

War as an Influencing Factor on the Logistics Management Processes of Foreign Economic Activity of Enterprises

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Abstract: During martial law, ensuring the citizens' safety is a central task for the country. The situation is becoming more acute due to Russia's full-scale invasion of Ukraine and the introduction of martial law on February 24, 2022. Such a situation leads to many obstacles to the traditional functioning of the Ukrainian logistics market. The development of international logistics is closely linked to the growth of the global market. As countries integrate into the system of global economic relations, the foreign economic activity of enterprises has become an essential factor in economic development.

Companies have the right to develop foreign markets and conduct foreign economic activity independently. Logistics is the search for ways to rationally sell products along the entire chain from the manufacturer to the final recipient. The logistics of foreign economic activity is aimed at the efficient management of goods exchange in physical form in material and related documents, financial, information, and other economic systems, as well as complex services related to the implementation of such operations with resources of all types of use. Foreign trade logistics has its own specific features in international trade, such as customs procedures management, standardization of delivery terms for goods under a sales contract, execution of shipping documents, and insurance. At the same time, the market structure significantly impacts the international transportation market.

The imbalance in the dynamics of transnational transportation at this stage affects the strategic decisions of enterprises in the supply chain. A company's logistical and strategic task when organizing foreign economic activity is formed by considering the optimal combination of technology, marketing, production, and logistics components. Since various factors influence foreign economic activity, an entrepreneur is exposed to certain risks throughout the entire activity of the business on the global market. Such risks can be viewed as unfavorable events or combinations related to foreign economic activity with negative consequences. Therefore, effective management of the factors in logistics that affect foreign economic activity is vital for enterprises to avoid or minimize risks and increase business profits in the international market.

Keywords: Logistics, instability, external environment, optimization, management.

INTRODUCTION

Like any other world country, Ukraine does not have all production factors. Hence, it must import certain goods and

services from other countries to meet domestic demand and develop its economy. Therefore, international trade is the main form of international economic relations, as it includes trade in goods in this material sense and a wide range of services (Milner, 2021). Moreover, international trade is the principal mean of exchange between manufacturers in different countries and generates economic interdependence (Roberts, ChoerMoraes, & Ferguson, 2019). Therefore, using logistics coordination mechanisms is one of the ways to im-

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prove the efficiency of foreign economic relations. In addition, the world market globalization, constant progress in science and technology, and the tendency to further deepen the international division of labor have increased the importance of process management and initiated research in this area.

One of the most important and, at the same time, the most complex forms of foreign economic activity is export activity, which arises when concluding foreign monetary transactions and represents a particular form of economic relations. In most cases, the mutual exchange of economic activities and related exports takes the form of foreign trade agreements. In addition, logistics of foreign economic activity has its own specifics in the import-export business, such as customs procedures management, coordination of goods delivery terms under the sales contract following international transport rules, preparation of the transportation process and documents for the goods, and insurance.

Theoretical and practical aspects of foreign economic activity logistics are reflected in the studies of domestic and foreign economists (Sabdash, Stauvermann, & Peleshchenko, 2019), Shtal, Uvarova, Proskurnina, & Savytska, 2020), Taraniuk, L. Wang, Qiu, Petrushenko, & Taraniuk, K. 2019), Taraniuk, L. Kobyzkyi, Taraniuk, K. & Dimitrova, 2018). The researchers' publications present different views on the concept of foreign economic activity, companies' management, and their processes. Ensuring information security in conditions of digitalization (Bondarenko, S., Makeieva, O., Usachenko, O., Veklych, V., Arifkhodzhaieva, T., & Leryk, S., 2022), and improving strategic state planning of national security (Bondarenko, S., Bratko, A., Antonov, V., Kolisnichenko, R., Hubanov, O., & Mysyk, A., 2022). The application of innovative approaches to the development of human potential in public administration (Semenets-Orlova, I., Shevchuk, R., Plish, B., Grydiushko, I., & Maistrenko, K., 2022), and improving the managerial activities of education managers in modern conditions (Semenets-Orlova, I., Klochko, A., Tereshchuk, O., Denisova, L., Nestor, V., & Sadovyi, S., 2022). In addition, they explore the process of managing foreign economic activity and define the main concepts related to the conditions of companies' adaptation in this context. During martial law, an external environment is a tool for managing logistics and ensuring stable operations in foreign markets. However, despite the many issues studied, many problems of rationalizing foreign economic activity through scientific logic mechanisms under martial law still need to be solved, which leads to further development in this area.

