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KEY FACTORS AFFECTING THE CHOICE OF OBJECT LOCATION OF LOGISTICS SYSTEM OF ECONOMIC AGROINDUSTRIAL FORMING

Setting the problem. Today, new formations that operate on the principles of logistics are created in agribusiness. These entities include the economic agro-industrial formations (EAIF). The dictionary [6, p. 58] gives the following interpretation, EAIF - "is an integrated system of production, processing and sales of agricultural products within the same sector or enterprise."

For the purpose of efficient economic activity within EAIF the logistics system (LS), which combines a certain number of logistics facilities the task of which is to create appropriate conditions for the movement of material flow in the form of agricultural products to the final consumer, is established. In this case, the classical logistic objects (LO) LS EAIF are the warehouses of raw materials, finished products, elevators, distribution centers, and possibly local brand wholesale markets. Building the chains of delivery to promote and implement agricultural products fast, the management of EAIF faces a number of problematic tasks that need to be solved considering the logistics approach. One of these tasks, which is very important for business, is a choice of location for LO on the probable logistics ground.

If we analyze the situation in Ukraine concerning the construction, for example, of elevators, complex facilities for storage of agricultural products, enterprises for processing agricultural products and others, we can make a conclusion: "they build a lot and in different places." And if you perform a detailed analysis of the places that have been chosen for the construction of LO, somewhere around 85-90 % of them were built by the criterion "of land availability for construction." That is, areas for construction were chosen where the local government had offered. But this approach is not correct, because in this case the procedure of rationale for construction of LO on the selected land is ignored that threatens the future loss of income and part of potential customers. Thus, for EAIF, that are created, the task of selecting locations of logistics objects is very important and yet problematic.

The analysis of recent research and publications The choice of location of logistics objects within specified geographical area has been covered in the works of domestic and foreign scholars of V. Alkema [1], B. Anikin [5], D. Bowersocks [2], A. Hadzhynskyi [3], O. Hutorov, N. Prozorova, R. Prozorov [4], R. Sahaidak - Nikitiuk [7], D. Waters [8], D. Shapiro [9] and others. Virtually all scholars are inclined to think that the choice of appropriate locations of LO is necessary to take into account the economic factor that is generated by the cost of transporting goods from the producer to the final consumer. However, taking into account the trends of the world market reforms, the increasing openness of borders and creation of macrologistics supply chains we should consider a broader range of factors influencing the choice of location of logistics objects in a particular geographical area. In particular, for the choice of location of logistics objects of LS EAIF a careful attention should be paid to topological- resource factors and organizational and managerial factors.

The study of the problem specified in the article in its practical aspect and the analysis of the literature on the abovementioned issues can indicate the need for systematics of key factors that have a significant impact on the choice of locations of LS EAIF. Thus, the procedure of planning the LO construction of the agricultural sector enterprises should take into consideration the complex of factors not only economic but also topological - resource and organizational - managerial. It will protect these objects from excessive logistics costs as for the current time, and the future.

Setting the objective. To perform the systematics of key factors influencing the choice of location of logistics objects system of economic agricultural formation.

The main material of the study. The analysis of the literature on the specified issues revealed that in most cases they use economic- mathematical model of topology optimization in the basis of procedures of selecting locations of logistics objects of LS. Its input parameters are previously considered as conditionally independent on the set of output parameters, such as volume of material flow that will be “passed” over the LO, which is designed for a certain period of time or the amount of logistical services to be provided to a specific group of consumers, etc. The correctness of the assumptions adopted in this case results from their temporary nature. It is based on the fact that in the iterative process of the entire set of input parameters of the topological optimization model the assumptions are replaced by the definitely obvious limitations.

It should be also noted that in the process of topological optimization location of LO the persons, who make decisions about construction and professionals, who will be engaged in its design, must solve the issues related not only to topological-resource factors, but also to factors of organizational-managerial and financial nature. If using a logistic approach to the choice of location of logistics objects of certain agro-industrial units of LS the preference should be given to topological-resource factors, as they are more

significant in the forming the logistics costs, including transportation of products. But the factors of organizational-managerial and financial nature are not less important to perform a correct choice of location

In order to further improve the procedure for selecting location of logistics objects of LS EAIF within the systematics of key factors their semantic analysis and description of the determinants (limitations) that affect the full consideration of these factors in terms of ensuring the effective operation of selected objects are important.

