framework agreement to supply (supply potential) materials, equipment, storage facilities or services to the construction site.

Will offer implementation methodology and implementation steps of the supply chain based on the value approach.

The method of implementing the stage of organization of the logistic chain, based on the value approach, is proposed to be determined from the next steps.

1. Formulation of the general value of a construction company - is, in particular, the specified priority criteria (priority criterion) that will be applied when choosing contractors.

2. Harmonization general construction company values with the values of customer and investor of construction - is engaging and approved in general and construction company, customer and investor.

3 With creation system I shared values of key project participants (construction company, customer and investor) on the basis of a harmonized general values.

4. Formulating evaluation criteria of potential contractors (suppliers) on the basis of shared values of key participants.

5. The wording of the requirements for candidates for the expert group on the basis of shared values of key participants.

6. Monitoring of competitions definition contractors (suppliers) on the basis of shared values of key participants.

7. Situational harmonize project participants shared values with values of potential contractors (suppliers) at the conclusion of the contract.

8. Monitoring of contract contractors (suppliers) based on situational harmonized at the conclusion of the contract values of key project participants and contractors (suppliers).

9. Finalizing the contract based on situational harmonized at the conclusion of the contract values of key project participants and contractors (suppliers).

10. Adjustment of the system of common values of key project participants based on experience gained from the contractor's performance (supplier).

The method of implementation of the implementation phase of the logistics chain, based on the value approach, is proposed to be determined from the next steps.

1. Bringing the plan for the construction of the facility in line with the system of shared values of key project participants.

2. Develop a plan for supplying the construction site in accordance with the system of common values of the key project participants.

3. Develop options logistic supply chains construction site given pool of counterparties with whom contracts concluded Framework.

4. Select optimality criterion by which elected a better logistics chain.

5. Selection of weighting coefficients optimality criterion compiled by an expert group on the basis of shared values of key participants.

6. The coordination of the logistics supply chain construction site logistics facilities of construction company.

7. Adoption of the agreed supply chain logistics of the construction site with a priority system of shared values of key participants.

8. Monitoring of realize of logistics supply chain construction site in accordance with the system of shared values of key participants.

9. Finalize logistics chain in accordance with the system of common values of the key project participants.

10. Adjusting the system of common values of the key project participants based on the experience gained from the results of the logistics chain implemented.

Using the methods of implementation phases and organizations implement supply chain based on evaluative approach will improve the efficiency of logistics construction, harmonize relations major participants and stakeholders to provide innovative and flexible management of construction projects.

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