Despite the development's importance, a system of practical factors ensuring the logistics process of foreign economic activity has yet to be formed. The actual growth related to its design, organization, and functioning and the penetration rate into the logistics sphere is too weak.

This article aims to analyze the influence of factors on the efficiency of logistics management of an enterprise's foreign economic activity under martial law and formulate directions for minimizing the negative impact.

Based on this goal, this paper solves the following tasks:

- analysis of the company's logistics activities;
- improvement of the mechanism of the enterprise's logistics activities taking into account international specialization;
- development of directions for assessing the impact of factors on the efficiency of the logistics management process;
- to form a set of directions for minimizing the negative impact of the martial law factor on logistics activities.

This article's research object is the logistics management processes of an enterprise's foreign economic activity.

The subject of the study is the economic and financial relations that arise between the enterprise and external stakeholders in the process of foreign economic operations.

METHODS AND MATERIALS

To support the current global economic development trend, a priority area of international logistics development is the formation of supply chains to reduce financial and time losses during the goods transfer from producers to consumers. Since the beginning of the war, using logistics approaches to develop foreign economic activity can become a competitive advantage that will ensure long-term efficiency.

Critical thinking is essential in analyzing situations and ways to solve them. Moreover, it is recognized as the primary future competence due to the world development tendency - the transition to an information society. Thus, by applying critical thinking methods, it is possible to analyze the situation in customs and logistics support and propose ways to improve it.

The process of modeling the concept of managing the instability of the external environment and the efficiency of enterprise activity involves the study of processes and phenomena characteristic of the development of logistics activities and operating under martial law based on design and efficiency assessment to obtain essential characteristics of objects, as well as the formation of measures to optimize their activities.

This article analyzes the impact of the martial law factor on the efficiency of logistics management processes of an enterprise's foreign economic activity based on the correlation and regression analysis model, classical management theory, and factor analysis of logistics management development indicators. The methodology of statistical observation is the official data of the State Statistics Committee of Ukraine. The model for improving the efficiency of logistics management will allow for predicting the profitability of an enterprise under martial law in Ukraine. Such a long-term model is advisable to use when assessing food security indicators for making managerial decisions and regulating the directions of logistics activities. As the basis of the article's methodology, the author uses a correlation-regression model of enterprise profitability dependence on the factors affecting logistics activities.

RESULTS

The formation of stable trade relations within the framework of foreign economic activity not only contributes to an increase in international financial flows but also helps to increase the enterprise's competitiveness in the global market. The concept of logistics management at an enterprise involves combining all functional areas related to the movement of material flow from producer to consumer into a single complex. Therefore, modern methods of improving logistics management efficiency are of practical importance for the Ukrainian economy. These methods will allow domestic enterprises to operate effectively in the domestic and foreign markets.

In today's unstable environment, the impact of foreign economic activity logistics on reproduction is becoming increasingly evident. It is primarily the result of further internationalization of economic activity, the deepening of the integration tendency worldwide, a significant increase in the role of external factors in the national reproduction process, and the result of structural and quantitative changes. Studies of logistics in the context of foreign economic activity show that the basis of logistics activities should be the analysis and synthesis of optimized operational processes and internal methods for assessing decision-making effectiveness. Optimization aims to rapidly mobilize reserves, mainly with organizational aspects as the lowest cost factors. Furthermore, it seeks to increase the business entities' adaptability to changing external conditions. All interdependent processes, such as materials, information, transportation, and storage (which comprise the logistics system), must be analyzed and synchronized in a complex unity and interdependence.

