

DOI: <https://doi.org/10.32782/2524-0072/2024-70-156>

UDC 332.1:656

THE UKRAINIAN REGION'S LOGISTICS POTENTIAL DUE TO MODERN SECURITY CHALLENGES

ЛОГІСТИЧНИЙ ПОТЕНЦІАЛ РЕГІОНІВ УКРАЇНИ В УМОВАХ СУЧАСНИХ БЕЗПЕКОВИХ ВИКЛИКІВ

Verbytskyi Vadym

Graduate student,

Odessa National Maritime University

ORCID: <https://orcid.org/0009-0001-5030-0234>**Shyriaieva Liudmyla**

Doctor of Economics, Professor,

Odessa National Maritime University

ORCID: <https://orcid.org/0000-0002-4706-2167>

Вербицький Вадим Сергійович, Ширяєва Людмила Володимирівна
Одеський національний морський університет

The paper deals with the nature of region's logistics potential. The main elements of the region's logistical potential were performed. The authors note, that Odesa region plays a crucial role in international trade and logistics, but modern security challenges significantly disrupt its operations. For today, these challenges serve as a catalyst for transforming the Odesa region's logistics. Key threats include military conflicts, mine contamination, port blockades, economic sanctions, terrorism, and piracy. These risks hinder maritime traffic, increase logistical challenges, and necessitate the development of alternative sea routes. Ongoing conflicts in the Black Sea, including missile strikes and minefields, compel redirection of cargo to river ports like Izmail and Reni, alongside multimodal routes combining rail, road, and sea transport. The authors emphasize that economic pressures, such as rising insurance costs and tariffs, drive companies to adapt its logistics strategies. Geopolitical shifts also open opportunities for integrating the region into global transport networks by enhancing infrastructure and diversifying trade partners.

Keywords: logistical potential, region, security challenges, full-scale invasion, maritime transportation, freight rates.

У статті було розглянуто сутність логістичного потенціалу регіону з точки зору українських науковців. Визначені основні елементи логістичного потенціалу регіону. Були проаналізовані фактори впливу на логістичний потенціал. Зазначено, що українські регіони, зокрема Одеський регіон, відіграють ключову роль у забезпеченні міжнародної торгівлі та логістики, але сучасні безпекові виклики створюють значні перешкоди для їх стабільного розвитку. Основними загрозами є військові конфлікти, мінна небезпека, блокада та тимчасова окупація портів, економічні санкції, тероризм і піратство. Наразі ці фактори ускладнюють судноплавство, збільшують ризики для логістичних операцій та призводять до необхідності формування альтернативних морських маршрутів. Військові дії в акваторії Чорного моря підвищують загрозу для судноплавства, тож як наслідок, вантажопотоки перенаправляються до річкових портів регіону (Ізмаїл і Рені), а також через мультимодальні маршрути, що поєднують залізничний, автомобільний і морський транспорт. Також у статті були проаналізовані ставки фрахту до та після повномасштабної російської навали та зазначено, що із-за атак дронами на Ізмаїльський порт фрахтові ставки призвели до значного підвищення, особливо на каботажні перевезення та транспортування баржами. Через це знову відбулася переорієнтація на перевезення портами Великої Одеси. Економічні виклики, зокрема зростання витрат на страхування вантажів і підвищення тарифів, змушують компанії регіонів адаптуватися до нових умов. Саме розвиток альтернативних маршрутів стає ключовим завданням для забезпечення стабільності регіональної торгівлі. Одночасно геополітична нестабільність створює нові можливості для інтеграції регіону у глобальні транспортні мережі, зокрема через розвиток інфраструктури та переорієнтацію на нових торгових партнерів. Особливий наголос у статті був зроблений на безпекові виклики, які наразі є каталізатором змін у морській логістиці Одеського регіону, стимулюючи інвестиції у розвиток портів, транспортних коридорів і мультимодальних шляхів.

Ключові слова: логістичний потенціал, регіон, безпекові виклики, повномасштабне вторгнення, морські перевезення, ставки фрахту.



