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## STRATEGIC MANAGEMENT OF INTERNATIONAL BUSINESS PROJECTS IN THE CONTEXT OF A LOGISTICS CRISIS

**Purpose.** To investigate the state of the national logistics system of Ukraine and propose measures to improve logistics processes in the field of international business project management and cross-border logistics. To propose approaches to adapting logistics processes in crisis conditions and identify factors complicating strategic management in these conditions.

**Methodology.** The dialectical method allowed determining the significance of the impact of the uncertainty of the trade policy of partner countries on the national logistics process. Using the integrated method, it was proposed to form specialized digital logistics systems and implement an integrated digital system that should combine the functions of logistics systems and DSS- and ERP-systems of manufacturers. The method of comparison based on the components of the Logistics Performance Index made it possible to identify problems in the national logistics system.

**Findings.** It is proposed to review the principles of building specialized logistics management systems and introduce real-time optimization of cargo flows through border checkpoints. It is proposed to form an integrated DSS- and ERP-system that should combine the functions of software complexes of logistics companies and digital systems of counterparties. It is indicated that the formation of management strategies is complicated by the increasing uncertainty of business processes. It is established that this uncertainty is not only a consequence of war and internal factors, but also a consequence of the influence of uncertainty in the trade policy of partner countries.

**Originality.** It is indicated that the logistics chain should not be treated as a linearly ordered set of links, but should be considered as a more universal variable tree-like structure, the routes of which are selected taking risks into account. The proposed comprehensive application of a tree-like logistics chain with a block strategy will increase the adaptability of logistics companies to challenges and their competitiveness.

**Practical value.** Promising directions for adapting logistics processes to crisis conditions are indicated, and directions for improving management strategies for international business project management are proposed.

**Keywords:** *strategic management, logistics crisis, business projects*

**Introduction.** Large-scale hostilities led not only to significant losses of logistics infrastructure, for example, more than 200 thousand sq. meters of equipped warehouses of logistics companies were destroyed, but also to significant changes in the logistics services market. With the increase in threats to the transport infrastructure of Ukraine in war conditions, the logistics costs of Ukrainian companies tend to increase, in particular, the rise in freight rates due to wartime directly affects the cost of sea transportation. This leads to a state of significant instability of the logistics process, which can be characterized as a logistics crisis. When participating in international business projects, the instability of logistics can lead to the accrual of contractual penalties from counterparties, which, accordingly, will increase logistics costs manifold.

The crisis in the country's logistics system is significant, as evidenced, in particular, by the fact that in 2024, according to the Logistics Performance Index (LPI),

Ukraine ranked 156<sup>th</sup> out of 176 countries, although in 2023, Ukraine ranked 66th in the ranking.

The lack of investment due to the war exacerbates the impact of the crisis, as it leads to low rates of commodity flows – the number of downtimes on routes is over 40 %; to insufficient rates of infrastructure development, inadequate level of automation of logistics services, etc. An obstacle to the development of the national logistics system is also the insufficient development of digital tools, both due to lack of investment and due to restrictions on the use of full-fledged electronic document management in this area, which, in particular, causes significant costs for making operational changes. This reduces the possibilities of optimizing management processes and reduces integration with digital systems of customers and service consumers.

The state of logistics structures in Ukraine today lags behind the technologies, level of organization and management methods of logistics companies in developed countries, which reduces the possibilities of integrating the national logistics system into the global logistics

space, and, accordingly, reduces the efficiency of managing international business projects.

At the same time, the level of management of logistics processes in Ukraine, aimed at international business projects, causes instability of the domestic economy, and does not provide the proper amount of revenue to the state budget from the export of goods.

In the global logistics market, the traditional approach to strategy formation is nowadays being transformed by relying on interconnected intelligent networks. This allows for the introduction of flexible strategic management and more effective adaptation to market changes even in times of crisis. Unfortunately, the Ukrainian logistics system is still far from the introduction of a national intelligent logistics network. This forms the features of the logistics system of Ukraine, determining the pace of its modernization and development paths.

