Lesson 2

Topic of the lesson: Main logistics flows. Functional areas of logistics. Logistics systems. The role of the logistics operator.

Questions:

1. The concept of material flow
2. Financial flows
3. Information flows
4. Service flows
5. The concept of logistics strategy
6. Types of strategic planning in logistics
7. Types of logistics strategies.

Flow is the amount of substance, information, money moved per unit of time.

The fundamental element in logistics systems is the material flow that results from the transportation of goods, storage of goods, assembly of batches and the performance of other logistics operations along the way from the primary source of raw materials to the end consumer, including reverse and return flows.

At certain points in time, the material flow may be a stock of raw materials, semi-finished products, work in progress, or finished goods (if the material flow is in a state of relative rest). For ease of management, the flow is considered as a fraction, the numerator of which is the unit of measurement of the load (pieces, tons, etc.), and the denominator is the unit of measurement of time (day, month, year, etc.).

In households, hot and cold water supply flows, gas flows are currently measured using meters. As a result, it is possible to track the flow sizes for a day, month or year. Material flows exist regardless of whether the enterprise has a logistics department.

In the absence of a control subsystem, the flows will be uncoordinated and disjointed. Therefore, there are unnecessary costs of time and money for

organizing the physical movement of goods. The specificity of the logistics approach lies in the management of the logistics service by a single material flow at the level of an enterprise or group of enterprises (in supply chain management).

In the classification of material flows, the following main groups are distinguished.

Group 1. In relation to the logistics system, the material flow can be: internal and external, incoming and outgoing.

Group 2. According to the assortment, material flows are divided into single-type and multi-type. Such a division is necessary, since the assortment composition of the flow significantly affects the work with it. For example, the logistics process at a wholesale food market selling a mixed assortment will differ significantly from the process in a potato storage facility that works with one type of cargo.

Group 3. Depending on the type of transport, material flows are distinguished in rail, road, water, air and pipeline transport.

Group 4. According to the overall dimensions, weight and physical and chemical characteristics of the cargo that make up the flows:

- ✓ heavy loads (do not ensure full use of the vehicle's cargo capacity, the weight of one cargo space is more than 500 kg);
- ✓ large mass (mass of one cargo item from 100 to 500 kg);
- ✓ lightweight cargo (do not ensure full use of the vehicle's carrying capacity, the weight of one cargo item is less than 100 kg) (lightweight cargo – cotton wool, tobacco and tea);
- ✓ oversized cargo (the height of one cargo space is more than 3.8 m, the width is more than 2.5 m, the length is greater than the length of the cargo platform). Oversized cargo requires special transportation conditions;
- ✓ bulk cargo (transported in bulk), for example, wheat grain;
- ✓ bulk cargo (transported in tanks, bottles and other special containers), for example, petroleum products;
- ✓ piece goods (the unit of measurement of which is pieces);

- ✓ packaged goods (measured by the number of containers – bags, boxes, rolls).

Group 5. According to the method of packaging during transportation, the following flows are distinguished: in containers; on pallets; in tanks.

Group 6. According to the nature of movement of goods in space and time, a distinction is made between:

- ✓ continuous material flows that are formed when moving goods using pipeline transport;
- ✓ discrete material flows – flows on all other types of transport.

Most material flows in the spheres of production and commodity circulation are discrete (intermittent) in space and time.

Group 7. By the degree of determinism of flow parameters:

- ✓ deterministic material flows – with completely known parameters, rare;
- ✓ stochastic material flows. If at least one of the flow parameters is unknown or is a random variable. In logistic systems, most flows are stochastic.

Group 8. According to quantitative criteria, material flows are divided into:

- ✓ large flows – several vehicles, for example, a motorcade;
- ✓ the average flows are formed by the incoming cargo
- ✓ single fully loaded vehicles;
- ✓ small streams.

Group 9. By belonging to the functional area of logistics at the enterprise (in the areas of supply; production; sales of finished products; management of returnable material flows).

Studying the constituent parts of the material flow and the features of its movement at the enterprise level or between enterprises allows us to detect "bottlenecks" and is the first step in optimizing the physical movement of goods. In this case, the material, information, financial and service flows should be considered as a single whole.

Financial flow is a directed movement of financial resources associated with material and information flows within the enterprise's logistics system and between enterprises. The main goal of financial servicing of material flows is to ensure their movement in the required volumes, within the required timeframes and using the most effective sources of financing.

The main characteristics of a financial flow include volume, cost and direction.

