

Main Approaches and Methods used in the Logistics System

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ABSTRACT

This article discusses the methods of managing logistics systems and production systems at the macro and micro levels.

KEYWORDS: *logistics system, macroeconomic systems, systems approach, stochastic approach*

The scope of research and operations in the field of logistics depends on the set of approaches and methods used in logistics. Almost all developments in this area are related to macroeconomics and microeconomics as a methodological tool for organizing effective management of economic processes to one degree or another, taking into account logistical features.

The methodological basis for detailed management of flow processes is a systematic approach. It is a comprehensive study of events, situations or objects in terms of systematic analysis. Also, a systematic approach allows us to consider any object of logistics research as a single logistics system, even if it consists of separate, separate subsystems. Since its characteristics are based on the close interaction of elements and parts of the logistics system, a systematic approach to the analysis of production and handling processes, the development of appropriate solutions and their implementation means taking into account these relationships. The study of some economic objects or phenomena arises from the fact that they are an integral part of more complex structures or processes.

The role of each of these parts in the effective operation of the entire facility is determined by a set of appropriate measures to strengthen it. A systematic approach helps to consider the object under study as a set of interconnected small systems united by a common goal, to identify its common features, internal and external connections. Mathematical analysis of economic processes confirms the possibilities and conditions for optimizing structural parts and logistics systems. Integrated logistics programs are an important pragmatic application of the systems approach to management.

The systematic approach does not manifest itself in the form of a clear and rigorous methodological concept. It can be described as a set of certain principles. Adherence to these definitions allows you to direct theoretical research and practical activities in accordance with the goal. Especially:

- macro approach;
- micro approach;
- deterministic approach;
- stochastic approach;
- statistical approach;
- dynamic approach;
- functional approach;

- the experimental approach is also widely used in logistics.

In the macro approach, the logistics system is considered as a whole. This does not take into account the internal structure and interdependence of certain economic structures and processes. Only the exit and entry into the general structure of the system, as well as the processes occurring at the general structural level in the logistics environment, are studied.

The micro approach allows you to study and manage the logistics facility from the inside. The internal structure and internal connections between its components are checked.

The determinism of the system provides a complete prediction of the results of logistics processes. This is possible only when the logistics system is redesigned, when the negative impact of its influencing factors on the final result is minimized due to high flexibility based on the observance of logistics principles.

The stochastic or probabilistic approach means that the final expected results will be variable due to external and internal factors and random influences. The functioning of specific logistics systems is associated with the presence of complex stochastic relationships within these systems and in relation to the external environment. Therefore, in the decision-making process, it is necessary to take into account the general goals of the logistics system and the level of compliance of its functional subsystems with the market situation, as well as their dependence on external influences. The lower the level of compatibility and integration with the external environment, the higher the probability of errors and deviations of the expected results from the planned ones.

Statistical approach. This approach allows you to check logistical problems in real time. Often used for performance analysis, as well as in calculations for the placement of logistics links and the formation of supply chains.

Dynamic approach. Unlike the statistical approach, the dynamic approach refers to the study of logistics systems, subsystems and their relationships in development and continuous movement under the influence of current trends in the external and internal environment.

Functional approach. This approach significantly increases the efficiency of performance analysis of logistics systems and subsystems. Its use relies on two basic complex concepts: the process and the law of the system.

The process or, in other words, the operating procedure of a logistics system shows a change that represents any changes in volume that define this system.

The law of action expresses a set of rules and consistency of actions. In the process of planning and management, after knowing the rules for the functioning of logistics systems, their initial state and coming to final conclusions, models and assumptions for future development are developed.

An experimental approach in logistics involves conducting the necessary research by actively participating in the flow of logistics processes and observing the results. This approach is used in case of deviations from the given parameters of logistics systems and subsystems. The methods and techniques corresponding to this approach help to better understand the essence of the problems under study, edit logistics programs taking into account cause-and-effect relationships and establish various interests.

Traditional approaches make the transition from the particular to the general /induction/. That is why they are called inductive. The creation of functional systems and subsystems in inductive conditions is carried out by combining some existing or separately developed elements.

And the logistic approach provides for a step-by-step transition from the general to the particular. At the same time, the starting point and criterion for research in the management process is the ultimate goal. To achieve this goal, a logistics system will be established. If the logistics system is not established, the algorithm of actions for this can be divided into four stages:

At the first stage, the general goals of the logistics system are determined, the range of problems and tasks to be solved is determined, particular indicators are calculated that reflect the final and intermediate results of the entire system.

At the second stage, the system goals, tasks of the impact of external and internal factors are analyzed, the requirements corresponding to the logistics system and its elements, as well as the conditions and limitations of the functioning of this system are determined.

At the third stage, based on the goals, objectives, requirements, variants of models of logistics systems and their subsystems are designed. Then the most efficient models are selected.

At the fourth organizational stage, structural elements of systemic significance are created and changed. Then a single logistics system is formed and structured into small systems.

A refined expression of approaches is manifested in the rules and methods that create the appropriate methods for managing logistics processes in the system.

The main working procedure of any research, including logistical research, is the scientific method. This method has three steps.

Payment routes are made up of logistics chains, which include various production, transport, warehouse, forwarding and other links. When using inductive approaches, problems of process flow control are usually constructed. Separate sections and links of the production and economic system are considered as closed subsystems, neutral from external influences arising from interconnected objects of a single economic system. When regulating production and economic processes within closed subsystems, a limited number of, usually the most simple and well-known methods are used. However, the transition from autonomous control of conditionally independent

subsystems to a single logistics system requires the expansion and complication of the methodological base for managing flow processes.

Logistics as a science at the intersection of economics, cybernetics, management, psychology and social sciences widely uses a set of methods, theories and types of analysis developed and applied to solve general or specific problems in the field of production and circulation. Among them, it is impossible to single out the most important ones. Each of them can play a decisive role in achieving the intended goals in a given situation.

From the point of view of logistics, all styles with a number of specific characteristics can be conditionally combined into three groups:

- economic and mathematical methods;
- forecasting methods;
- informal styles.

For logistics, the method of developing optimal solutions in this group is of particular importance. They are used to improve the quality of decisions made in logistics management. These styles can be thought of as types of modeling. The peculiarity of these groups of styles is due to the need to choose one of the several available alternatives. A payment template and a set of solutions is the most common style of this complex.

In logistics management, you often have to make decisions under conditions of uncertainty. These tasks arise when there is a need to act in a completely uncertain situation. Usually the decision maker has the right to choose the strategy.

Using this right, he can use a certain strategy in the selection process or make a decision by drawing lots, choosing a strategy depending on the situation. The outcomes of decisions that can be made are determined by unknown parameters related to the "strategy of nature" or the person opposing the decision. For the first case, the application of the theory of statistical decisions and the theory of control of random processes is very effective, and for the second case, the application of game theory.

Forecasting methods. These methods are based on the acceptance of various hypotheses or realities in uncontrolled prospective conditions necessary for planning the processes under study. Meanwhile, forecasting methods rely on past experience in addition to certain assumptions. Their practical application in logistics research is of great importance, and the range of tasks they cover is extremely wide.

For example, at the macroeconomic level, forecasting is used to determine the general state of the economy, as well as the leading directions of market conditions. This will help the stakeholder to choose the right strategy and tactics in the future. Designing or adjusting the logistics system to work effectively under the expected conditions is a consequence of the results obtained.

Forecasts of development in the field of technology help to calculate the cost-effectiveness of their implementation and choose the right path in the organization and management of logistics systems, especially in the field of production logistics.

Forecasts of the development of competition make it possible to revise the strategy, carry out a preliminary

balancing of non-structural processes and minimize the negative consequences in the context of relevant changes in the logistics system and adapt them to new conditions.

Forecasts based on surveys and research allow you to determine what will happen in complex dynamic situations. He uses information from many areas of life. For example, market conditions for many products can only be determined by taking into account changes in the economic situation, political situation, technology, environmental regulations or the dominance of social values, traditions and customs. As mentioned above, even in this case, the mechanism of the logistics system must be ready to accept adjustments in order to adapt to the new requirements of reality and expected situations.

Social forecasting is useful for the logistics system for many reasons. After all, changes in the state of society and social groups, social goals of people are the basis of inevitable changes in the economy and the market. Of course, a company that is prepared in advance for the expected changes will have an advantage over its competitors through the use of logistics methods and tools in its activities.

The set of forecasting methods can be divided into two categories - quantitative and qualitative methods.

Typical representatives of fashionable style are:

- analysis of periodic series;
- through modeling.
- The following are the most common quality styles:
- opinion of the judges;
- method of expert assessments;
- model of consumer expectation;
- a set of opinions of sellers, etc.

In logistics, qualitative methods are used only when the amount of information available is insufficient or when the quantitative method is too expensive to justify itself. In addition to the formal methods of managing production and economic activities listed above, logistics also adheres to informal methods.

- the method of verbal information (receiving and presenting information through conversations, radio, television, communication with people, etc.).

- Written informational style (obtaining and presenting information through newspapers, magazines, annual reports, etc.).
- Unofficial methods also include industrial espionage and others.

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