LOGISTICS AND THE PROBLEM OF LOGISTICS SYSTEMS

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Abstract – The article gives the basis of the logistics system and the definition of logistics, as well as the class of problems to be solved. An analysis of the logistics problems being solved was carried out. The following is devoted to transport and production logistics, the class of the problem is given as a minimum problem

Key words: logistics, logistics systems, transport logistics, production logistics, warehouse, material, information, flow of the PPP algorithm

Introduction. Logistics is a set of tasks related to the management of materials and related management of materials and information flows with them. Before defining logistics, let’s visualize the process of managing material flow.

As a physical example, let's take a stream of water flowing from a tap. You can control this flow using various actions - closing or opening the tap, adding hot or cold water. You can soak the shower mixer tap, or you can use a flexible hose to direct the flow of water in any direction [1].

As a result of the above actions, the intensity of the flow and its direction change; the qualitative characteristic changes - temperature, when the jet is sprayed through the shower net, the structure changes despite the diverse material flows circulating in economic systems, their control is, in principle, similar to the control of a water jet:

“opened the tap” more - increased supplies; “closed the tap” - stopped supply. You can change the recipient - the flow will go along a different path, you can change the qualitative composition of the flow, change the range of goods supplied, etc.

As a science, logistics poses and solves the following problems [2].

1) Demand forecast and inventory planning;

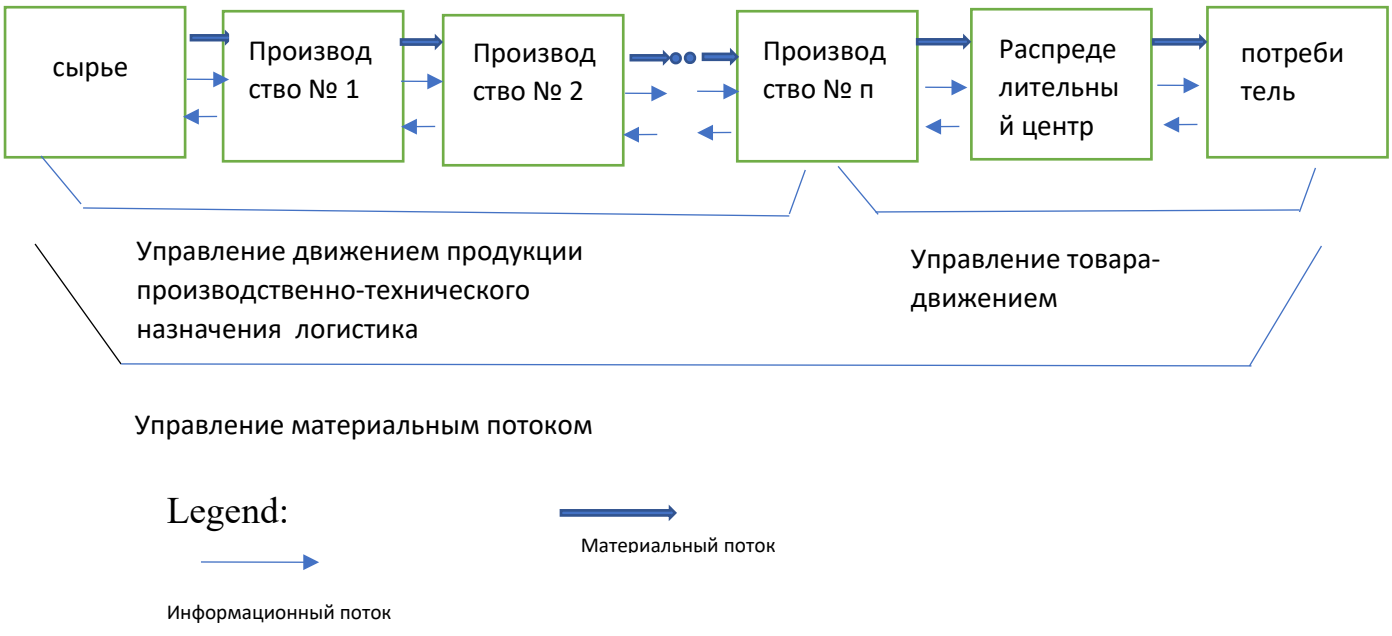
2) Determination of the required production and transport capacity;

3) Development of scientific management of finished products based on optimal management of material flows;

4) Development of scientific foundations for managing transshipment processes and transport and warehouse operations at production points and at consumers;

5) Construction of various variants of mathematical models of the functioning of logical systems;

6) Development of methods for joint planning, sales and shipment of finished products and other tasks.