The volume of the flow is indicated in monetary units per unit of time. The cost of the flow is determined by the costs of its organization. The direction of the financial flow is determined in relation to the enterprise organizing it. A distinction is made between incoming, internal and outgoing flows. For example, payment for supplies by a buyer to a supplier is an outgoing flow, and receipt of money by a seller is an incoming flow. Internal financial flow is cash that is dead in stocks.

Impacts on the characteristics of financial flows lead to changes in the patterns of movement of material and information flows. And, conversely, the cost and volume of transferred material resources affect financial indicators. For example, the impact of prepayment on the time of shipment of goods from the supplier or the impact of the size of material stocks on the financial and economic indicators of the enterprise.

Financial flows are classified by purpose and types of economic relations.

Group 1. According to their purpose, financial flows can be divided into the following types: those caused by the purchase of goods; financial resources necessary for the internal movement of goods within the enterprise and the maintenance of stocks; expenses arising in the process of marketing or selling goods.

Group 2. According to the types of economic relations, the following are distinguished: horizontal financial flows – financial resources pass between enterprises independent of each other (for example, a supplier and a buyer); vertical financial flows – pass between parent and subsidiary organizations.

Thus, in the logistics of the enterprise, only those financial flows are considered that are related to material flows in the process of supply, production or sale of goods. The financial service is engaged in the management of the actual finances at the enterprise.

Information flows in the spheres of production and commodity circulation are accompanying in relation to material flows and contain information necessary for managing its movement.

Classification of information flows.

Group 1. In relation to the enterprise, information flows are divided into internal and external, incoming and outgoing.

Group 2. According to the type of information carriers, flows are divided into paper and magnetic media. In addition, the information carrier can be a person himself, for example, a forwarder accompanying the cargo on the way or a storekeeper in a warehouse.

Group 3. According to the time of occurrence and frequency of use, information flows are: regular; periodic; on-line ; off-line .

Group 4. In relation to the material flow, the following information flows are distinguished: leading; synchronous; lagging; coinciding in direction; differing in direction.

The increasing role of information flows in modern economic systems is due to the following reasons:

- ✓ the consumer needs information about the order status, the availability of goods in stock, delivery times, that is, information is a necessary element of customer service;
- ✓ the availability of complete and reliable information allows us to reduce the need for stocks by reducing uncertainty in demand;
- ✓ Timely information increases the flexibility of the logistics system to achieve competitive advantages.

Thus, information support in logistics systems presupposes the timeliness and accuracy of providing information to persons making management decisions or participating in the movement of material flows during cargo transportation.

Service flows are flows of services generated by the logistics system as a whole or its subsystems in order to meet the needs of external or internal consumers of the enterprise. Services can be provided by intermediaries in the process of moving material flows from the manufacturer to the consumer, therefore, for the enterprise, three parties of the participants in the logistics process are distinguished. For manufacturers and trading enterprises, these parties are as follows: the first party is suppliers of raw materials or goods; the second party is consumers; the third party is logistics intermediaries.

Logistics intermediaries are usually divided into main and auxiliary. **The main** ones include carriers, forwarders, and responsible storage warehouses. **Auxiliary logistics** intermediaries are insurers, security companies, customs brokers, and banks.

Another participant in the supply chain is **a logistics provider.** In essence, this is also a logistics intermediary, but differs from it in that it simultaneously performs a set of logistics functions. For example, warehousing, transportation and customs clearance of goods.

Thus, the use of a logistics approach at an enterprise involves a description of existing flow processes. Material, information, financial and service flows are considered in their mutual connection and mutual influence. Material flow management is aimed at finding and eliminating "bottlenecks" at the intersection of flows of different levels, as well as when transferring material assets between functional areas of the enterprise.

1. Material flow is the fundamental flow in logistics systems. It is formed as a result of transportation, storage, assembly and other logistics operations along the way from the primary source of raw materials to the final consumer.

2. Financial flow is a directed movement of financial resources associated with material, information and other flows both within the framework of the enterprise's logistics system and outside of it.

3. Information flow – a flow of messages in oral, documentary (paper and electronic) and other forms, corresponding to the material or service flow in the logistics system, and intended for the implementation of control functions.

4. Service flows – flows of services generated by the logistics system as a whole or its subsystem (link, element) with the aim of satisfying external or internal consumers of the business organization.

5. The use of the logistics approach at the enterprise presupposes a description of existing flow processes. Moreover, material, information, financial and service flows are considered in their mutual connection and mutual influence.