Problem's statement. The paper deals with the critical issue of evaluating the region's logistical potential due to security challenges. In the context of increasing global instability, regions face heightened risks that affect their supply chains, infrastructure, and economic activities. Effective logistics management plays a pivotal role in ensuring resilience and sustainability during such crises. However, there is a lack of a unified methodology to assess logistical potential, particularly in scenarios involving security threats. The problem lies in the need to balance regional development goals with preparedness for emergencies, requiring a comprehensive evaluation framework. Existing approaches often fail to account for dynamic geopolitical risks and their impact on logistics systems. This creates a gap in understanding how to optimize regional resources while mitigating vulnerabilities. Addressing this problem is essential for ensuring economic stability and security at the regional level. The findings will contribute to improved decision-making for policymakers and stakeholders in logistics.

Analysis of recent research and publications. Analysis of scientific sources allows us to highlight key aspects of this issue. Due to an analytical research conducted by Kyivstar Business HUB [1], Ukrainian logistics has demonstrated significant resilience and adaptability in martial law conditions. The industry is recovering and integrating into the European and global transport and logistics network. In particular, 84% of companies are ready to resume sea transportation after the deblockade of Ukrainian ports, and 66% consider the development of highways connecting Ukraine with the EU to be a priority area for investment. Also, 70% of transport and logistics companies emphasize the need to develop a network of strategic transport hubs in the western regions of Ukraine.

I. Nastych [2] notes that Ukraine's logistics routes have undergone significant changes since the beginning of the first phase of the war in 2014. As a result of military operations in the east of the country and the annexation of Crimea, traditional transport corridors were disrupted, which forced logistics companies to look for alternative routes and adapt to new conditions. This included reorientation to the western borders and the development of new transport links with European countries.

D. Vasylykivskyi [3] and others examine the prospects for the development of logistics

systems in the global economy and the modernization of customs regulation in the context of deepening integration processes. The authors emphasize the importance of adapting customs procedures and logistics chains to modern challenges, including security aspects and the need to ensure the stability of supplies.

D. Vishnevskyi [4] analyzes the key factors that influence the effectiveness of territorial planning of regions, such as economic, social, environmental and security aspects. In particular, the author emphasizes the importance of taking into account security factors in the planning process, which includes ensuring the physical safety of the population, creating conditions for preserving vital infrastructure and reducing the risks of vulnerability of territories to military threats and emergencies.

Analysis of literary sources indicates that the regions' logistics potential is closely related to the ability to adapt to modern security challenges. Effective territorial planning, modernization of customs and logistics regulation, as well as the development of new transport routes are key elements for ensuring the sustainability and development of the logistics industry in the face of modern threats.

Highlighting previously unresolved parts of the overall problem. Despite considerable attention to the assessment of logistics potential, the issues of adapting the methods to the conditions of dynamic security challenges remain unresolved. There are no integrated approaches that would take into account the relationship between geopolitical risks, the digitalization of logistics and the stability of regional systems. Practical tools for operational forecasting and management of logistics potential in crisis situations are also insufficiently researched. So, research of the Ukrainian region's logistical potential due to the modern security challenges is a relevant topic, especially given the current geopolitical conditions and military operations.

Statement the paper's aim. Therefore, the paper's aim is to systematize existing approaches to assessing the Ukrainian region's logistical potential due to security challenges.

Presentation of the main research material. The region's logistical potential is a complex characteristic that reflects its ability to effectively manage material, information and financial flows to ensure sustainable economic development and increase competitiveness. It encompasses a set of resources, infrastructure, technologies and management competencies that ensure

the optimization of logistics processes at the regional level.

The main elements of the region's logistical potential are:

- infrastructure – a developed transport network (road, rail, waterways and air routes), the presence of modern logistics centers, warehouses and terminals;

- transport networks – effective integration of various types of transport, which ensures fast and reliable movement of goods both within the region and beyond its borders;

- qualified labor – the presence of specialists in the field of logistics, management and information technologies who are able to ensure effective management of logistics processes;

- information technology – use of modern supply chain management systems, process automation and implementation of digital solutions to increase transparency and efficiency of logistics operations;

- institutional factors – availability of a favorable regulatory environment, support from local authorities, development of partnerships between business and the state.

The assessment of the region's logistical potential is an important stage for determining its strengths and weaknesses, as well as for developing development strategies. The scientific literature offers various methodological approaches to such an assessment.