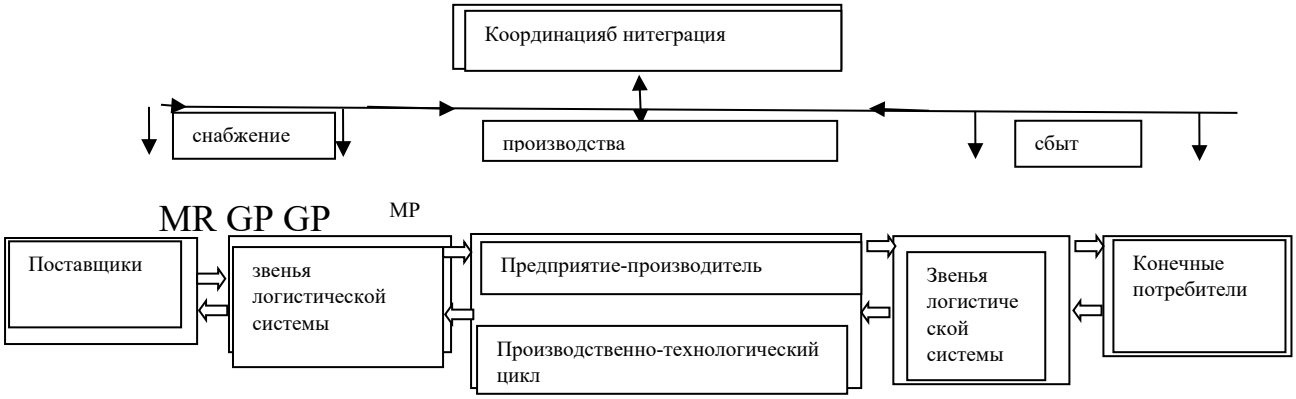


Pic. 1

Subject to placement of experience options:

The main goal of the logistics system is to deliver goods in the right quantity and assortment and to the greatest possible extent ready for production or personal consumption to the place required by consumers (the right product at the right time and in the right place) at a given level of logistics costs. The elements of the links

are enterprises - suppliers of material resources, manufacturing enterprises and their divisions, sales, intermediary organizations, transport and forwarding enterprises, exchanges, banks, information and computer service enterprises. Most links of the logical system are a synthesis of subjects and objects of control with their own criteria for optimizing functioning, which significantly complicates control in the logical system.



- procurement -Transportation -Inventory Management -Storage - Cargo handling -collection of returnable waste, containers	- management production procedures - intra-factory transportation - Inventory Management - maintaining GP production quality standards - protective packaging - cargo handling - warehousing - pricing	- management of order procedures - transportation Protective packaging - cargo handling - warehousing - Inventory Management - provision of spare parts and service - support for the return of GP collection of returnable waste and containers - support of customer service standards - pricing
Logistics operations (functions)		
Information and computer support		

Pic.2 Micro-logistics system

⇨ -- - material flows; - information and financial flows; MR – material resources; GP – finished products; VMP – returnable material flows

We accept the following interpretation

i is the number of the point of origin of the material flow.

j - consumer destination number

A_j – volume of material sent to i – point.

B_j - required volume of material j – consumer

C_{ij} – i - consumption costs per unit of cargo from the sender's point to the consumer's point.

X_{ij} is the volume of necessary material transferred from point i to point j of the consumer.

It is necessary to determine the value of X_{ij} so this function F should be minimal.

$F=\sum_{i=1}^{П}\sum_{j=1}^{m} C_{ij}X_{ij} \to min$and fulfillment of the following conditions.

1. $\sum_{j=1}^{m} X_{ij}=A_i(i=1\div\eta)$

The transported volume of material must correspond to the volume of the produced material and product.

2. $\sum_{i=1}^{П} X_{ij}=B_j(j=1\div m)$

The transported material, or cheese, must satisfy the consumer's needs.

3. $X_{ij}\geq 0(i=\overline{1-\eta});(j=\overline{1\div m})$

These are conditions of non-negativity. It can also be identified as follows.

Find values X_{ij}so that the resulting function is

$F=C_{ij}X_{ij}+C_{12}X_{12}+\ldots C_{mn}X_{mn} \to min$

and must fulfill the following conditions

1) $X_{ij}=A_i$

2) $X_{ij}=B_j$

3) $X_{ij}\geq 0(i=\overline{1,n});(j=\overline{1,m})$

The right sides of the equation are equal, so the following are true:

$$\sum_{i=1}^{n} A_i = \sum_{j=1}^{m} B_j$$

The solution to this model of transporting material flow in the logistics system chain is solved by different methods.

Accordingly, there is a solution algorithm and a computational package of application programs.

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