A logistics operator is a company that organizes and manages the processes of delivery of goods, their storage, order picking and other logistics operations.

The main task of a logistics operator is to optimize the supply chain and ensure timely delivery of products from the manufacturer to the end consumer.

The main functions of a logistics operator:

- ✓ Transportation.
- ✓ Warehousing.
- ✓ Equipment and packaging.
- ✓ Customs clearance.
- ✓ Supply chain management.

Working with a logistics operator allows companies to focus on key business processes by outsourcing all logistics-related tasks.

Logistics strategy is a direction of long-term development of the logistics system, concerning the forms and means of its implementation at the enterprise,

interfunctional and interorganizational coordination and integration, formed by top management in accordance with corporate goals.

Among the large number of logistics strategies used by enterprises, one can distinguish between basic and additional strategies.

The main areas of logistics strategies include the following:

- ✓ minimization of logistics costs;
- ✓ improving the level of customer service;
- ✓ the main focus is on time parameters: minimizing the time of delivery of goods or delivery exactly at the time specified by the customer;
- ✓ the main focus is on providing very high quality services;
- ✓ flexibility of the offered products implies the provision of specialized services or services taking into account the requirements of specific customers;
- ✓ flexibility in the volume of products offered requires special attention to be paid to prompt response to changing demand;
- ✓ technology – the desire to develop and use the most modern technologies in the field of communications, cargo tracking, package sorting, product identification, inventory control, etc.;
- ✓ location – the desire to provide services by being located in the most advantageous places, for example, at bus stops in city centers.

Types of strategic planning in logistics. Planning is a general management function that is part of the management ring.

Planning of logistics activities is a systematic process of searching for opportunities to act, forecasting the consequences of these actions, developing a logistics project, forming management decisions, specific activities and deadlines for their implementation to achieve the set goals in the future.

To organize effective planning, an enterprise must have a planning system, i.e. an ordered structure of individual types of planning.

The main requirements for such a system are:

✓ **Documentation.** To coordinate planned calculations and control the implementation of plans, it is important that their main parts are documented.

✓ **standardization.** Documentation must be compiled in accordance with certain standards.

✓ **organization. An** organizational regime is needed that, on the one hand, would organize the activity of developing plans, and on the other hand, would ensure the flexibility of the planning system, the possibility of improvisation and adaptation to changing conditions;

✓ **accuracy.** It is necessary to clearly and reasonably determine the accuracy of measuring the characteristics of planning objects;

✓ **coordination.** All private plans of the planning system must be coordinated both between different planning levels (plan integration) and within one level (plan coordination). It is necessary to coordinate goals, forecasts, events, means, actions of responsible persons, degree of necessity, urgency, hierarchy, sequence, flexibility, etc.;

✓ **Continuity, flexibility and cyclicity.** Continuity is that when some plans have already been developed and are being implemented, others are being developed or refined, some plans are being developed in parallel. Flexibility is that the possibility of ambiguous conditions arising and the revision of plans taking them into account is taken into account. Cyclicity is the systematic revision, refinement, adjustment taking into account changed circumstances of the goals, objectives, and activities of the same plans as they approach the time periods of their implementation;

✓ **completeness or** coverage of all aspects of the enterprise's activities, including logistics activities.

Before you begin planning, you need to clearly define:

- planning object (what is planned);

- subject of planning (who plans); - planning horizon (for what period);

- planning tools (what to use for planning: financial resources, computing equipment);

- planning methodology (how to plan);

- coordination of plans (what, with whom and under what conditions).

The most common methods used to develop plans include the following: negotiations, adjustment of previous plans, various intuitive methods, graphical methods, calculations using spreadsheets, simulation modeling, expert systems, mathematical models (mathematical programming, network planning, etc.).

The results of the implementation of plans must be monitored.

Logistics control is an orderly and ideally continuous process of processing logistics data to identify discrepancies between planned and actual values of logistics indicators, as well as analyzing these discrepancies in order to identify their causes.

Types of logistics strategies.

The most common logistics strategies include **the "lean" strategy,** the dynamic strategy, and the strategy based on strategic alliances. Let's look at them in more detail. "Lean" strategy The "lean" strategy is based on the principle of cost management, i.e. producing the same or comparable products as competitors, but cheaper.