In particular, I. Koblyanska and co-authors [5] suggest taking into account institutional factors when assessing logistics potential, emphasizing their impact on the efficiency of logistics processes in the region.

O. Bilovodska, O. Hryshchenko, L. Syhyda [6] note that the region's logistical potential is a set of existing and potentially possible elements and factors of the logistics infrastructure that participate in the formation and distribution of material and corresponding accompanying flows. At the same time, the formation and use of such potential is designed to ensure timely and effective movement of logistics resources with minimal costs.

Other researchers [7; 8] focus on the importance of infrastructure components, such as transport networks and warehouses, emphasizing their impact on optimizing logistics processes and ensuring the competitiveness of the region.

So, the development of the region's logistical potential contributes to:

- attracting investment and business development;

- creating new jobs and increasing the employment rate of the population;

- improving access to domestic and foreign markets;

- reducing the cost of transporting and storing products;

- increasing the overall competitiveness of the region;

Thus, logistics potential is a key factor determining the economic development and attractiveness of the region in the conditions of a modern globalized economy.

In the context of globalization and the rapid development of international trade, the region's logistical potential are gaining special importance, becoming a key factor of success in the global market. Effective management of international supply chains requires a deep understanding and adaptation to numerous external and internal factors that can affect logistics processes. From global economic trends to local regulatory requirements, from technological innovations to environmental standards – all these aspects determine the complexity and specificity of the logistical potential [9].

So, the analysis of challenges affecting the region's logistical potential becomes not only relevant, but also necessary for the formation of effective logistics management strategies. Such analysis allows regions' companies not only to adapt to changing market conditions, but also to use emerging opportunities to increase competitiveness, optimize costs and improve the quality of customer service. Given the above, it is important to consider the wide range of security challenges that form logistics activities, from macroeconomic conditions to industry specifics and internal organizational processes (see Figure 1). This comprehensive approach will help identify key challenges and define strategies that will ensure sustainable growth and development of the region in an international dimension.

The global economic environment has a significant impact on the region's logistical potential, determining not only the cost and efficiency of transportation, but also the overall strategy for managing supply chains. Changes in the global economy, such as inflation, currency fluctuations, and the imposition of economic sanctions, can have an indirect and direct impact on the logistics activities. For example, inflation can lead to increased transportation and warehousing costs, as fuel, labor, and

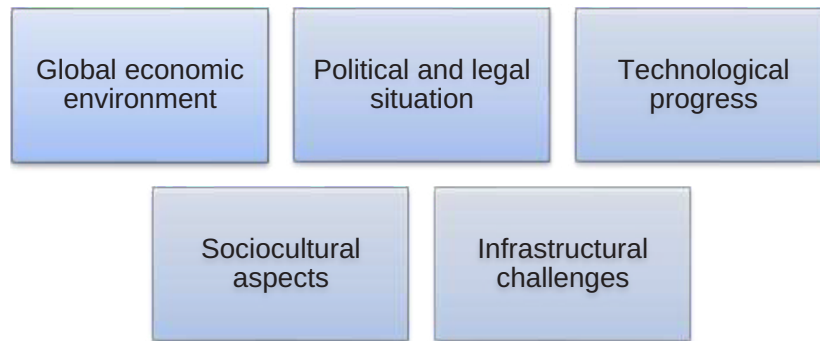


Figure 1. Challenges affecting the logistics potential of the region

Source: done by the authors

warehousing costs increase. At the same time, currency fluctuations can affect the cost of imported goods and materials, as well as the competitiveness of export prices.

Economic sanctions imposed on certain countries can limit opportunities for international trade, requiring logistics operators to seek alternative routes and suppliers, which can again lead to increased costs and complexity in supply chains. Global economic trends require regional companies to be more flexible and efficient in coordinating transcontinental deliveries.

The COVID-19 pandemic, which has caused significant disruptions to global supply chains, illustrates how global economic events are impacting logistics strategies. Many companies have faced challenges in fulfilling orders due to transportation restrictions, customs delays, and labor shortages [10]. This has forced them to rethink their supply chains, increase inventories for critical materials, and diversify their sources of supply. Also of note is the impact of the full-scale Russian invasion into international logistics chains [9], which has resulted in:

- Reorientation of trade routes. The war has caused the closure or restriction of traditional routes across the Black Sea, requiring exporters and importers to seek alternative ways to transport goods. This has led to increased logistics costs and delays in deliveries.