**Literature review.** Since the logistics crisis affects the development of the country's economy, the sustainability of financial revenues to the budget and other macro-economic indicators, the scientific community pays significant attention to this problem.

Thus, in the article by Zubrov and Molchanov [1] it is indicated that in conditions of global crises, logistics is a tool in the struggle for a place on the economic and political world arena in the future. This leads to an assessment of the impact of the crisis from the point of view of testing the strength of the national logistics system and determining its significance even in conditions of a decrease in the country's status as a transit transport hub [2]. Accordingly, as indicated in the article by Zubrov and Molchanov [1], with a radical change in the management of the country's logistics system as a result of the crisis, a review of the management strategy of its logistics companies is required.

This creates additional difficulties, since the country's logistics system was, according to the definition of Kryvoruchko [2] in the stage of formation and consolidation, when crises due to the pandemic, war, instability of social, economic, and political processes in Ukraine prevented this. This, accordingly, has led to the fact that the logistics system of Ukraine is inferior to neighboring countries in terms of load, quality and complexity of services [3]. This reduces its competitiveness in the global logistics market.

Scientists point out that the military crisis created risks not only for national but also for international supply chains, whose business projects included Ukrainian enterprises [4]. At the same time, scientists have not paid attention to the reverse vector of the impact of world crises on the state of Ukrainian logistics.

Researchers indicate that the European market opens up not only prospects for increasing export volumes for Ukraine, but also serves as an incentive for improving the national logistics system, especially in conditions of crisis, which forces to reformat logistics business processes [5].

At the same time, some scientists studying approaches to managing international logistics systems propose as the main options: the concept of "just-in-time" and the concept of "lean production", aimed at minimizing warehouse stocks [6]. But the crisis conditions, which lead to significant uncertainty of the factors

of the logistics process, necessitate the improvement of these traditional approaches. Thus, some researchers point to groups of factors that affect the instability of business processes of logistics companies, which makes it impossible to apply the above concepts [7]. These include, in particular: loss of logistics volumes due to the destruction of transport and infrastructure, unavailability of transport routes due to high risks on them, personnel mobilization, reduction of exports and imports due to the destruction of production, etc. [7].

Scientific works also note that companies are forced to transform their management strategies with the onset of the crisis [8]. At the same time, researchers often ignore the need to implement permanently flexible strategies during crises. The constant impact of crisis phenomena on logistics processes also narrows the possibilities of global supply chain management, contrary to the claims of some scientists [8].

Scientific works also often define a logistics crisis as a consequence of a breakdown in the logistics system at the beginning of hostilities [9]. At the same time, a change in the tactics of missile and bomb strikes by the aggressor determines the variability of the effects of military threats on the logistics process. Also, the cause of the instability of the specified process is often indicated exclusively by the internal effects of the crisis [9]. This is not sufficiently substantiated for assessing the logistics of international business projects.

Researchers indicate that the conditions of the crisis, the challenges of war require "regulation of logistics strategies", reforming the management of logistics activities, and note that this is required by the process of European integration [10]. At the same time, the problem of uncertainty and significant dynamism of the main factors influencing logistics systems is often bypassed, which is the cause of management deformation, both at the tactical and strategic levels.

Also, when studying existing approaches to international project management, primarily traditional approaches to strategic management, scientists indicate that these approaches do not provide proper consideration of the uncertainty of threat factors [11]. Scientists suggest using flexible approaches to overcome the instability of the logistics process in crisis conditions. But this flexibility is mainly defined as an increase in the number of suppliers, diversification of sales, variability of supply chains [12]. At the same time, the need for flexibility in the organizational structure of logistics and, in general, flexibility in the strategic management of the logistics process in crisis conditions remains out of consideration.

The article by Vasylytsiv [13] states that in crisis conditions, the requirements for the adaptability of Ukrainian logistics companies are increasing. It is also indicated that in the event of a rapid change in threats, logistics companies should promptly implement relatively cheap tactical solutions, which, at the same time, should be of a systemic, comprehensive nature. Given the variability and unpredictability of the conditions in which logistics processes are carried out, scientists continue to insist on the possibility of ensuring permanent continuity and efficiency of logistics operations [14] and on the expediency of using exclusively statistical analysis methods for planning and forecasting business processes [15].

