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CLASSIFICATION OF INFORMATION FLOWS IN LOGISTICS

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Abstract: *The report presents a traffic study of information flows in logistics in a local area network built according to the 802.3 standard. The study of network performance is according to the number of computers in communication.*

Keywords: *traffic, data, logistics, network, lan, communication, information, flow*

In logistics processes, the main attention is paid to the physical production and lifting-transport processes. Currently, more and more attention is paid to information flow, with the help of which information flows are planned, managed and controlled. Information becomes a logistic production factor. Because of it, warehousing can be shortened (better management of stocks, consistency in the actions of the supplier and the user, replacing the storage of finished products with the storage of semi-finished products and raw materials). Information can also speed up transportation. In addition, in the logistics process there is a set of flows and flow processes that are interconnected. In doing so, the implementation of the logistics process can be broken down into multiple consecutive stages, each of which can be performed by one or more entities. The lack of timely information causes the accumulation of materials, because the uncertainty of the user, as well as the uncertainty of the supplier, usually cause the need from insurance.

1. Information flows

The basis of Material Flow management is the processing of information circulating in the logistics systems. In this regard, Information flow is one of the key concepts in logistics. It is a set of messages circulating in the logistics system, necessary for the management and control of logistics operations. The information

flow corresponds to the Material and can exist in the form of paper or electronic documents[7]. The information flow can precede the Material, move simultaneously or after it. At the same time, the Information flow can be in one or the opposite direction with the Material flow. The Anticipating Information Flow, moving in the opposite direction to the Material Flow, usually contains information about the requests. A one-way information flow with Material represents messages about the upcoming delivery of the cargo. Simultaneously with the Material flow, information about the quantitative and qualitative parameters of the flow also flows, and together with the Material flow, but in the opposite direction, the information about the results of the acceptance of the cargo in terms of quantity and quality can be transmitted.

Systems manage people, with the monitoring and control of tasks taken over by technology. It prepares information and distributes it in real time. The logistic management of different types of material flows is based on the processing of the information related to these flows, which, on the one hand, initiates them, and on the other hand, arises as a result of their movement. This information exists in logistics systems in the form of different types of information flows[6].

In order to ensure an adequate formation of the information flows, it is necessary to observe the two fundamental principles:

1. The data must be collected as close as possible to the location of the production and distribution activity where the events that are their source occur.
2. Data must be presented in a form suitable for conversion and comparison.

2. Purpose and classification of logistics information systems.

The new tasks that arise before the organizers and managers of the production in the field of the practical implementation of the logistics principles lead them to the need to create information systems that would allow to collect, organize and transfer information in accordance with the set goals.

The term "logistics information system" is understood as "a structure including personnel, equipment and technologies that are united by the information flow used by logistics management for planning, regulation, control and analysis of the operation of the logistics system". In other words, the set of organized, transformed and interconnected flows of information in a certain way form a very characteristic subsystem within the logistics system itself, which, due to its specificity and completeness, is often called the information subsystem (system) of the logistics system[4].

IP management is used in modern systems for intelligent management of technological objects. Common features of the global network The Internet and local computer networks predetermine new opportunities for information exchange and dissemination of information, which leads to the emergence of new

approaches to the collection, processing and presentation of measurement information.

The information system is that essential component of the logistics structure that connects it into a whole and serves to coordinate the supply, production and sales of finished products[5].

Figure 1 shows the most typical information logistics system operating in a single production. It has a number of features. First, it is all-pervasive – there are no closed areas for it; all horizontal and vertical levels are pierced by its channels and sensors. Second, it is strictly hierarchical, the management levels are precisely delineated and are responsible for the functions entrusted to them. Third, external link functions are delegated only to a certain level of the hierarchy.

The local information network connected to the conveyor collects and transmits data on: the location of the supply items; their quality control; the condition of the means of loading; the marking and identification of the product and for its entry into the warehouse. This network transmits the data directly to the second level responsible for the delivery of the material and technical means.

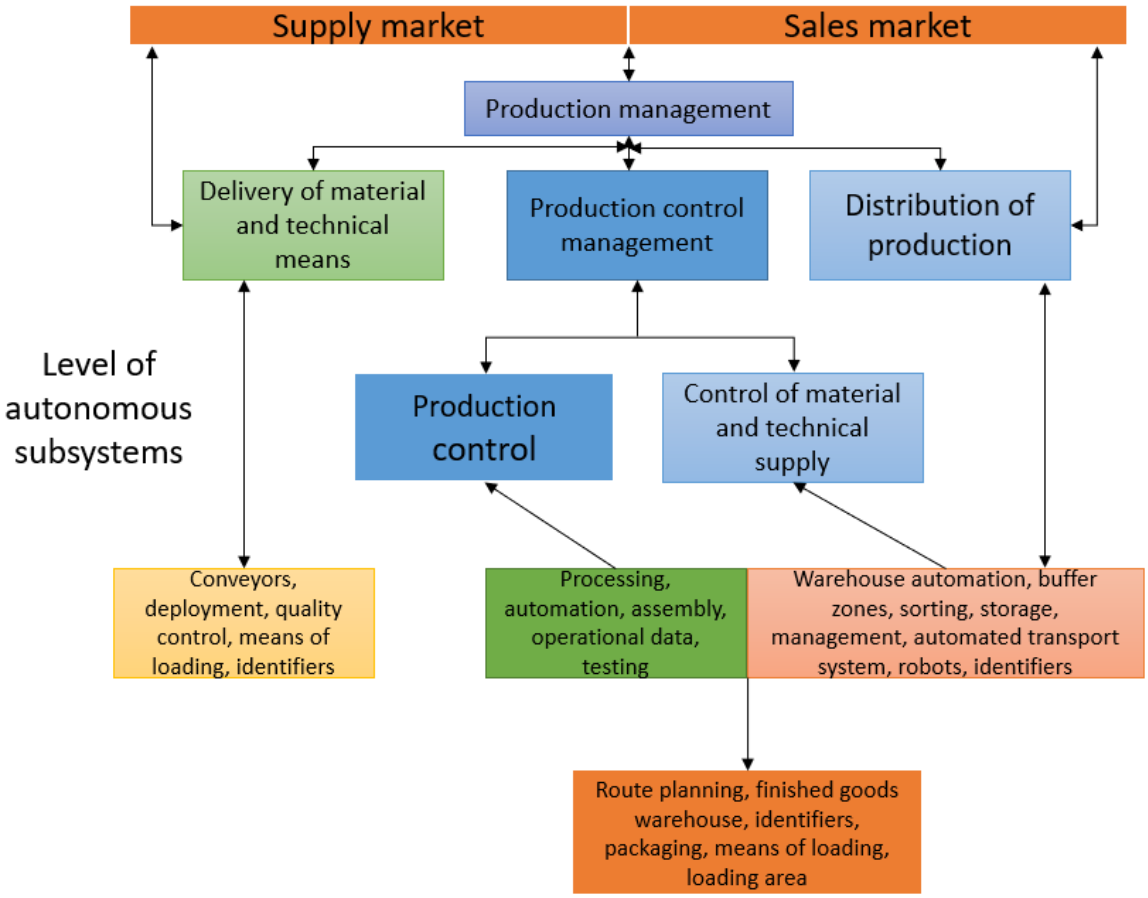

Fig. 1 An example of the organization of an information logistics network in production

LANs located directly at workplaces feed the production control structure with information about assembly rates, test results, etc. And information about the situation in buffer zones and warehouses is obtained from the material and technical supply control structure. The two controlling systems actively exchange information at their level. Finally, the local network, collecting data on the processing of finished products and their transportation to customers, transmits them to the divisions leading the distribution of the production.

In this way, in itself it represents one of the most important elements of production, and in the systems of material and technical supply it plays a decisive role in increasing their efficiency. This process of intensification of production is conditioned both by the short terms for processing materials at a lower level of stocks and increasing flexibility of production, and by the high "transparency" of each section of the enterprise.

Information systems in logistics, as well as all systems with feedback, in addition to their structure, are also characterized by such quantitative indicators as the amount of delay and the degree of amplification.

Delays in making logistical decisions compared to the arrival of information leading to these decisions can be different in magnitude and occur in different places of the regulated material flow (Fig. 2).