- Rising transportation costs. The invasion has led to an increase in fuel prices, which in turn has led to an increase in the cost of sea and air transportation at the global level. This has had a direct impact on the cost of international logistics for many industries.

- Instability in raw material supplies. Ukraine and Russia are significant producers and exporters of agricultural products and raw materials, in particular grains and fertilizers. The war has led to instability in the supply of these

goods, which has affected global food markets and increased prices.

- Political and economic sanctions. The introduction of international sanctions against Russia and restrictions on some Ukrainian companies have complicated trade relations, forcing many companies to look for new partners and reorganize their supply chains.

- Increased risks for international logistics. Military actions and political instability have increased the risks for international transport operations in the region, requiring logistics companies to apply additional security and risk management measures.

- Adaptation of logistics strategies. Regional companies have been forced to adapt to new conditions by optimizing their supply chains, introducing flexible logistics solutions and using digital technologies to improve the management and transparency of logistics processes.

The political and legal situation in the countries where companies operate plays a crucial role in shaping logistics strategies and operations. International political relations, local legislative changes, trade agreements, customs regulations, as well as political stability can have both direct and indirect effects on the efficiency, cost and reliability of international logistics operations. Political stability is a fundamental factor influencing companies' decisions on choosing countries for production, warehousing or transit of goods. Countries with a high level of political stability and a predictable business environment are more attractive for investment in logistics infrastructure, while in regions with a high risk of political conflict or instability, companies may face additional risks and costs.

Political stability is a critical factor for the region's logistical potential, and its impact can be illustrated by the example of the political crisis in the Suez Canal in March 2021, which

occurred due to the blockage of one of the world's most important waterways by the large cargo ship Ever Given. This incident, while not an example of political instability in the traditional sense, demonstrates how unexpected events in strategically important locations can cause immediate logistical challenges on a global level. The blockade of the Suez Canal has delayed hundreds of ships carrying billions of dollars in goods, including oil, natural gas, electronics, clothing, and other goods that form the basis of international trade [11].

Local regulatory changes in the countries where a company operates have a direct impact on the region's logistical potential. This can include changes in customs laws, import and export regulations, packaging and labeling standards, environmental regulations, and more. Companies must constantly monitor such changes to adapt their operations and comply with the requirements in each country to avoid legal problems, delays, or unforeseen costs.

Trade agreements and customs regulations also play a key role in the region's logistical potential forming. Free trade agreements or regional trading blocs can provide businesses with preferential market access, reduced or eliminated tariffs on certain goods, which in turn can reduce the cost of goods to end consumers and improve the competitiveness of businesses. A well-developed logistics infrastructure is essential for the efficient functioning of the economy as an important factor in determining the location of economic activities, as well as the types of these activities that can be carried out in each specific case. A highly developed logistics infrastructure reduces the impact of distance between regions, ensures national market integration and low transportation costs to the markets of other countries and regions [12].

The Odesa region is a key center of maritime logistics in Ukraine, providing a significant part of the country's exports and imports. However, due to current security challenges, traditional sea routes have undergone significant changes and restrictions.

Before the full-scale Russian invasion, the main sea routes were the Black Sea routes, which connected the ports of Odesa with international trade routes. However, due to military aggression and blockade, these routes became dangerous and less reliable. In response to these challenges, alternative logistical routes were developed:

1. Danube ports – increased use of ports on the Danube River allowed to partially

compensate for the losses from the restriction of sea routes.

2. Land routes through the western borders – the development of road and rail routes to the countries of the European Union became an important direction for ensuring exports and imports.

3. Use of rail routes through neighboring countries – rail transportation through Poland, Romania and other neighboring countries became critically important for maintaining trade relations.

According to the State Statistics Service of Ukraine, the volume of freight transportation by all modes of transport in March-December 2023 amounted to 282,4 million tons, which is 22% more compared to the same period in 2022. This indicates the adaptation of the logistics industry to new conditions and the search for alternative routes [1].

Analysis of freight rate dynamics in the Odesa region's ports before 2022 and after it demonstrates significant fluctuations due to security challenges and changes in logistics routes. Before the start of the full-scale war in Ukraine, freight rates in these ports were relatively stable, reflecting global trends and seasonal fluctuations in demand for transportation. Statistics for this period are limited, but in general, the market was characterized by predictability and a gradual increase in cargo transshipment volumes.