Table 1

## Destruction and damage to transport infrastructure facilities

Transport infrastructure facilities	Quantity	Share of total quantity, %	Cost, billion \$
Airports, units	18	53.7	1.8
Water transport facilities, various	n/a	n/a	0.85
Railway infrastructure: tracks, thousand km	0.507	2.4	1.8
stations, units	126	8.4	3.5
Motorways, thousand km	17.48	10.5	18.6
Bridges and viaducts, units	344	3.1	2.6

Scientists often prefer a strategy of minimizing logistics costs, without paying attention to the importance of ensuring the continuity and sustainability of the logistics process in crisis conditions [16].

A common approach is to consider the logistics services market as a semi-closed structure, segmented by logistics operations and by individual suppliers of such services [17]. At the same time, this market has all the features of an open system.

The divergence in the views of scientists on promising directions for the development of the national logistics system and ways to increase the effectiveness of strategic management of international business projects in the context of a logistics crisis requires extensive research, assessment of the state, and development of proposals for improving the logistics process in Ukraine.

**The purpose of the article.** Purpose: to investigate the state of the national logistics system and propose measures to improve logistics processes in the field of international business project management, cross-border logistics.

Tasks: to propose improvements in management strategies for cross-border logistics; to propose approaches to adapting logistics processes to crisis conditions; to identify factors complicating strategic management in crisis conditions.

**Methods.** The study applied special and general scientific methodological approaches. The dialectical method allowed establishing the influence of uncertainty on the effectiveness of strategic management of the logistics process in Ukraine and revealing the significance of the level of uncertainty of the trade policy of partner countries for international business projects. The analytical method made it possible to propose accelerating the integration of the national logistics system with the global logistics system for logistics companies to gain economic advantages. The complex method provided the opportunity to propose the improvement of the formation of specialized digital logistics systems and the implementation of an integrated digital system, which should combine the functions of logistics systems and DSS and ERP systems of counterparties. The abstraction method allowed indicating the feasibility of replacing management by linear routes with management by tree-like logistics structures as a tool for adaptation in conditions of instability. The method of comparison by components of the Logistics Efficiency Index allowed us to indicate the problems of the national logistics system.

**Results.** The Ukrainian logistics market experienced the shock of 2022, caused by the start of a large-scale war, as a result of which the number of operating enterprises in this sector in 2022 decreased by 25.36 % compared to 2021. At the same time, the impact of the war on the country's logistics system is not a one-time event, but rather prolonged in time. This is indicated by the continuation of targeted bombing of the transport infrastructure on which the country's logistics system relies. Thus, according to Kyiv School of Economics [18], as of 2024, a significant share of the total number of transport infrastructure facilities was destroyed and damaged (Table 1).

Given that the destruction has been inflicted on key facilities for the country's transport system (Table 1) and

that the destruction continues, this requires a significant adaptation of the logistics process management strategy for the operation of companies in conditions of permanent threat. First of all, this determines the peculiarities of choosing a strategy for adapting to the challenges of war. These strategies are not stable over time. Thus, if 2022 required survival and resilience strategies, then at the end of 2023 – the beginning of 2024, business began to use development strategies, and 2025 was marked by an expansion of the volume of logistics operations, in particular, for international business projects. The indicated focus on foreign markets is in some way related to a decrease in domestic demand, primarily due to mass migration of the population and mobilization into the army.

The events of 2022 also led to a deformation of the market for logistics service providers, as mainly small enterprises, which at that time accounted for 93 % of the total number of enterprises, ceased their economic activities [19]. At the same time, a certain part of small enterprises turned out to be more adaptable to the conditions of the logistics crisis, as the trend of reduction of large and medium-sized enterprises continued in the following years, and the number of small enterprises in 2023 increased by 27.5 % compared to 2022. In general, in the logistics industry in 2025, 85 % of Ukrainian companies either fully resumed their operational activities or did not stop them even during the severe crisis of 2022 [19].

