

TECHNICAL RISKS IN MODERN LOGISTICS

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Abstract

The article discusses the issues of the emergence of risks of logistics activities, the nature of their occurrence and the features of technical risks in modern logistics. The classification of risks according to certain signs and the cause of their occurrence is given. The stages of risk management of logistics activities at enterprises of various industries and types of activity are determined. It is determined that one of the main reasons that have increased the possibility of risks in logistics activities is economic instability in the global environment. All this had a negative impact on all areas of business activity, in particular, an increase in the level of uncertainty in the relations of enterprises with counterparties involved in the logistics chain. Possible ways and methods of minimizing the risks of logistics activities are considered, strategies for minimizing risks in the logistics activities of enterprises are recommended.

Keywords: risks, logistics activities, risk management, transport, risk minimization

I. Introduction

The unstable economic situation in the country, caused by sanctions pressure, has had a negative impact on all areas of business activity. Added to this were fluctuations in the foreign exchange market, which contributed to the receivables of many enterprises, which, in turn, led to a reduction in budgets and expenses, and some companies ceased operations altogether.

These changes in the economy have led to an increase in the risks of logistics activities, that is, an increase in deviations from the expected results due to the disruption of the stability of the logistics system of enterprises. Therefore, the issue of reducing risks in the logistics activities of enterprises, taking into account modern economic conditions, is relevant.

The issue of the emergence of risks and the reduction of their impact on entrepreneurial activity is very relevant, especially in the conditions of uncertainty of the external environment, therefore domestic and foreign scientists devote their works to the study of such concepts as "risk", "uncertainty", "methods of assessing the degree of risk", "risk management", etc. S.G. Kholmovsky [6], A.S. Svezhintseva [6], M.I. Raskatova [3], V.I. Sergeev [4] and others.

Various aspects and approaches to the identification and management of risks related to various types of activities are presented in scientific works. However, changes in the external environment, the state of the national economy, changes in the impact of technical risks on logistics activities cause the need for additional research on the issue of reducing the risks of logistics activities in modern economic conditions.

The purpose of the article is to study the technical risks of logistics activities and determine the ways and methods to reduce their impact in modern economic conditions.

II. Methods

In the logistics system, risks occur at almost all stages of the logistics chain, from the supply

of raw materials and goods to production and ending with the delivery of finished products to the consumer. The main reasons for the emergence of risks are the uncertainty of external conditions and the instability of the logistics system, including economic, political, currency instability, violation of product delivery times, changes in consumer demand, etc.

There are many definitions of the category of "risk" [1; 5], since this science is quite young. In particular, examples of these definitions are given in the paper [5], but one can agree with the authors regarding their interpretation of the definition: risk can be defined as the possibility of an event that can lead to a disruption of the normal functioning of the logistics system in a constantly changing external environment. This work provides the following reasons for the emergence of uncertainty that causes risks in the logistics system and a decrease in the level of its reliability:

- \u2012 randomness, that is, an event that may occur differently in the future;
- \u2012 information gap as vagueness and unreliability of information about the environment;
- \u2012 a gap in competence, that is, the influence of subjective factors on the result of the analysis of a risk situation;
- \u2012 divergence of interests of the parties that are participants in the logistics process;
- \u2012 the influence of the internal and external environment on the effectiveness of the logistics system.

Particular attention should be paid to the subjective factors that play a decisive role in the process of risk management in any business activity. It is clear that the functioning of complex systems in a competitive environment, which are logistics systems, is impossible without reliable organizational and managerial elements. Therefore, the priority task of the logistics system is to ensure its reliability by creating a risk management system. Logistics risks are the risks of carrying out logistics operations of transportation, warehousing, cargo handling and inventory management and the risks of logistics management at all levels, including managerial risks arising from the performance of logistics functions and operations [6].

Determining the place of each risk and creating opportunities for the effective application of risk management methods makes it possible to scientifically substantiate the classification of risks, since each type of risk corresponds to a certain method of management.

III. Results

The main reasons for the emergence of logistics risks are limited or lack of information, instability of the external environment, a decrease in the volume of product sales, the likelihood of breaking the contract with the supplier and the carrier, an increase in the level of the customs rate, non-compliance of the selected transport with the requirements of transportation, low quality of carriers' work, imbalance of the main elements of the logistics chain. A detailed analysis of risks according to certain classification features is given in Fig. 1.

To develop effective ways to manage risks in logistics activities, we will consider the risks that may arise in the procurement, production, sales, transport and storage activities of the enterprise.