1. Topological resource factors take into account "geography" and the availability of resources in the geographic area for the functioning the LO according to planned objectives and formulated purpose. Correct quantitative and qualitative description of this factor of its content comes down to the characterization of the restrictions imposed on the activities of a particular object LS. Number of restrictions depending on the type of LO may be different. But in practice when choosing location you should consider the following eight restrictions.

The first restriction. Functioning of LO assumes its optimal approximation to the points of concentration of material flows, i.e., raw materials, finished products and others. Ideally, the LO should be at the point of geographical area for which the total distance to the supplier of material flow or to its customers is minimal. In this case, the problem can be solved as a particular case of the transportation problem. Boundary conditions of optimum system are the specific costs associated with the preparation and delivery of each kind of product.

This limitation in its essence is the optimization task of choosing the distance between the points of LO dislocation and the location supplier and consumer. Therefore, an important point in solving this problem is to find a function that determines the appropriate distance.

The second restriction. Another factor is taken into account in solving the optimization problem because LO organizes their functions in time. Material flows should be delivered to the entrance to the LO in a specified time period in compliance with the condition that $t_1 < t_2 < \ldots < t_n$ (where t_1 – time of delivery of the first resource, t_2 – time of delivery of the second resource, t_n – time of delivery the last, the most "late" resource).

Start of functioning of LO in full scope is determined with the moment of delivery (t_n) the most "late" cargo. Therefore, one of the methods of solving the problem of location is the method of the minimum delay.

In accordance with this method the point of location the object on geographical area is selected there where the most late or problematic cargo will be guaranteed delivered in the specified time interval.

Decision of optimization problem that is described with the second restriction can be considered on the example of finding a point that is located at a short distance from given of three points – three types of material flows, one of which is "problematic" in terms of its timely delivery.

The solution to this problem can be supplemented with a choice of one particle distance on which it would be advantageous use of "problem" resource of road transport for the delivery and also another share of distance – to use another, for example, rail transport.

The third limitation is associated with the optimization of the composition (structure) of the material flow, or other words - "format" resource. This is very important because from the previous format of material flow that enters to the LO depend scope, content and labor costs logistics operations, that are carried out under the relevant logistics facilities as well as the timeliness of customer service.

The fourth limitation of the optimization of LO location is a restriction that is connected directly with the consumer (or groups of consumers) material flow.

The point of LO location should provide minimal or optimal costs on delivery of necessary goods (raw materials, commodity products, etc.) to the consumer.

If the problem of a consumer is solved as a multicriteria problem, so the problem of location the LO in a particular geographic area is solved in terms of optimization of costs of delivery of goods to the consumer.

The fifth restriction: the presence of the workforce with the necessary skills to implement of certain logistics operations and logistics activity.

The local source of workforce that has "ability" to performance of assigned tasks is the most affordable and desirable for the planning and organization of logistics facilities in selected territory.

The infrastructure of chosen location LO has become the sixth limitation. This infrastructure satisfies certain conditions of the implementation of effective logistics activities of the entity.

The seventh limitation consists in a possible technical support from other LS that function on the chosen territory.

Thus the planned location of logistics facilities HAPF should be located closer to other systems that function in a specified market space. Among these systems are informational, scientific, services, industrial and so on.

The eighth limitation refers to the institutional constraints and depends completely off the political and economic support from the state and local government authorities.

These restrictions are an expression of environmental functioning of objects LS HAPF. Technology and technological constraints associated with engineering geophysics (solution of this problem of location envisages taking into account factors of physical security of logistic facility) reflect the internal environment.