The continued destruction of key transport infrastructure facilities leads not only to cargo delays and additional losses of resources – fuel, time, etc., but also to significant uncertainty of risks for logistics companies, in particular, due to the instability of logistics processes and the possible violation of the terms of international contracts. This, accordingly, reduces the level of competitiveness of Ukrainian logistics companies in the international market. This necessitates changes in the management organization of logistics companies and related sectors.

The European Commission indicated the insufficient level of strategic corporate governance in transport companies in Ukraine, which is one of the causes of the logistics crisis, based on a report prepared by the Jaspers Team [20]. The European Commission also indicated that even JSC “Ukrzaliznytsia” does not ensure proper management of infrastructure and transport operations, and does not implement a modernization strategy. Although during 2022–2024, with the participation of JSC “Ukrzaliznytsia”, there was an increase in the volume of export

transportation almost to the pre-war level, in 2025 there is a decrease in these indicators. This is a consequence of many reasons. Thus, the reduction in the harvest caused a decrease in the volume of grain exports in the first half of 2025 by 29.6 % compared to the figure for 2024. Due to the lack of rolling stock and its downtime in ports, the lack of access tracks, the rapid delivery of cargo to the seaports of Ukraine has been reduced [20].

Since the modernization of the railway system will require significant financial investments and resources, in particular time resources, it can be predicted that the increase in demand in the logistics services market will be offset by the rapid development of other types of transport, primarily road transport. This is confirmed by the data of the State Statistics Service of Ukraine on the steady growth of road transport volumes for the period 2022–2025, which for cross-border logistics today already exceed the indicators of 2021. According to surveys of representatives of logistics companies, 66 % of them indicate the need for state structures to make efforts to develop highways towards EU countries as a factor in increasing the efficiency of cross-border transportation [17]. The construction of new logistics complexes for cargo transshipment and distribution warehouses according to GDP and ISO 9001 standards near these complexes is currently hampered by a lack of investment. Therefore, it is proposed to expand the assistance of state structures in accessing investment risk insurance.

The lack of investment also leads to a shortage of terminal complexes for containerized cargo, the share of which in the world market is over 53 %. Although at present Ukraine has almost restored the volume of container transportation, in particular, due to the fact that small bulk carriers capable of moving along the Danube have begun to be used for this type of cargo, it is predicted that Ukrzaliznytsia JSC will increase its tariffs for containers with a load of more than 26 tons. This will lead to a significant reduction in international container operations for Ukrainian logistics companies and, first of all, will stop the use of 40-foot High Cube containers. This will worsen the conditions for Ukraine's integration into the global logistics space.

Significant risks of destruction of location-concentrated warehouse capacities by air strikes lead to the need to change their placement strategy, in particular, aimed at dispersing infrastructure facilities. This, in turn, requires a review of the principles of building not only automated warehouse management systems (WMS), computerized transport management (TMS), but also requires the introduction of new principles of logistics process management, which are the basis of Logistics version 4.0 and later versions. For example, digital logistics systems for managing geographically dispersed infrastructure facilities should provide high synchronization of logistics processes for the rational formation of mixed cargo, reducing customs clearance time, eliminating problems with spoilage of agricultural products, etc.

Also, to increase the effectiveness of strategic management of dispersed infrastructure facilities, it is proposed to move away from traditional approaches to territorial management of them to operational management methods that can be provided by modern systems equipped with artificial intelligence using cloud technologies. This also applies to highly integrated transport companies.

Also, to provide a new quality to strategic management, it is proposed to form an integrated digital system, which should combine not only the functions of WMS, TMS, Logist Office 2.0, Logistics 4.0, blockchain technology, in which each cargo is given its own digital identifier, but also with DSS, CRM and ERP systems of enterprises-customers of logistics services. This will not only solve the problems of reporting, mixed transportation, fulfillment while reducing the total costs of logistics and distribution, will allow managing risks associated with complex relationships between logisticians, customers and consumers of logistics services, but will also accelerate the integration of the national and global logistics system.