With the beginning of invasion in 2022, the situation changed dramatically:

– 2022. The blockade of major seaports led to a reorientation of cargo flows to the Danube ports. According to the Ukrainian Seaports Administration, from January to October 2022, the Danube ports processed 12,6 million tons of cargo, which is three times more than in the same period in 2021 [13].

– 2023. Freight rates on the Reni – Marmara route ranged from \$48/t in February 2023 to \$21.5/t in May 2024, showing significant volatility. Similar fluctuations were observed on the Odesa – Marmara route, where rates peaked in September 2023 (\$59/t) and then decreased to \$24/t in December 2023 [14].

– 2024. Attacks on the IZmail port led to a significant increase in freight rates for coaster and barge transportation. Some shipowners refused to berth in the ports due to security risks, which further affected the increase in rates [15].

Conclusions. Modern security challenges, such as military operations, port blockades, mine hazards and sanctions, directly affect the

efficiency and safety of in the region's logistical potential. This forces us to look for alternative routes and solutions to ensure the stability of trade flows. The Odesa region is adapting to the challenges by reorienting logistics flows to river ports (Izmail, Reni, etc.), developing multimodal transportation, and attracting new partners to reduce dependence on traditional routes.

Security challenges stimulate the implementation of technological innovations, such as digitalization of logistics, risk monitoring and strategic route planning. The situation in the region demonstrates how geopolitical instability can become a driving force for changes in

transport infrastructure and international trade. Alternative routes not only compensate for losses, but also open up new opportunities for the development of the regional economy. To ensure the sustainability of logistics in the face of security risks, investments in ports, transport corridors and rail connections are needed. This will contribute to the diversification of routes and reduce the impact of threats.

Thus, security challenges become both a problem and an incentive for the transformation of logistics in the Odesa region, which is an important factor in its long-term stability and competitiveness.

REFERENCES:

1. Haluzevi trendy. Stan lohistrychnoi haluzi v Ukraini: trendy ta osoblyvosti [Industry trends. State of the logistics industry in Ukraine: trends and features] Available at: <https://hub.kyivstar.ua/articles/galuzevi-trendi-stan-lohistrychnoi-galuzi-v-ukrayini-trendi-ta-osoblyvosti> (accessed January 21, 2025) (in Ukrainian)
2. Nastych I. Lohistyka v Ukraini: zmina fokusa ta perspektyvy vidnovlennia [Logistics in Ukraine: changing focus and prospects for recovery]. Available at: https://propertytimes.com.ua/industrialnaya_nedvizhymost/logistika_v_ukrayini_zmina_fokusa_ta_perspektivi_vidnovlennia (accessed January 21, 2025) (in Ukrainian)
3. Vasylykivskiy D. (2020) Mytne ta lohistrychne rehuliuвання v systemi mizhnarodnykh ekonomichnykh vidnosyn: monohrafiia [Customs and logistics regulation in the system of international economic relations: monograph]. Khmelnytskyi: KhNU, 447 p. Available at: https://mev.khmnpu.edu.ua/wp-content/uploads/2025/01/monogr_2020.pdf (accessed January 21, 2025) (in Ukrainian)
4. Vyshnevskiy D. (2024) Intehralna otsinka prostorovo-faktornoho vplyvu na protsesy pidvyshchennia efektyvnosti terytorialnoho planuvannia na rehionalnomu rivni [Integral assessment of spatial-factor influence on the processes of increasing the efficiency of territorial planning at the regional level]. *Komunalne hospodarstvo mist*, tom 6, vypusk 187. P. 130–134. Available at: <https://khg.kname.edu.ua/index.php/khg/article/view/6396/6317> (accessed January 21, 2025) (in Ukrainian)
5. Koblianska I., Rybalko N., Mishchenko O. (2015) Lohistrychnyi potentsial rehionu: sutnist i metodychnyi pidkhid shchodo yoho otsiniuvannia [The logistics potential of the region: essence and methodical approach to its assessment]. *Visnyk Sumskoho derzhavnogo universytetu. Seriya Ekonomika*. № 2. P. 23–30. Available at: https://essuir.sumdu.edu.ua/bitstream-download/123456789/43253/1/Koblianska_lohistryka.pdf (accessed January 22, 2025) (in Ukrainian)
6. Bilovodska O., Gryshchenko O., Syhyda L. (2016) Specific features of regional logistics potential consideration in the process of the enterprise distribution system development. *Economic Annals-XXI*. 160 (7-8). P. 105-110. Available at: https://www.researchgate.net/publication/309098238_Specific_features_of_regional_logistics_potential_consideration_in_the_process_of_the_enterprise_distribution_system_development (accessed January 23, 2024) (in English)
7. Kohut M., Hrinkevych S., Khyliuk V. (2023) Poniattia ta znachennia lohistrychnoho potentsialu yak chynnyka rozvytku rehionu [The concept and significance of logistics potential as a factor in the development of the region]. *Naukovyi zhurnal «Ekonomika i rehion»*. Poltava: PNTU. T. 2(89). P. 16–22. Available at: <https://journals.nupp.edu.ua/eir/article/view/2929/2327> (accessed January 25, 2025) (in Ukrainian)
8. Kopylova O., Ivantsov V., Sorochan V. (2023) Ryzky finansuvannia innovatsii u lohistrychnykh kompaniiakh [Risks of financing innovation in logistics companies]. *Ekonomichnyi analiz*. 33(3). P. 266–275. Available at: <https://www.econa.org.ua/index.php/econa/article/view/5813> (accessed January 25, 2025) (in Ukrainian)
9. Maritime Trade Disrupted: The war in Ukraine and its effects on maritime trade logistics. Available at: <https://unctad.org/es/isar/publication/maritime-trade-disrupted-war-ukraine-and-its-effects-maritime-trade-logistics#:~:text=The%20war%20in%20the%20Ukraine,maritime%20transport%20infrastructure%20and%20services.> (accessed January 25, 2025) (in English)
10. Rinaldi M., Bottani E. (2023) How did COVID-19 affect logistics and supply chain processes? Immediate, short and medium-term evidence from some industrial fields of Italy. *International Journal of Production Eco-*