Foreign economic activity is defined as commercial activity in the field of international goods exchange in material form and the provision of comprehensive services related to trading operations. Such an understanding of foreign trade requires a broad approach to defining the nature and conditions of its implementation and economic, monetary, financial, and legal measures. In addition, a prerequisite for foreign economic activity is the implementation of several steps, such as protective measures of an economic, monetary, financial, and legal nature related to the goods' movement from the seller to the buyer.

At the same time, the logistics process must comply with the fundamental law of logistics - the 7R rule:

- The right product
- The right condition
- The right quantity
- The right time
- The right place
- The right customer
- The right price (Trichai, 2021).

Based on these rules, the role of logistics in foreign trade to achieve common goals is to provide customers from neighboring and distant countries with the necessary goods of the right condition and quantity at the right time in the right place from reliable suppliers, with a high level of pre-sales

and after-sales service and a certain level of total costs. However, it should be noted that several obstacles currently hinder the organization of international logistics activities in Ukraine.

The main barriers can be identified as follows:

- disruption of the supply chain;
- poor quality fulfillment of the terms of foreign economic agreements;
- increased transaction and logistics costs;
- due to the destruction and complication of fuel storage facilities, the lack of direct investment in the formation and functioning of related logistics infrastructure (docks, warehouse complexes, distribution centers);
- state monopoly on highways and transportation routes.

The deployment of large-scale military operations throughout Ukraine has forced the entire country to adapt to the conditions of military invasion. In such a scenario, the foreign economic activity of enterprises is significantly changing as changes are taking place in all sectors of the economy. Nevertheless, there are still disruptions in the supply chain, as many production and industrial facilities have been destroyed, some are occupied, and transportation and storage infrastructure has been damaged or destroyed due to fuel and storage of lubricants and other products provided to businesses. Thus, the list of barriers to the functioning of the logistics industry can be supplemented by such factors as a decrease in exports due to the blockade of trade routes and the lack of categorization of logistics routes in the wartime mechanism.

Reorganizing the logistics system is becoming increasingly important after the full-scale Russian invasion. The war has resulted in the cancellation of sea transportation, which covers about 65% of all exports, air transport disruptions, railways deterioration, and road transport worsening. In addition, many warehouses and logistics centers were bombed, and supplies of raw materials to major industrial cities such as Kharkiv, Zaporizhzhia, Mariupol, Kherson, and Odesa were cut off. This situation has led to the following consequences: loss of established logistics routes, increased delivery times, a significant increase in transportation costs, and a reduction in warehouse stocks. The current situation calls for constructing and optimizing new roads with the lowest prices and highest productivity. Businesses should look for alternatives to building logistics, as imperfect logistics activities due to the lack of opportunities to replenish stocks of material resources can lead to the forced closure of enterprises.

Thus, given the increased military danger and general instability of the external environment, it is necessary to formulate the task of rational goods distribution, including transportation of production resources and distribution of finished products and optimal management of these processes. One of the ways to solve this problem should be an investigation of the logistics system and the material and technical flow of the enterprise's foreign economic activity. Logistics processes in an enterprise's foreign economic activity system can be represented by the following diagram (Figure 1).

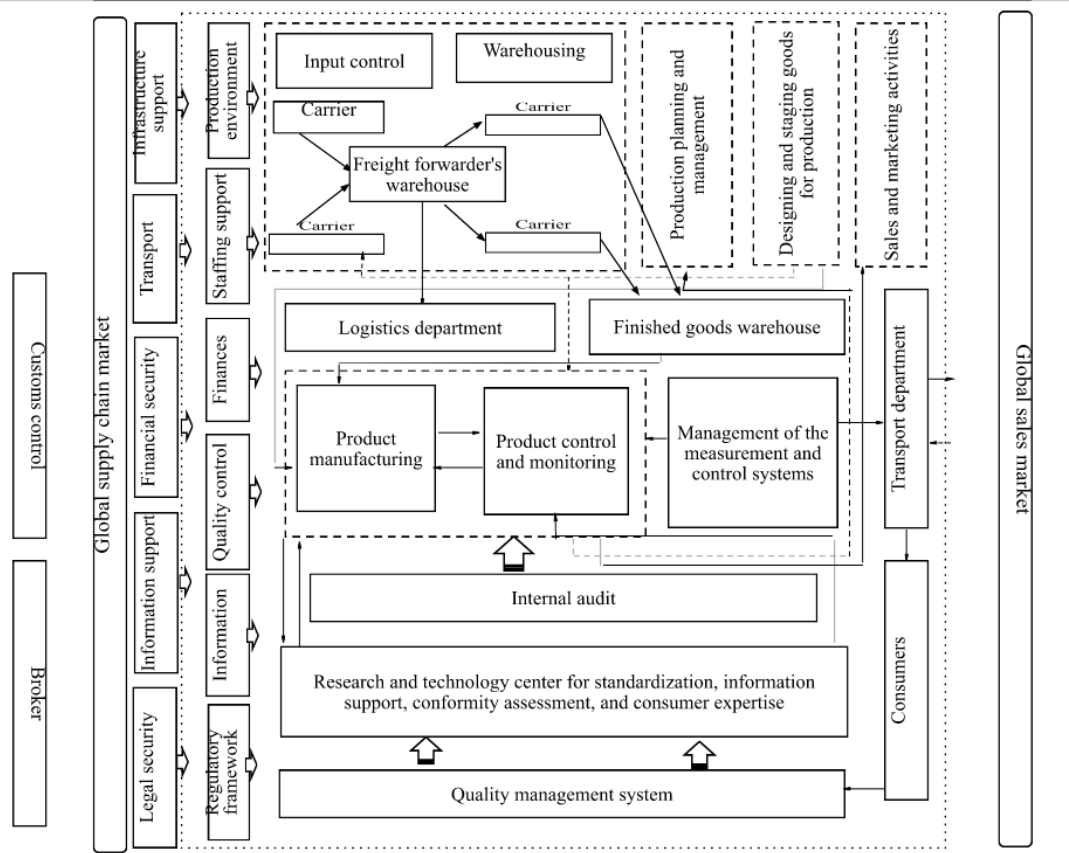


Fig. (1). Mechanism for ensuring logistics processes in the foreign economic activity of the enterprise (compiled by the author).

Thus, an enterprise's logistics system consists of suppliers (manufacturers and wholesale suppliers of products), logistics intermediaries (transport and forwarding companies), own structural units (procurement, sales, wholesale and retail warehouses, own operations), a network of own branches, customers (including municipal and regional stores), united by logistics services.

The cargo route during export is divided into three stages: initial delivery (to the terminal of the main carrier, port, airport, and border crossing point), mainline transport (international transportation), and final delivery (from the customs border to the other party's destination). Considering the complex structure and variability of any foreign trade transaction, it is necessary to develop an algorithm for such a transaction for planning, analysis, and control. These models differ in the level of granularity of various stages, the composition of information, the possibility of computer processing, and the alignment of requirements for the company's logistics system.

In foreign trade, material flows are transformed into goods through the imposition of commodity and currency relations during their movement from the supplier to the recipient, including when crossing the country's customs borders. Therefore, from the logistics point of view, the most critical role in optimizing the flow of goods in foreign trade is played by the financial flow that ensures the movement of inventory across customs borders. At the same time, in the context of an unstable external environment caused by Rus-

sia's military invasion of Ukraine, the issues of information support and security conditions are of particular relevance.

The primary indicator for optimizing the goods flow is an enterprise's profitability. However, the number of factors that affect the efficiency of foreign economic activity and the resulting indicator of profitability differs depending on the particular enterprise chosen, depending on the specific conditions and features of its work, and the capabilities of its managers and employees. Thus, this article presents a general method for optimizing the processes of logistics foreign economic activity in the context of an unstable external environment.

Ensuring an increase in the company's profitability can be realized by taking into account the following factors:

1) Factors related to product sales:

- improving the efficiency of economic activity when selling products. In other words, it means accelerating working capital movement, reducing various stocks, and realizing the fastest possible delivery of finished products from producers to consumers.
- establishment of an effective pricing policy differentiated by specific customer categories;
- strict compliance with the terms of the contract concluded for the supply of the goods;
- improving advertising activities to increase the effectiveness of the marketing campaign;

- improving the quality of the goods;

2) Factors related to the use of production facilities, raw materials and real estate, machinery, and equipment:

- increase the production of industrial products by increasing the utilization of the company's production capacities;
- reduction of production costs by increasing labor productivity, rational use of equipment, raw materials, materials, fuel, and electricity;
- use of the most modern mechanized and automated means of production;
- elimination of excess and unused equipment by selling or leasing;
- implementation of scientific and technological progress, especially digitalization processes, in production;

3) Factors related to the use of labor resources:

- implementation of a large-scale and effective policy in the field of employee training, which is a specific form of investment;
- taking measures to improve the working atmosphere of the team.

The enterprise profitability indicator can be written as the following equation (1):

$$P = \{T_c, L_s, S_d, C_p, N_a, P_q, P_v, L_p, D_l, I_t, E_t, S_e, W_l, A_{lt}, T_c\} \quad (1)$$

where,

P – enterprise profit, UAH;

T_c – capital turnover, days;

L_s – stock level, UAH;

S_d – delivery speed, days;

C_p – product cost, UAH;

N_a – number of the agreements made, units;

P_q – product quality, units;

P_v – production volume, UAH;

L_p – labor productivity, UAH;

D_l – digitalization level, share of units;

I_t – inventory turnover, days;

E_t – training and improvement of employees' skills, UAH;

S_e – employee satisfaction with labor conditions, share of units;

W_l – average wage level, UAH;

A_{lt} – long-term assets, UAH;

T_c – transportation costs, UAH.

Assuming that the factor attributes have both a direct and inverse effect on the resulting profitability indicator, the overall integral profitability indicator can be calculated by the following equation (2):

$$Y = \left\{ \frac{T_c, S_d, N_a, P_q, P_v, L_p, D_l, I_t, E_t, S_e, W_l, A_{lt}}{L_s, C_p, T_c} \right\} \quad (2)$$

where,

Y – integral resultant indicator, share of units.

Next, each factor should be assigned a weighted factor (δ) that reflects its contribution to the overall enterprise profitability. Then, the factor is calculated using correlation and regression analysis and allows for a comparison of the factors that influence the resulting indicator. Then, equation (2) will have the following form (3):

$$Y = \left\{ \frac{\delta_1 T_c, \delta_2 S_d, \delta_3 N_a, \delta_4 P_q, \delta_5 P_v, \delta_6 L_p, \delta_7 D_l, \delta_8 I_t, \delta_9 E_t, \delta_{10} S_e, \delta_{11} W_l, \delta_{12} A_{lt}}{\delta_{13} L_s, \delta_{14} C_p, \delta_{15} T_c} \right\} \quad (3)$$

In this case, $\sum \delta_{1...15} = 1$.

At the same time, achieving maximum results in terms of specific indicators under martial law in the country is impossible. Such indicators include delivery speed, number of contracts, production volume, inventory turnover, average salary, and level of transportation costs. In this case, it is necessary to additionally conduct a correlation and regression analysis to determine the adjustment indicator that considers the degree of uncertainty for each factor separately.

In terms of reducing the uncertainty of the external environment, international logistics intermediaries play an essential role in solving global logistics problems, particularly international freight forwarding companies, foreign trade companies and representative offices, companies engaged in export operations, brokerage companies, buyers, and sellers. Moreover, the country's logistics infrastructure, import and export packaging companies, seaports, and, more importantly, logistics service packages are usually provided by large international That is why the practical implementation of the logistics method of foreign economic activity is expressed in its functional levers.

The leading logistics tasks include optimizing the accounting process of logistics activities since this process has a regulatory impact on the information flow, and contractual agreements are the information basis of logistics processes, i.e., material and capital flows are crucial. In building the international logistics system, the following tasks were addressed: creating a free transport market not limited by capacity and congestion, adopting modified tariffs proposed by general regulators, and developing rules that facilitate and, at the same time, protect the common market for logistics operations, transit of goods, timely liberalization of transport and customs procedures, matching the carrying capacity of road transport with the productivity of rail and warehouse facilities, international compliance with the

In Ukraine, international transport corridors are an object of the global infrastructure of European importance. These facilities are part of the trans-European system consisting of port, river, rail, road, and mixed transport infrastructure, various ancillary facilities (warehouses, terminals, checkpoints, access roads, etc.), and air transport. For Ukraine, which has a vast territory and different socio-economic and economic-geographical conditions, building a regional transport and logistics center with subsequent integration into the national logistics infrastructure and the international community is

crucial. Therefore, it is proposed to create a network of regional terminals as well as transport and logistics centers in large nodes of the public network of national and international scale, which will be united into a regional transport and logistics system based on a single organizational, economic, and financial system, information system, staff, and law.

DISCUSSION

International transportation is only possible in the modern global economy with a well-developed domestic and international logistics infrastructure. At the same time, when servicing the international goods flow, the distribution process often involves the logistics infrastructure of several countries. For example, Khan, Godil, Yu, Abbas, & Shamim (2022) conducted a detailed analysis of the impact of logistics infrastructure on country development. In addition, Cichosz, Wallenburg, & Knemeyer (2020) studied the effect of scientific and technological progress on the logistics industry's functioning.

These studies generally aim to analyze and develop international logistics and transportation infrastructure, which multinational companies mainly use. A terminal, a logistics park (hub), or a transport and logistics center is an intermodal hub at the intersection of international goods flows. It represents a particular type of logistics infrastructure (Ertem, Akdogan, & Kahya, 2022). In the research by Tadić, Krstić, & Zečević (2019), the authors analyzed the mechanisms of planning logistics processes and developing logistics networks. Similar studies were conducted by Pamučar & Božanić (2019), Muravev, Hu, Rakhmangulov, & Dai (2019), Taraniuk, L., Qiu, & Taraniuk, K. (2020). According to these studies, logistics infrastructure facilities are divided into three main groups: local, regional, and international, with the latter representing a comprehensive centralized infrastructure that serves the process of international cargo transportation. Due to the depth of the labor division, i.e., the division that occurs within the framework of infrastructure outsourcing, it contributes to the rational allocation of company resources; focuses on activities in which the company has specific advantages; reduces product development time and improves the efficiency of distribution mechanisms, increases the ability to adapt to market changes quickly.

The issues of assessing the efficiency of logistics processes in foreign economic activity remain relevant under current conditions.

Due to the specifics of organizing the management of each economically active entity, performance evaluation remains relevant. In other words, if the assessment of logistics processes has a positive effect, the project will be accepted and implemented. Forming a logistics system is no exception, as the main advantages are savings and increased efficiency. The problem of evaluating the efficiency of logistics activities has been covered in the works of many scientists. Among these, we pay special attention to the works devoted to obtaining and maximizing the logistics effect. These issues are thoroughly covered by Nagahara, Lou, & Yanagida (2021) and Budak (2020). In addition, the issues of logistics cycle optimization are discussed by Robul, Deineha, Prokopenko, Novikova, Lukianykhina & Baistriuchenko (2020),

Körösi, Duchoň, & Lukáč (2022), Sun, Geng, Gong, & Yang (2020). The above studies thoroughly addressed the issues of evaluating logistics activities' efficiency, offering a systematic and integrated approach.

Thus, various areas of modeling in the logistics system can be solved with the help of multiple models and methods of optimization and accurate calculation of a particular system. At the same time, it is almost impossible to fully consider the existing methods and models for describing economic objects and systems at the macro level.