The goal of lean logistics is to perform each operation using less of each type of resource: people, space, inventory, equipment, time, etc. To achieve this, the lean strategy tries to find ways to eliminate unproductive resource expenditure. The first attempts to implement lean operations were made in the manufacturing sector at the initiative of Toyota . The methods used for this led to such high results that they began to be used in other areas of the enterprise, and eventually the idea of the lean enterprise arose. The famous management expert Robert Townsend claims that “in all organizations at least 50% of the resources (people, effort, space, time) are wasted.”

A typical approach to implementing a lean strategy is to: conduct a detailed analysis of current operations and then eliminate operations that do not add value; eliminate stops, simplify movements; use better technology to increase efficiency; locate facilities closer to customers to reduce transportation costs; look for

opportunities to achieve economies of scale; and eliminate unnecessary links in the supply chain.

It should be noted that lean operations may not work in very dynamic or uncertain conditions. In these cases, a more flexible strategy based on agility can be used.

Dynamic strategy . The goal of a dynamic strategy is to ensure high quality customer service by promptly responding to new or changing conditions.

There are two aspects of dynamism:

- ✓ speed of response to external conditions: dynamic organizations closely and constantly monitor consumer requests and respond to them promptly;
- ✓ the ability to adjust logistics characteristics to meet the needs of individual consumers.

Organizations using a dynamic strategy:

- ✓ focused on consumers;
- ✓ strive to achieve complete satisfaction of consumer needs;
- ✓ create convenient access for consumers to their organization;
- ✓ respond flexibly and promptly to changing demands; design logistics so that it meets and even exceeds consumer demands;
- ✓ perform post-sales checks to ensure that consumers remain satisfied after their purchase;
- ✓ take care of preparing future transactions, always maintaining contact with their consumers, potential buyers, etc.

Organizations that have satisfied customers reap important benefits - repeat business and positive word of mouth to other people and organizations.

Essentially, both strategies consider customer satisfaction and low costs as dominant directions, but describe the process of achieving the goal differently.

The goal of the strategy of forming alliances with suppliers and customers is to achieve increased efficiency in the supply chain, when all its members work

together and jointly benefit from long-term cooperation. The reasons for using this strategy are usually the desire for better customer service, greater flexibility, lower costs, the desire to avoid investments in facilities, and the lack of experience of the organizations. The most common partnerships are between transportation companies, other areas of cooperation include warehousing, import/export services, and information processing.

Other common strategies that focus on more specific aspects of their operations include:

- ✓ The differentiation strategy is the desire of the enterprise to be unique, for example, in the customer service system.
- ✓ Time-based strategy.

In general, these strategies aim to ensure faster delivery of products.

An example of such a strategy is the "time compression" strategy, which is similar to the "lean" strategy but focuses on eliminating unnecessary time in the supply chain, i.e. time during which no value is added to the product.

- ✓ Environmental protection strategies. For example, such strategies may focus on the production of products using natural ingredients, the production of reusable containers and packaging, the production of products that do not require special disposal, the multiple recycling of materials used, the use of waste, etc.
- ✓ Strategies of increased productivity. The focus is on the maximum possible use of available resources. If a "lean" strategy seeks ways to get rid of unnecessary capacities (premises, transport, etc.) and resources, then this strategy will rather agree to leave the existing capacities, but will seek ways to effectively use these surpluses (renting, providing new services to other organizations, etc.).
- ✓ Value-added strategies aim to add as much value as possible to the final product. For example, when distributing washing machines, a company might arrange delivery, installation, connection of the machine, training on its use, arrange for the removal of old machines, offer a service contract, etc.

✓ Diversification or specialization strategies. These strategies are focused on the widest or narrowest range of services, product range, and activities, respectively. For example, there are transport companies that offer transportation of any cargo: from letters to containers. Other transport companies are engaged in the delivery of only oil by tankers or only small packages of cargo.

✓ Focus strategy is characterized by concentration on satisfying the needs of one segment or specific group of buyers, without striving to cover the entire market. The goal of the strategy is to satisfy the needs of consumers of the selected target segment better than competitors.

✓ Growth strategies are based on the desire to achieve economies of scale by expanding the geographic areas served, developing more activities, increasing market share, etc.

Questions for final control:

1. Formulate the concept of planning strategy in logistics
2. Describe the role and objectives of planning strategy in logistics
3. Explain the types of strategic planning in logistics
4. Explain the types of logistics strategies
5. Give a definition of the concept of flow.
6. What units are used to measure flow?
7. What is material flow?
8. What parameters characterize the material flow?
9. Give a classification of material flow in
10. logistics system.
11. What is cash flow?
12. Questions for final control: