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V. Semenova,

Doctor of Economic Sciences, Professor, Professor of the Department of Economy of Enterprise and Business Organization, Odessa National Economic University

ORCID ID: <https://orcid.org/0000-0001-5194-4878>

R. Hrinchenko,

Doctor of Economic Sciences, Professor, Head of the Department of Economy of Enterprise and Business Organization, Odessa National Economic University

ORCID ID: <https://orcid.org/0000-0002-3366-6154>

I. Tanasiuk,

PhD in Economics, Associate Professor of the Department of Economy of Enterprise and Business Organization, Odessa National Economic University

ORCID ID: <https://orcid.org/0000-0002-9262-4309>

**STRATEGY FOR RISKS REDUCTION IN LOGISTICS MANAGEMENT
AT ENTERPRISES FOR ADAPTATION TO INNOVATIVE CHANGES**

В. Г. Семенова,

*д. е. н., професор, професор кафедри економіки підприємства та організації
підприємницької діяльності,*

Одеський національний економічний університет

Р. В. Грінченко,

*д. е. н., професор, завідувач кафедри економіки підприємства та організації
підприємницької діяльності,*

Одеський національний економічний університет

І. М. Танасюк,

*к. е. н., доцент, доцент кафедри економіки підприємства та організації
підприємницької діяльності,*

Одеський національний економічний університет

СТРАТЕГІЯ ЗНИЖЕННЯ РИЗИКІВ В ЛОГІСТИЧНОМУ УПРАВЛІННІ НА ПІДПРИЄМСТВАХ ДЛЯ АДАПТАЦІЇ ДО ІННОВАЦІЙНИХ ЗМІН

This article examines issues related to risk mitigation in logistics management at domestic enterprises. It has been determined that in recent years, due to the rapid development of Internet technologies, the development of transport and warehouse infrastructure, market globalization, and the digitization of management systems, there has been an improvement in logistics processes and an expansion of enterprises' potential opportunities to utilize modern supply chains in international markets. The paper examines Ukraine's position in the World Bank's Logistics Performance Index and concludes that our country's ranking has significantly declined across all indicators. Overall, the decline amounts to 18 positions (from 61st place in 2014 to 79th place in 2023) in the ranking of 140 countries worldwide, indicating the presence of problems in the domestic logistics sector. This study examines the types of risks in logistics processes and concludes that innovative and technological risks have a significant

impact. It concludes that a risk mitigation strategy must be developed in logistics management to help enterprises adapt to innovative changes, and outlines the stages for implementing such a strategy. The main stages of the strategy include:

- 1) Identification of key risks in the enterprise's logistics processes and determination of the risk level: analysis of resource suppliers for reliability, resource quality, prices, and supply terms; identification of key and potential customers; analysis of risks associated with the transportation and storage of the enterprise's resources and products; identification of technological risks and forecasting of force majeure risks in logistics processes.*
- 2) Developing a system of measures to mitigate risks in logistics processes: measures to foster partnerships with resource suppliers; attracting new customers and actively collaborating with regular clients; cooperation with reliable carriers and the use of modern warehouse technologies; continuous monitoring of the latest technologies in logistics and investment in energy-saving and waste-free technologies, etc.*
- 3) Implementation of the developed measures and monitoring of their execution: conducting control measures and analyzing the results achieved. The results of the study indicate the need to improve logistics management to enable enterprises to adapt to innovative changes from a strategic perspective.*

У статті розглядаються питання щодо зниження ризиків в логістичному управлінні на вітчизняних підприємствах. Визначено, що протягом останніх років, внаслідок швидкого розвитку Інтернет-технологій, розвитку транспортної та складської інфраструктури, глобалізації ринків та цифровізації систем управління спостерігається удосконалення логістичних процесів та розширення потенційних можливостей підприємств щодо використання сучасних ланцюгів постачань на міжнародних ринках. У роботі досліджено місце України у міжнародному Індексі ефективності логістики, який проводить Світовий банк та зроблено висновок про значне зниження рейтингу нашої країни за усіма показниками. В цілому зниження становить 18 позицій (з 61 місця у

2014 до 79 місця у 2023 рр.) у ранжуванні серед 140 країн світу, що свідчить про наявність проблем у вітчизняній логістичній сфері. В роботі досліджено види ризиків у логістичних процесах та зроблено висновок про значний вплив інноваційних та технологічних ризиків. Зроблено висновки про необхідність формування стратегії зниження ризиків в логістичному управлінні для адаптації підприємств до інноваційних змін та розроблено етапи реалізації такої стратегії. До основних етапів стратегії відносяться:

- 1) Ідентифікація основних ризиків у логістичних процесах на підприємстві та визначення рівня ризику: аналіз постачальників ресурсів на надійність, якість ресурсів, ціни, умови постачання; визначення основних та потенційних споживачів; аналіз ризиків транспортування та складування ресурсів і продукції підприємства; ідентифікація технологічних ризиків та прогнозування форс-мажорних ризиків в логістичних процесах.
- 2) Формування системи заходів зниження ризиків у логістичних процесах: заходи щодо забезпечення партнерських відносин з постачальниками ресурсів; залучення нових споживачів та активна співпраця з постійними клієнтами; співпраця з надійними перевізниками та використання сучасних складських технологій; постійний моніторинг новітніх технологій в логістиці та інвестування в енергозберігаючі та безвідходні технології тощо.
- 3) Впровадження розроблених заходів та контроль за їх реалізацією: проведення контрольних заходів та аналіз досягнутого. Результати проведеного дослідження свідчать про необхідність удосконалення логістичного управління для адаптації підприємств до інноваційних змін в стратегічній перспективі.

Keywords: *logistics management, risks, business adaptation, innovative changes, strategy.*

Ключові слова: *логістичне управління, ризики, адаптація підприємства, інноваційні зміни, стратегія.*

A general formulation of the problem and its connection to important scientific or practical challenges. The development of the global economy encompasses many areas that are dynamically changing under the influence of scientific and technological progress and require a constant focus on innovative changes. In particular, with the development of Internet technologies, approaches to the organization and management of logistics processes at enterprises have changed significantly. The possibilities for logistical support with the necessary resources for production and service provision have expanded in terms of selecting suppliers of these resources both within a given country and abroad. Promising avenues have emerged for strengthening effective interaction between enterprises and potential consumers of their products and for encouraging them through various loyalty programs, etc.

Domestic enterprises are also facing increasing demands for rational and effective management in the logistics sector and for adapting their operations to innovative changes. Technological advancements are leading to shifts in consumer preferences and needs in target markets and require a comprehensive overhaul of approaches to all aspects of business operations. The challenges of managing logistics processes are exacerbated by the growing economic crisis in Ukraine resulting from military actions on our territory by the Russian Federation and the damage and destruction of transportation routes, particularly the current inability to use air transport and maritime (river) shipping. The types of risks arising in logistics support and management processes, as well as strategic approaches to mitigating them, require further study.

Analysis of recent studies and publications. Many scholars and practitioners have devoted their work to researching issues related to the management of logistics processes in enterprises. For example, T.O. Vodolazhska, in her article, examined the essence of the concept of “enterprise logistics strategy” and proposed a classification of these types of strategies: a strategy to minimize total costs of logistics processes; a strategy aimed at improving the quality of logistics services; an innovative logistics strategy, etc. [1].

V. Vakulenko, Y. Liu, and S. Liu, in their work, focused on issues of logistics support for exports under martial law in our country, identified the main directions of risk-oriented logistics management in modern conditions to reduce the level of potential risks, and proposed the use of adaptive management tools for the restoration of logistics systems based on the digitalization of logistics processes and the widespread use of software products [2].

Scholars such as V. Shishkin, O. Onishchenko, and D. Zevenko have studied the logistics system as a key component of a country's economic functioning and examined the main problems that have arisen in supply chains as a result of hostilities on Ukrainian territory. The authors also emphasized the significance of information risks and their impact on logistics processes and proposed using SWOT analysis to determine strategic priorities for managerial decision-making to ensure the resilience of logistics systems [3].

In their research paper, T. Pavliuk, Y. Polusmyak, and R. Zenkinova examine innovative approaches to logistics management in enterprises, including the automation of logistics processes and the use of artificial intelligence to promote adaptability to changes in sales markets from a strategic perspective and to ensure increased competitiveness [4]. O. Levishchenko and S. Kuzmenko identified the main stages of developing a sustainable development strategy for logistics enterprises, taking into account consumer market needs and the necessity of adapting to customer demands while maintaining optimized costs and stable financial indicators [5].

Researchers K. Pavlov, O. Totska, A. Bortnik, O. Burtsev, and O. Moroz identified the main factors influencing the selection and implementation of a logistics strategy. The importance of government regulation in the context of adapting logistics processes at small and medium-sized enterprises is noted, particularly in crisis situations and under martial law [6].

A significant body of research examining the effectiveness of logistics management from a strategic perspective also underscores the relevance of this topic and the existence of a number of unresolved issues. In particular, further

clarification is needed regarding the identification of risks in logistics management and the ways in which enterprises adapt to innovative changes in logistics processes.

Formulation of the article's objectives (statement of the problem). The aim of the study is to identify the main types of risks in logistics management and to examine strategies for mitigating them to ensure the enterprise's adaptation to innovative changes.

Presentation of the main research findings. The modern global economy is shaped by constant technological change. The adaptability of enterprises in a changing competitive environment is determined by the following factors:

- ensuring the monitoring and analysis of the market environment and strategic prospects for market changes;
- the ability to promptly reorient the activities of enterprise personnel toward necessary changes in the organization of production processes, technical training, and production technologies;
- building constructive relationships with resource suppliers, the enterprise's customers, and other partners;
- focusing on the creation and production of new products and services and the diversification of business activities;
- the ability to implement new organizational, technical, and technological processes [7, p. 337].

The processes of economic globalization and the strengthening of international economic relations have also contributed to the development of logistics processes utilizing modern innovative technologies.

Logistics management is an important component of the overall management system, aimed at ensuring the economic, functional, and social aspects of planning, organizing, motivating, controlling, and regulating the logistics processes of enterprises and organizations [8].

The World Bank ranks countries worldwide according to the Logistics Performance Index based on the following criteria:

- Customs;
- Infrastructure;
- International shipments;
- Logistics competence and quality assessment;
- Timeliness;
- Tracking and tracing [9].

The study covers most countries around the world; specifically, in 2023, it included 140 different countries, with the following nations ranking among the top 10:

- 1) Singapore.
- 2) Finland.
- 3) Denmark.
- 4) Germany.
- 5) Netherlands.
- 6) Switzerland.
- 7) Austria.
- 8) Belgium.
- 9) Canada.
- 10) Hong Kong (China) [9].

In 2023, Ukraine ranked 79th in this ranking. The trend in the domestic economy's position in terms of logistics efficiency compared to other countries over the years is shown in Fig. 1.

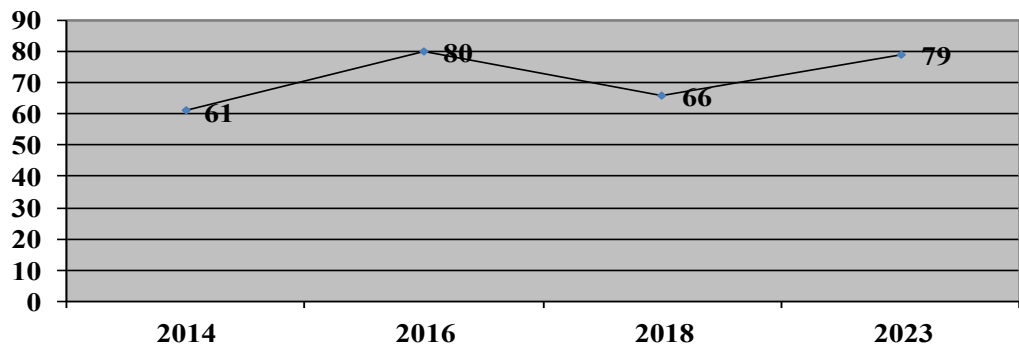


Fig. 1. Logistics efficiency index of Ukraine.

Source: based on [9].

An analysis of the Logistics Performance Index shows that, over the entire study period, Ukraine’s ranking fell from 61st place in 2014 to 79th place in 2023.

Table 1 shows how Ukraine’s rankings changed according to various groups of criteria in the Logistics Performance Index for 2014–2023.

Table 1. Changes in Ukraine’s ranking by individual criteria in the Logistics Performance Index

Criteria	2014	2016	2018	2023	Deviation 2023-2014 (+;-)
Overall rating	61	80	66	79	+18
Customs	69	116	89	90	+21
Infrastructure	71	84	119	89	+18
International shipments	67	95	68	75	+8
logistics competence and quality assessment	72	95	61	92	+20
Timeliness	45	61	52	76	+31
Tracking and tracing	52	54	56	94	+42

Source: based on [9].

An analysis of the data in Table 1 shows that Ukraine’s ranking has declined across all criteria groups of the Logistics Performance Index throughout the entire observation period. The largest drops in ranking occurred in the “timeliness”

criterion—by 31 positions—and the “tracking and tracing” criterion—by 42 positions. The overall ranking fell by 18 positions.

This situation is caused by a number of factors, among which the most significant are the ongoing military hostilities and Russia’s aggression on Ukrainian territory, which have led to the destruction of transport and warehouse infrastructure and restrictions on the use of essential supply chains for resources and products.

Researchers identify the following types of risks that affect the execution of logistics processes:

- commercial risks, which lead to financial losses due to breaches of contractual obligations with partners;
- economic and legal risks, which involve legal violations during the execution of logistics operations;
- technical risks, which arise from potential technical issues with vehicles and storage equipment [2, pp. 298–299];
- force majeure risks (military actions; natural disasters; political instability, etc.), which are objective and have a significant impact on all economic processes, including logistics [3, p. 200].

We believe that, in addition to the risks mentioned above, the risks associated with innovation and technological change are also becoming increasingly significant today, requiring companies to adapt to new requirements and changes in logistics processes.

Market analyst N. Serhiychuk notes that there are three main innovation trends in logistics today:

- 1) Hyper-automation, which aims to combine various modern technological solutions to increase the efficiency of logistics processes. The goal of implementing hyper-automation is to achieve coordination in sales, supply, planning, procurement, and distribution, while reducing the role and significance of the human factor.

2) Flexible logistics, which focuses on scaling logistics operations and the supply chain “upstream” or “downstream” depending on market demand, while accounting for limitations in transportation resources, warehouse space, and the ability to avoid prolonged storage of goods. The advantages of this approach also include increased efficiency in supply chain control and improved customer service. Implementing flexible logistics requires professional data analytics, the use of modern software products, and artificial intelligence.

3) Green logistics (ecologistics), which aims to reduce the negative environmental impact of logistics processes (transportation, warehousing, etc.) [10].

In our opinion, for a company to adapt to these innovative changes in logistics management, it is necessary to develop a strategy focused on reducing risks and achieving competitive advantages. We believe that the main stages of implementing such a strategy include:

1. Identifying the main risks in the company’s logistics processes and determining the risk level, which involves:

- conducting an analysis of the reliability of the company’s resource suppliers (resource quality, prices, supply terms, etc.) and assessing the risk level in accordance with an established system of criteria and rankings;

- identifying the company’s key customers (consumers) and assessing the prospects for further cooperation and the potential to attract new customers for products and services;

- identifying potential technical risks (related to transportation and storage equipment) and determining the levels of these risks in accordance with the ranking methodology;

- Identifying potential innovation risks in the logistics sector and analyzing the necessary investments in new logistics technologies;

- Forecasting the impacts of force majeure risks and the potential level of losses for the company.

2. Developing a system of measures to mitigate risks in logistics processes:

- Based on the analysis of resource suppliers, identify potential new partners and key areas for securing long-term contracts with all partners (exchange of information regarding resource quality control, prices, delivery times, and supply optimization);

- Attracting new customers for the company's products (services) (using social media and targeted advertising, participating in specialized trade shows, offering periodic discounts on products (services), etc.). Strengthening engagement with existing customers (monitoring product delivery, improving the quality of after-sales service, sending promotional mailings, implementing modern CRM software for customer tracking and analysis);

- To reduce transportation risks, it is advisable to carefully select reliable transportation companies that provide full cargo insurance; implement modern GPS tracking systems that allow for real-time monitoring of vehicles; ensure timely vehicle maintenance; and develop alternative transportation routes;

- Reducing risks in the process of storing resources and products is achieved by implementing automated systems, unloading equipment, and providing necessary equipment (fire safety equipment, humidity sensors, temperature sensors, etc.);

- To reduce innovation and technological risks, it is necessary to conduct continuous monitoring of innovative developments in the logistics sector; identify sources and volumes of investment in innovative technologies and the economic efficiency of such measures; implement waste-free and environmentally friendly production processes; ensure the enterprise's energy independence, etc.;

- Reducing the impact of force majeure risks involves analyzing forecasts regarding such factors (events), developing alternative transport routes and transportation options, insuring against risks, and establishing an insurance fund.

3. Implementation of the developed measures and control over their implementation. At this stage of strategy implementation, it is important to develop a schedule for control measures and analyze the reasons for deviations from

planned results for timely flexible response to the impact of external and internal factors on logistics processes.

Conclusions and prospects for further research in this area. Logistics management plays a crucial role in the operations of modern enterprises and is influenced by various economic processes, particularly by innovative changes.

The study analyzes Ukraine's ranking in the international Logistics Performance Index over recent years and concludes that between 2014 and 2023, the domestic economy's ranking declined across all criteria groups. The classification of risks in logistics processes (commercial, economic and legal, transportation and warehousing, and force majeure) is examined, and the risks of innovative and technological changes are identified, which, at the current stage of scientific and technological progress, significantly influence all aspects of a company's operations.

The main stages of implementing a risk reduction strategy in logistics management to adapt the enterprise to innovative changes are identified, and the key measures for implementing the strategy are defined.

Prospects for further scientific research will focus on studying modern technological trends in the development of logistics systems, taking into account the risks and strategic prospects for improving logistics processes in the Ukrainian economy.

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