The widespread use of economic and mathematical models and methods for managing logistics processes is a highly relevant issue. In addition, consideration of manufacturing issues related to such formal features as consumption, finance, and marketing can help increase the production-consumption system's flexibility and quickly adapt to changes in micro and macro environmental conditions.

CONCLUSION

Practical logistics principles and methods allow management to free up financial resources for additional investments. Implementing logistics management in foreign economic activity will also reduce product inventories in the delivery, production, and sales links, accelerate investment funds turnover, reduce production costs, and ensure customer satisfaction. At the same time, the process of fulfilling customer orders should be the focus of the logistics management system. In recent years, consumers have been making increasingly high demands on the quality of logistics services. With the development of market relations, consumers have more and more opportunities to compare and choose the best services. The quality of logistics services in foreign economic activity is the satisfaction of the needs of foreign consumers, which is expressed in the correct execution of deliveries, error-free, prompt provision of services, and the desire to improve the level of service constantly, compliance with consumer standards, terms of foreign trade agreements. To meet these requirements, it is advisable to create a special department within the logistics department, whose task is to combine the tasks of logistics management of the company's internal business processes with foreign partners and consumers in a single system. Understanding the benefits of effective interaction between functional areas and logistics, the availability of modern communication systems between the territories, and management support can significantly contribute to achieving the enterprise's strategic goals.

A logistics system includes the so-called logistics processes as processes that transform the system's state per the state of the objects. The system objects are place, time, content, and quantitative and qualitative characteristics. It should be noted that logistics related to logistics management affect financial costs and logistics services activities directly interact with financial services activities. At the same time, the actual financial capacity of an enterprise becomes a limiting factor in many operations, such as inventory creation and equipment purchases.

Thus, under conditions of external environment instability, the logistics management of enterprises' foreign economic activity should be aimed at creating a large number of multi-

national enterprises, using global logistics chains and networks to do business, creating favorable conditions for importing and exporting various goods, eliminating unnecessary barriers and restrictions to entering the industry. Therefore, the need for more skills in managing foreign economic activity is the main reason for multiple problems in imports and exports today. Thus, domestic enterprises' main task is conducting business abroad to fully embrace the development of foreign trade under globalization.

The main ways to improve the efficiency of logistics activities under martial law are as follows:

- Digitalization of logistics business processes: the use of computer systems to ensure the collection, storage, processing, release, and distribution of information to reduce the complexity of the process of using information resources and increase the reliability and efficiency of many logistics processes. It is used for inventory management, warehousing, processing, delivery, and distribution.
- Consolidation of a shipment: combining two or more small shipments from one or more suppliers into one large load. It is used for transfer and distribution.
- Cost minimization method: shipment order reduces the storage time of excess inventory. It is used for shipping, supply, and inventory management.
- ABC analysis: dividing inventory of raw materials and supplies into three categories of importance based on a specific cost, delivery speed, or other criteria for inventory management, shipping, warehousing, packaging, delivery, and distribution.
- XYZ analysis: ranks materials based on the average cost difference between their intermediate consumption level from inventory and their average removal level for inventory management, delivery, warehousing, packaging, and distribution.
- Cross-docking: direct deliveries from suppliers or manufacturers, bypassing warehouse logistics. It is used for transfer, supply, and distribution.
- Material requirements planning: the need for various materials, raw materials, and components required to make each product is calculated based on the quantity of the main program requirement and the corresponding material order. From this basis, consider factors such as shipping and arrival times to determine when to place an order for inventory management, delivery, and distribution.
- Forecasting: the extension of all ideas about future events based on observations and theoretical assumptions; making reasonable estimates of the probability of one or more possible events or process states. It is used for inventory and procurement management.
- Implementation of a CRM system to help organize work between customers, contractors, agents, and other supply chain participants. Its main advantage is automation and total control over the execution of

tasks. In addition, this system is used to record requests and interactions of company employees. Another CRM benefit that needs to be noticed is increased customer processing speed, reduced time required for funds transactions, and acceleration of profit generation.

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