For the sustainability of the logistics process in this direction, even with an increase in the level of threats, it is proposed to expand the participation of the state in the development of transport hubs in Western Ukraine, which should become structural elements of a developed system of variable routes. To this end, it is proposed to expand the mechanism of public-private partnership to the logistics sector.

This will allow the formation of multipolar strategies for transport flows, which will reduce the threat of damage and allow maneuvering along routes taking into account the level of risk on them in real time. Thus, the proposed increase in the number of transport hubs is not aimed solely at increasing the volume of warehouse space or accelerating the exchange of goods of various types of transport, but, first of all, this should ensure an increase in the stability of the country's logistics system in conditions of war and crisis.

This will also contribute to the transition from linear routes to tree-shaped logistics structures as a tool for adapting to instability. This also allows for the implementation of a block strategy for managing the logistics process – when the entire process is segmented into blocks, the connections between which are flexible and can be quickly changed. These blocks can be widely diversified in location, execution time, management teams that implement them, etc. Thus, with a dynamic change in order volumes or variability in the number of customers, the logistics company can scale the logistics process in real time. This is also a means of reducing logistics costs and accelerating the delivery of goods to the consumer. The proposed block approach will allow one, in conditions of constant change, to quickly find the optimum in terms of integrated indicators of money-time-quality.

Competitiveness for Ukrainian logistics companies is not only a factor for positioning in the global market, but also an opportunity to increase the level of business profitability. Thus, although the logistics margin rate can vary greatly for different product groups, different regions and other influencing factors, the level of this indicator for Western companies is acceptable at 20–25 %. At the same time, Ukrainian companies consider a logistics margin rate of 10 % to be acceptable. This significantly limits the development of the Ukrainian logistics market, so its inclusion in the global market should become a strategic goal of the national logistics process.

At the same time, the problem for logistics companies is that employment in the logistics services sector, after a decrease in 2022 compared to the previous year,

continues to decrease in subsequent periods – by 2–3 % annually. This, given the demand for cross-border logistics operations, requires significant changes in the management of logistics processes, in particular, changes aimed at automation and digitalization [21].

The sustainability of business processes today is determined not only by the immediate threats of war, but also by the ability of companies to form and implement their long-term strategies. A significant difficulty in forming management strategies today lies in the increased uncertainty for business processes. This uncertainty is exacerbated by the significant instability of the regulatory environment, the tariff policy of transport monopolists, the volatility of macroeconomic and political factors, etc. Thus, in 2025, the Business Activity Index (UBI, Ukrainian Business Index) decreased by 13.2 % compared to 2024 – from 43.7 to 38.6 out of 100 possible points [22]. This marked the end of the growth trend of the Business Activity Index since 2022. For comparison, in 2023, this index was 38.2. Since the Business Activity Index indicates changes in production volumes, this, accordingly, leads to instability in the logistics services market.

Also, the instability of the cross-border logistics services market in Ukraine is a consequence of global economic and political uncertainty, which leads to restraining the development of the economies of countries participating in international business projects with Ukraine. Thus, in 2025, according to the National Bank of Ukraine [23], the Trade Policy Uncertainty Index (TPU) and the Economic Policy Uncertainty Index (EPU) increased by almost an order of magnitude (Figure). This is significantly more than during the economic crisis of 2019–2020 (Figure).

Although, according to the NBU forecasts, in the coming years, higher growth rates of the economies of Ukraine’s partner countries are expected, their imports during this period will not be free from high volatility [23]. This will continue to cause significant uncertainty in the logistics process of Ukrainian companies, which, accordingly, will complicate the strategic management of international business projects. These threats and challenges stimulate logistics companies to look for new ways to adapt to rapidly changing realities.