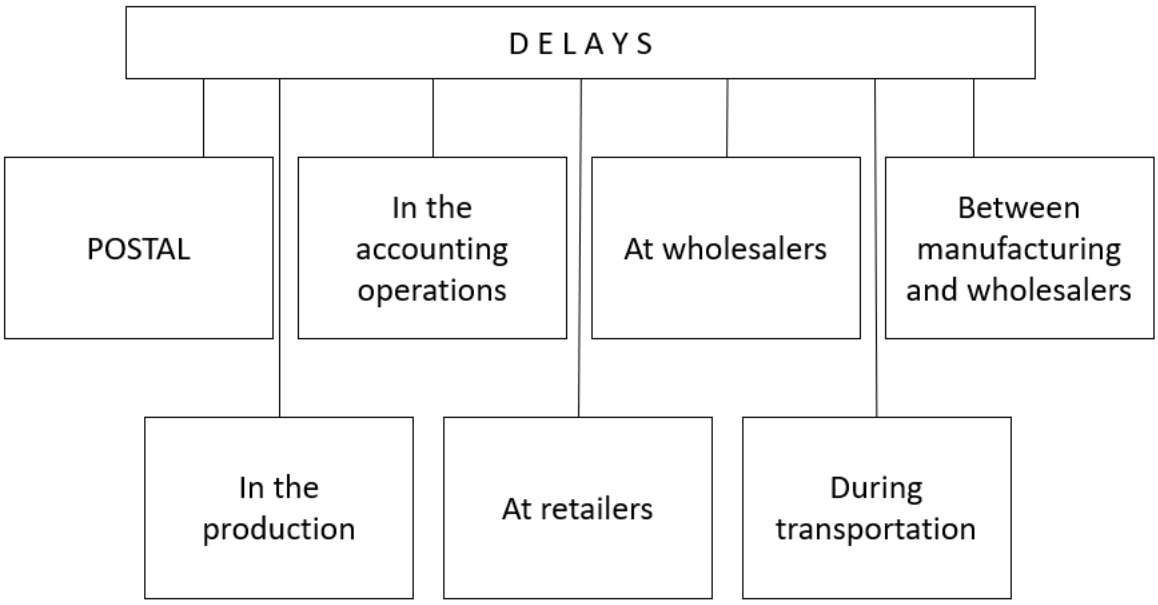

Fig. 2. Types of delays in logistics systems

Typically, delays in production and distribution activities amount to values of the order of a week. Therefore, the unit of measurement is the week. Thus, on average, the transportation time is one week, the delay in accounting operations - three weeks, the postal delay - half a week, the delay at wholesalers and in the

various types of distribution points, as well as the delay between individual operations during production, is on average one week. Finally, the time between making a decision on changes in production and reaching the corresponding value of the material flow at the output of the production unit averages six weeks.

The concept of degree or amplification factor of the unit of the system of automatic regulation in logistics corresponds to the set of rules, models and algorithms, setting one or other management directives in accordance with the changes in the information on the course of the production and distribution activity. The behavior of the person or the decision-making body, determined by the information received by him, can be represented as the simplest reaction to the fluctuations of the material flow about one or between two levels.

In the classical theory of regulation and management, such indicators of the quality of a transition process developing over time from an old established meaning to a newly established one are the following:

• transition time, defined as the time required to approach the actual value of the adjustable parameter to the new level of a set small value;

• degree of oscillation of the transient process, which can be monotonic or oscillatory; in the latter case, the degree of oscillation is determined by the number of oscillations of the adjustable parameter, carried out until reaching its set approximation to the new value;

• magnitude of the reregulation, measured by the maximum exceedance of the adjustable parameter of its new value, which can occur during the transition process;

• integral quality indicator, representing the integral area of the transient process curve.

Conclusion

The role of logistics management information provision is constantly growing. The implementation of modern information logistics systems is gaining more and more mass scale. Dispositive information systems are created at the warehouse or workshop management level and serve to ensure the normal operation of logistics systems. Executive information systems are created at the level of administrative or operational management.

The widespread entry of logistics into the economy is largely due to the computerization of material flow management. The ability of microprocessor technology to solve complex issues of information processing allows analysis and mutual exchange of large volumes of information between the various participants in the logistics process.

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