These technologies are also associated with the assessment of the actual security of extreme regimes or destruction of other objects of functioning (LO should be located on such distance from places of functional security of to be able to ensure the possibility of adequate technological and organizational response to the extreme situation – the evacuation of personnel, special measures to prevent environmental pollution and so on.), with the possibility or impossibility of waste utilization from the activity of LO.

2. Factors of organizational and managerial nature are also very important in solving the problem of search the appropriate placements of facilities LS EAIF because the level of the spatial capitalization must accord to the informative and infrastructure qualification opportunities of the management subsystem. It means that the LO should be located as close to the main office EAIF because dispersion of structural divisions EAIF creates at least one significant negative factor that may become critical under certain conditions, such as deterioration of manageability.

Thus, the object of LS EAIF should not create a very large number of internal combinations of arrangement of divisions for the purpose of conduct the logistics activities on the defined logistic range. But if some sections of LO due to the peculiarities of location will create a sufficiently large number of possible combinations and variants, in this case it is recommended to do autonomy of these links, for example, by establishing of subsidiaries in the single logistic chain of supply.

3. Financial factors: placement of LS EAIF objects should ensure the greatest possible realization of positive scale effects. Average level of costs associated with maintenance of integrating effects that are necessary to support the chosen scheme of the location the last.

Methodologically, this problem is compounded by the lack of standard systems and standard methods of accounting and estimates of the costs of location the logistics facilities on the determined logistic range. The purpose of financial justification of decision for location of the facilities of LS EAIF is the optimization of these costs based on the aggregate of all other criteria, including the factors of institutional level. In this case we speak about the existence of such informal resource as access of guidance for placement of bureaucratic preferences.

Unfortunately, nowadays, this factor is very important for choosing location of objects of LS EAIF on the "desirable" territory of logistic range.

Conclusions and further research. Systematization of the factors that have significant impact on the choice of locations the facilities of logistics system of agricultural household formation is presented in the article. Brief description of the factors is shown. It has been described the oriented action on the process of choosing locations.

According to these results, the direction of further researches is the implementation of quantitative and qualitative analysis of the impact of each factor on logistic activity of EAIF. Establishing the quantitative characteristics of evaluation of factors to influence on the effectiveness of the functioning of the economic agricultural formations is also very important.

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Sumets O.M. KEY FACTORS AFFECTING THE CHOICE OF OBJECT LOCATION OF LOGISTICS SYSTEM OF ECONOMIC AGROINDUSTRIAL FORMING

Purpose. The purpose of this paper is implementation of systematics and description of key factors influencing on the choice of objects location of logistics system of economic agro-industrial formation.

Methodology of research. Materials of scientific researches of domestic and foreign scientists on the problem of choosing the location of logistics objects in the identified fields of geographical area have been used to achieve this aim.

While solving certain tasks in the methodology of research we used special techniques, such as: monographic research method – while studying literature sources and practical experience of planning and organizing of logistics systems; systematic approach – for a comprehensive study and analysis of factors influencing the location of various objects of logistics systems; structural and functional method of research – to analyze the changes taking place in the agriculture of the country and on the domestic and foreign markets; logical and semantic method of analysis – to substantiate the content of direction and essence topological-resource and financial factors, factors of organizational and managerial nature.

Research of factors was aimed in such directions: topological and resource – on account of geography and the availability of resources for the functioning of a logistics facility in accordance with the planned objectives and formulated purpose; the factors of organizational and managerial nature – on the level of space capitalization, which should correspond to the informative and infrastructure qualification capabilities of the management subsystem; financial factors – on account of realization of scale effects.

Findings. Systematization of the factors that have a very significant impact on the choice of locations of logistics system of agricultural formation has been fulfilled. The content and the direction of action on the process of choosing have been described.

Originality. Systematization of the factors influencing the location of objects of logistics systems, taking into account topology, the availability of resources, organizational and management and financial features has been fulfilled in the process of research.

Practical value. Algorithm and method of searching of expedient topological point of location facilities will find further improvement based on the systematic factors influencing the location of objects of logistics systems.

Key words: economic agro-industrial formation, logistic system, a factor of influence, logistic object, point of location, logistic range, economic feasibility.