- The following risks are possible within the framework of procurement logistics:
- the risk of delay in the delivery of raw materials or materials to the warehouse due to non-fulfillment of the terms of the contract by the supplier or carrier;
 - the risk of damage to raw materials or materials due to non-compliance with the necessary conditions for the transportation and storage of products;
 - the risk of an increase in the price of raw materials due to price fluctuations, exchange rate differences or price increases by the supplier;
 - the risk of cargo detention at the customs border due to violation of the conditions for certification of goods;
 - risk of customs clearance by violation of documentary support of goods.

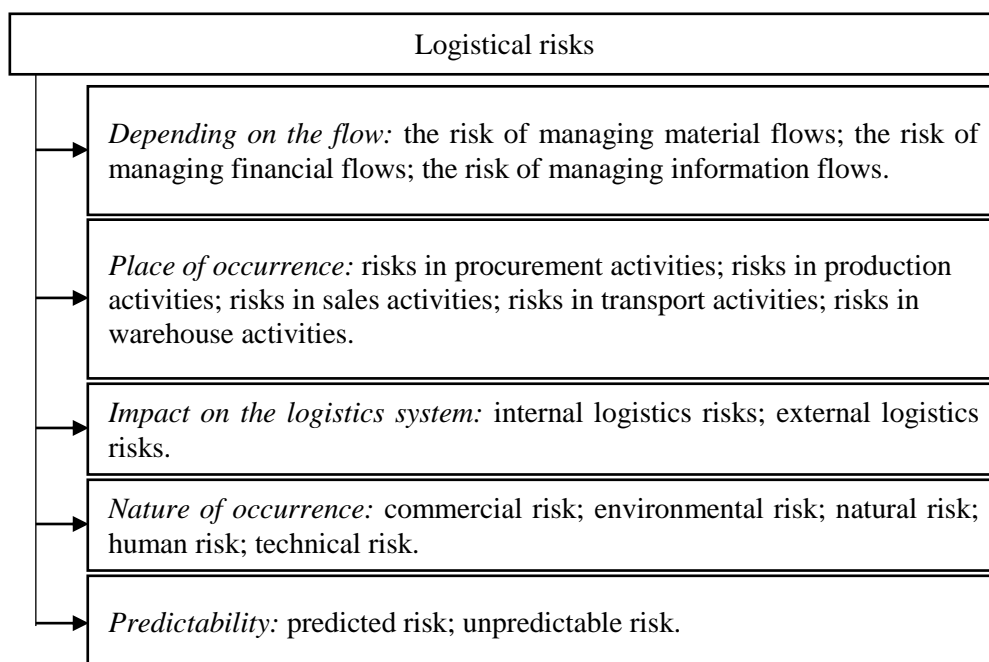


Figure 1: Classification of risks of logistics activities

Within the framework of production activities, the following risks are distinguished:

- the risk of a shortage of the required amount of raw materials or materials due to incorrect calculation of the necessary amount of stocks to ensure the uninterrupted operation of the enterprise;
- the risk of an increase in the cost of storing raw materials by raising prices for utilities and renting warehouse space.

Within the framework of sales activities, the following risks are possible associated with the movement and storage of finished products:

- the risk of violation of the deadline for the delivery of products to the customer due to untimely shipment of goods or delay in delivery by the carrier;
- the risk of damage to products during storage and transportation;
- the risk of a surplus or shortage of goods due to an error in determining the optimal amount of demand.

Within the framework of transport activities, we highlight the following risks:

- the risk of severing ties with logistics partners;
- the risk of non-fulfillment of obligations for the transportation of goods by logistics partners;
- the risk of an increase in transportation costs;
- the risk associated with partial damage or complete loss of the goods during their transportation;
- the risk of breakdown of vehicles, which leads to untimely delivery of goods to the consumer.

The following risks may occur within the framework of warehouse activities:

- the risk of an excessive amount of inventory in the warehouse;
- the risk of an expiration date, which will lead to the liquidation of a batch of stock or goods;
- the risk of growth of fixed costs.

Risks in logistics arise in the process of movement of material, financial and information flows, that is, they combine various types of risks of all components of the logistics system. There are the following types of risks of the logistics system:

- commercial, directly related to the economic aspect of the enterprise's activities;

\u2012 technical, related to the operation of technical means;

\u2012 economic and legal, related to the civil liability of individuals and legal entities in the process of logistics activities;

\u2012 force majeure, which are completely unpredictable.

To reduce the impact of risks on the result of the logistics activities of enterprises, it is important to take into account all aspects of the modern conditions of the logistics activities of enterprises and consider them separately and in interconnection and interdependence.

The following types of risks are considered the most typical in logistics activities:

\u2012 loss of cargo due to theft, false shipment to third parties, damage due to natural and man-made disasters or negative social phenomena;

\u2012 untimely delivery due to delays, changes in routes, etc.;

\u2012 damage to goods, when the use value of goods is lost in whole or in part due to the movement of goods for a long time in long chains of transportation, transshipment, sorting, etc.

\u2012 improper execution of accompanying documents, as a result of which problems arise during customs clearance of goods;

\u2012 disclosure of confidential information, which may lead to a violation of equality in competition;

\u2012 environmental risks may arise as a result of violation of the rules for the transportation and storage of goods, they may harm the life and health of people or the environment;

\u2012 risks of loss of reputation as a result of choosing an unscrupulous partner who may have a negative reputation;

\u2012 risks of civil liability for causing losses to third parties in the process of carrying out logistics operations.

Due to the occurrence of risks, the following types are distinguished:

\u2012 internal risks – organizational, technical and technological, depend mainly on the company's employees. They can be reduced by the correct organization of logistics processes at the enterprise;

\u2012 external risks are those that do not depend on the company at all. These include natural disasters, international conflicts, epidemics. To minimize them, it is necessary to calculate possible scenarios of events on the way of cargo movement;

\u2012 mixed risks - associated with both external factors and the behavior of the company's employees. These include theft, violation of the rules for the transportation and storage of goods, legal and legal risks, financial risks.

In order to reduce risks to a minimum level, to ensure the development of the logistics system and its functioning, it is necessary to manage risks by using appropriate methods. Risk management of the logistics system is a set of methods, functions and stages of the logistics cycle process, the successful application of which allows you to prevent risks or reduce them, ensure the sustainable functioning and development of the logistics system of the enterprise. The risk management process is carried out in stages.

At the first stage, it is necessary to identify the external and internal risks of the logistics system under study. At this stage, risks specific to each specific enterprise are identified and identified.

At the second stage, a qualitative and quantitative assessment of risks is carried out, that is, the amount of losses in the event of a risk event and the probability of its occurrence are identified. At this stage, the statistical method, the method of the stage of expert assessments, the method of analogies are used.

At the third stage, the analysis of the impact of risk factors, its magnitude and frequency on the indicators of logistics activities is carried out using correlation and regression analysis, simulation modeling and analytical methods.

At the fourth stage, it is necessary to carry out forecasting, modeling decisions made to prevent logistics risk;

At the fifth stage, the acceptability of the logistics risk is assessed and the management method that can ensure its minimization is selected.

