

LOGISTICS TECHNOLOGIES IN MACHINE-BUILDING INDUSTRY

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Keywords: machine-building industry, logistics technologies, logistics costs, logistics outsourcing.

Abstract. The article focuses on the technology of logistics approach associated with reducing the costs of circulation in the implementation of flow control of material resources. One of such technologies is the introduction of a logistics outsourcing system into the system of external logistics of engineering companies.

ЛОГИСТИЧЕСКИЕ ТЕХНОЛОГИИ В МАШИНОСТРОИТЕЛЬНОЙ ИНДУСТРИИ

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Ключевые слова: машиностроительная индустрия, логистические технологии, логистические затраты, логистический аутсорсинг.

Аннотация. В статье рассматриваются технологии логистического подхода, связанные со снижением издержек обращения при осуществлении управления потоками материальных ресурсов. В качестве одной из таких технологий рассматривается внедрение системы логистического аутсорсинга в систему внешней логистики машиностроительных компаний.

The complex composition of mechanical engineering industry, the products of which are used in almost all sectors of the national economy, requires manufacturers to focus not only on procurement and production activities in the process of creating products, but also on distribution [1].

First of all, the application of the logistic approach in industrial production management is aimed at planning, accounting and reducing logistics costs, which currently make up at least 15% in the structure of all costs of engineering enterprises. As source of growth for engineering enterprises many scientists and experts consider the application of the logistics concept of industrial production management that implies the study of the full cycle of logistics process – the "supply-production-sales" [2].

The purpose of the logistic approach application at the mechanical engineering enterprise is the end-to-end management of material flows [3]. The logistic approach peculiarity is the feedback between the links of the material resources management system and the development of internal and external logistics integration of industrial enterprises. The basic concepts in logistics are logistic flow and logistics technology. The concept of logistic flow means the flow of material resources and the associated flows of financial and information resources. Logistics technology is a standard sequence of logistic functions that has a certain theoretical basis - a conception.

When describing logistics process management system, as logistics conceptions are considered the following: MRP-I (Material Resources Planning) and MRP-II (Material Requirements Planning), DRP (Distribution Requirements Planning), production management technology OPT (Optimized Production Technology), the concept SCM (Supply Chain Management) is considered as a module of production systems [4].

Meanwhile, logistics outsourcing is the transfer of non-production logistics

functions to external service companies. Logistic outsourcing has lots of advantages. It allows the manufacturer to focus on the core business, to use the best experience in the organization of logistics processes, to provide active feedback between the manufacturer and the consumer, to help in costs reducing by applying the advanced technologies for delivery and storage.

Research of foreign scientists confirm the effectiveness of contract logistics in the following areas: the providing information on the goods route, customs declaration and customs clearance of cargoes, documentation preparing, organization of port cargo delivery, warehousing and storage in transit, coordination of transport deliveries, negotiating on transportation tariff, choosing carrier, monitoring the reliability of supplier [5].

The first character of logistics technologies division is its relation to the external or internal logistics flow. The field of internal logistics at the first stage of application of logistics technologies cannot be outsourced. This is confirmed by the experience of all industrial and agricultural organizations. According to the authors, the most effective is the transfer of external logistics functions to outsourcing. The arguments for maintaining the logistics internal field in managing the focus company are the following factors:

- the need to control the quality of incoming items and products of work in progress;
- the need for quality control and timely delivery of items in the production process;
- the need to comply with production standards and safety standards in the process of internal redistribution of the material flow;
- the need to correctly calculate the level of safety stock of materials and items under the conditions of planned production and application of MRP and OPT systems;
- the safety of quality of finished products in the warehouse and the reduction in the materials and parts delivery time.

The field of external logistics is the most free for applying the logistics outsourcing system and for transferring to external management the delivery processes of materials and parts from suppliers, as well as the provision of integrated transport and logistics services for the sale of finished products.

One of the most important aspects of the application of logistics technologies in the mechanical engineering industry is the organization of the distribution process. The lack of the necessary base of practical research in the field of organization of the distribution system of finished products, the lack of arguments for engineering companies transfer logistics processes of distribution to outsourcing, leads to the increase in costs. Understanding the problem, mechanical engineering enterprises conduct independent developments in optimization of logistics processes in corporate management [6].

Taking into account the preference of mechanical engineering enterprises for independent control over the intra-production logistics processes, it is necessary to consider the prospect of implementing information logistics systems [7]. In mechanical engineering, such systems can be used for transportation, storage and processing of stocks of material resources entering production. Economic benefits by information logistics systems implementing in machine-building manufacture

are as follows: reducing the time of logistics process, reducing the level of material resources in the field of production, improving the reliability of information. A key aspect of management by information logistics systems implementing is the formation of the conditions of their choice.

When choosing the information logistics system for a mechanical engineering enterprise, it is important to take into account the innovation of technology, the critical time of the logistics process and the functional area of management. As such functional area of management, in this case, transportation of material resources between production divisions of the mechanical engineering enterprise is considered. Among the systems for managing the material resources transportation the most well-known are cargo selection systems and analytical systems, such as Gonrand, Videotrans, Espace Cat, ISCIS. Russian experts highlight the lack of information about these systems and the resulting complexity of the choice [8]. Meanwhile, the introduction of such systems can reduce both the time of selection of the carrier and the cost of delivery of material resources at the right time to the right place. For large corporate companies, the most suitable foreign system is ISCIS (the analytical supply chain management system) which allows transportation between the company's divisions. An additional advantage of this system is the ability to assess costs and calculate delivery efficiency, as well as the possibility of their applying in the management of external material flows.

The logistics technologies introduction is a prerequisite for development of modern mechanical engineering production complex. The actualization of logistics technologies application is associated with logistics costs optimization, which will free up a part of financial resources for developing the logistics infrastructure complex or investing scientific and technical developments.

As one of the promising technologies, the use of a logistics outsourcing strategy in managing external logistics of large engineering companies is considered. As promising areas of integration of logistics companies with mechanical engineering enterprises should be considered the field of consulting services in acquisition or development of logistics technologies, in organization the goods transportation including routing, handling and monitoring of goods in transit, as well as in documentary registration in the process of international delivery of goods.

References

1. Quarterly Bulletin "mechanical engineering". Mode of access: http://riarating.ru/industry_newsletters/20180614/630096424.
2. Gorskaya D.T., Stepanov Yu.A. Integrative processes of interaction of tools of logistics and marketing in mechanical engineering // Materials of the AAI international scientific and technical conference "Automobile and tractor construction in Russia: development priorities and personnel training" dedicated to the 145th anniversary of MSTU "MAMI". P. 74-84.
3. Gadjinsky A.M. Fundamentals of logistics: textbook. – M.: Marketing, 2006. – 432 p.
4. Shindina T.D. Classification of logistics concepts and technologies // Bulletin of SUSU. Series "Economics and management". 2014. No. 1(8). P. 189-191.

5. Selivanov A.V., Shamlitsky Ya.I. Transport-warehouse logistics engineering systems of industrial enterprises // News of SibSAU. 2013. No. 2(48). P. 260-265.
6. Gillis C., Damas P., What should you Outsource? // American Shipper, January 1997, p. 25-31.
7. Gaysina DA. SAP Logistics system in warehouse enterprises // Problems of modern economy: materials VII international. scientific. conf. – Kazan: Young scientist, 2018. – P. 75-77. URL; <https://moluch.ru/conf/econ/archive/294/13871/>.
8. Glushko V.A., Islamova D.A. Information systems in logistics and problems of their effective application. – Kazan: Young scientist, 2019, <https://moluch.ru/archive/240/55394>.

Список литературы

1. Ежеквартальный бюллетень «Машиностроение». Режим доступа: http://riarating.ru/industry_newsletters/20180614/630096424.
2. Горская Д.Т., Степанов Ю.А. Интегративные процессы взаимодействия инструментариев логистики и маркетинга в машиностроении // Материалы международной научно-технической конференции ААИ «Автомобиле- и тракторостроение в России: приоритеты развития и подготовка кадров», посвященной 145-летию МГТУ «МАМИ». С. 74-84.
3. Гаджинский А.М. Основы логистики: учеб. пособие. – М.: Маркетинг, 2006. – 432 с.
4. Шиндина Т.Д. Классификация логистических концепций и технологий // Вестник ЮУрГУ. Сер. «Экономика и менеджмент». 2014. №1(8). С.189-191.
5. Селиванов А.В., Шамлицкий Я.И. Транспортно-складская логистика машиностроительной системы производственного предприятия // Вестник СибГАУ. 2013. № 2(48). С. 260-265.
6. Gillis C., Damas P., What should you Outsource? // American Shipper, January 1997, p. 25-31.
7. Гайсина Д.А. Логистическая система SAP в складских хозяйствах предприятия // Проблемы современной экономики: материалы VII Междунар. науч. конф. – Казань: Молодой ученый, 2018. – С. 75-77. – URL: <https://moluch.ru/conf/econ/archive/294/13871/>.
8. Глушко В.А., Исламова Д.А. Информационные системы в логистике и проблемы их эффективного применения. – Казань: Молодой ученый, 2019, <https://moluch.ru/archive/240/55394>.

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