nomics. Elsevier, vol. 262(C). Available at: <https://www.sciencedirect.com/science/article/pii/S0925527323001470> (accessed January 25, 2025) (in English)

11. Stuck in the Suez Canal: Lessons from the Logjam. *Transport Policy Matters*. Available at: <https://transportpolicymatters.org/2021/04/01/stuck-in-the-suez-canal-logjam-lessons/> (accessed January 25, 2025) (in English)

12. Karyi O., Podvalna H. Lohistychna infrastruktura Ukrainy u svitovykh reitynhakh [Logistics infrastructure of Ukraine in world rankings.]. *Visnyk Natsionalnoho universytetu «Lvivska politekhnika»*. Seriya: Problemy ekonomiky ta upravlinnia. Lviv: Vydavnytstvo Lvivskoi politekhniki, 2017. № 873. P. 41–49. (in Ukrainian)

13. Porty Odeskoi oblasti naroshchuiut perevalku produktsii [Ports of Odessa region are increasing product transshipment]. Available at: <https://intent.press/news/economy/2023/porti-odeskoyi-oblasti-naroshuyut-perevalku-agro-produkciyi/> (accessed January 24, 2025) (in Ukrainian)

14. Svitovyi rynek frakhtu-2024: v ochikuvanni turbulentnoi volatylnosti – pohliad eksperta [Global freight market 2024: expecting turbulent volatility – expert view]. Available at: <https://www.apk-inform.com/uk/exclusive/opinion/1539287> (accessed January 26, 2025) (in Ukrainian)

15. Try ataky na inozemni sudna v Chornomu mori za ostannii tyzhden: Yak tse vplyne na stavky frakhtu, perevalku ta strakhuvannia? [Three attacks on foreign vessels in the Black Sea in the last week: How will this affect freight rates, transshipment and insurance?]. Available at: <https://latifundist.com/spetsproekt/1109-tri-ataki-na-inozemni-sudna-v-chornomu-mori-za-ostannij-tizhden-yak-tse-vplyne-na-stavki-frahtu-perevalku-ta-strahuvannya> (accessed January 26, 2025) (in Ukrainian)