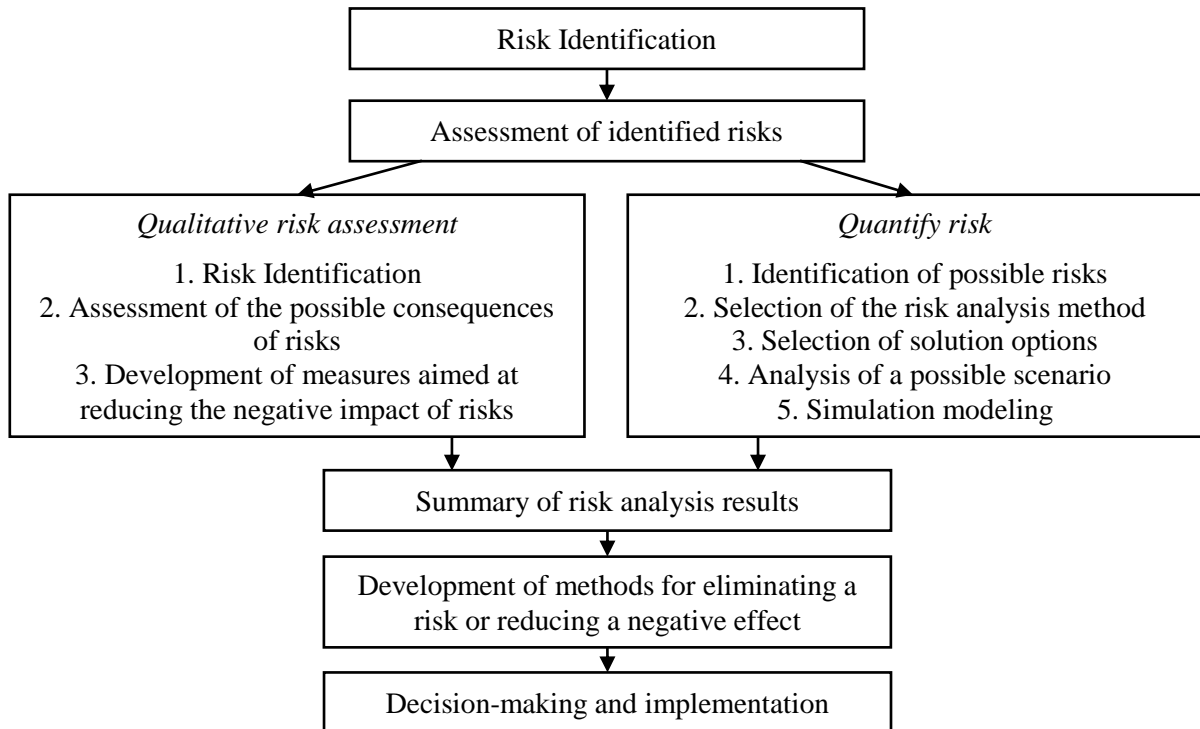


Figure 2: Algorithm for managing the logistics risks of the enterprise's activities

Usually, the methods of minimizing risks are: risk avoidance; localization of risks; risk diversification; risk compensation; risk transfer; limitation; insurance [3].

If risk avoidance involves rejection of the services of unknown or dubious partners, rejection of dubious offers, then integration or association with reliable partners allows you to distribute risks between them and reduce the impact of a certain type of risk on each of the parties to the transaction.

To reduce the impact of risks on logistics activities, it is possible to use risk localization methods that provide for local interest - the link in the supply chain that is the most risky.

IV. Discussion

Reducing the degree of risk is also possible through the use of differentiation of activities and/or markets for products with an expansion of the range of products, orientation to various groups of consumers, etc.

Risk compensation provides for the use of strategic planning of enterprises, forecasting the external environment, monitoring the socio-economic and legal environment and creating a system of reserves.

Risk transfer is carried out through the conclusion of lease, supply, storage, transportation, maintenance, etc. agreements.

To reduce the expected risks, it is possible to carry out limitation, that is, to establish maximum costs when selling goods on credit.

At the same time, it is advisable to include the method of risk management, which is relevant in modern economic conditions both for the logistics system and for enterprises of all types of activity, since the instability and uncertainty of both external and internal conditions for the functioning of the economy contribute to an increase in risks at all stages of logistics activities. Such a method is the method of risk acceptance, that is, readiness for risk and the formation of

measures that can prevent foreseeable losses. In this case, management decisions should be aimed at forming readiness for their occurrence through the creation of self-insurance and external insurance funds.

Insurance is the main and more widespread way of minimizing risks, which is used by both manufacturers and carriers on domestic flights and international carriers. One of the ways to manage logistics risks is the Incoterms 2020 rules, which are eleven unified rules applied in the practice of world trade. These rules set out the rights and obligations of the parties to a foreign trade contract in terms of the supply of products from the seller to the buyer [2]. These rules regulate both the distribution of transportation costs between the seller and the buyer, and the transfer of transport risks (damage to goods, loss or unexpected destruction of cargo) and insurance.

Risk management in the logistics system is closely related to the chosen corporate strategy, which ensures its stability and effective operation. The work [4] reflects the influence of the enterprise strategy on the choice of risk management methods in the logistics systems of the enterprise:

When choosing a "cautious" strategy, the company can abandon logistics risks or transfer it to another participant in the logistics process. A "balanced" strategy involves, depending on the current situation, the assumption of risk and the creation of insurance funds or the provision of guarantees, the transfer or rejection of logistics risks. A "risky" strategy may involve accepting or transferring risks depending on the specific situation.

In modern conditions of economic development, enterprises are faced with the need to search for methods to expand the sales market by entering international markets. In these conditions, risk becomes an integral condition for the functioning of the enterprise due to the effect of economic, financial, legal and political factors, which often generate various threats of material losses in the implementation of foreign economic activity. In addition, enterprises are increasingly making management decisions in conditions of uncertainty, so the issue of logistics risk management at enterprises focused on foreign markets requires special attention.

All components of the risk management process are closely interrelated, and each has not only a determining, but also a subordinate nature in relation to the other component. The multi-stage nature of the logistics system implies a high level of potential risk. Therefore, the logistics system should provide for a set of measures aimed at maintaining a high level of reliability of the system, which should minimize the probability of adverse events, from the point of view of risk management.

Thus, for the effective functioning of the logistics system in conditions of uncertainty, it is necessary to assess and analyze the risks of logistics activities. The use of the proposed methodological approaches to logistics risk management will make it possible to identify reserves for improving the efficiency of managing individual business processes of the logistics system and develop measures aimed at optimizing costs, using the resources of logistics system participants in the most rational way and meeting the requirements for the quality of logistics services in the supply chain.

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