At the same time, the reduction of the European Union market due to the suspension of the preferential

customs regime for Ukrainian products, improper adaptation of Ukrainian manufacturers to the requirements of the European Community, has caused the need to increase supplies to the markets of Central Asian countries, in particular, Kazakhstan, Azerbaijan and Uzbekistan. This has prompted the use of sea transport routes, which, although opened, are characterized by a significant level of risk.

Thus, according to the State Statistics Service of Ukraine [24], companies that order logistics services have changed their strategies, reorienting themselves to new foreign markets (Table 2).

Such changes not only require scaling of logistics processes, revision of logistics strategies, but also significantly increase the level of uncertainty for logistics companies.

Considering the possible options of traditional stratification of business strategies [22] with the distinction of: global strategy, aimed at unification of logistics operations and, in general, at unification of logistics processes; national strategy, aimed at adaptation to local conditions, which are variable in crisis conditions; international cooperation; the most appropriate strategy seems to be one that combines international integration and a high degree of local adaptation of business processes.

Logistics risks in war conditions are characterized by significant changes in short periods of time. The aggressor quickly adapts to countermeasures and introduces new tactical techniques aimed at complicating logistics processes. This has the consequence that the logistics situation changes every two to three months. This even leads to a radical change in the basic concepts of logistics. Thus, the logistics chain in the process of planning management measures should cease to be treated mainly as a linearly ordered set of connected links [6], and should be considered as a tree-like structure, the branches of which are selected to minimize risks and losses – resources, time and even lives of personnel. The proposed tree-like structure is a more general approach to modeling and managing the logistics process because it includes a linear logistics chain as one of the sub-variants. transportation. Unlike a linear route, which implemented the principle of minimizing transportation time, or minimizing the distance between the points of departure and destina-

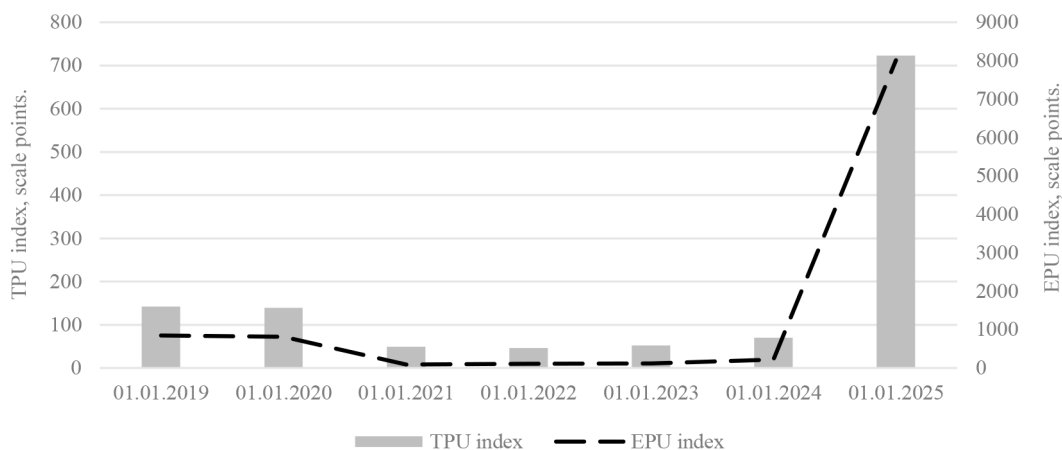


Fig. Trade policy uncertainty indices of Ukraine’s partner countries, TPU index, 1 % of all articles = 100, EPU index, average in 1985–2010 = 100 (r.s.)

Table 2

Changes in the direction of the logistics process in Ukraine

Country-participant of international business projects	Volumes of the logistics process in 2023, thousand USD	Volumes of the logistics process in 2024, thousand USD	2024 to 2023, %
China	2,406,335	2,393,838	99.48
Slovakia	1,102,919	942,632.1	85.47
Romania	3,863,043	1,760,765	45.58
Poland	5,072,099	4,708,912	92.84
Kyrgyzstan	33,652.36	34,460.51	102.41
Kazakhstan	266,520.1	291,503.5	109.37
Azerbaijan	196,257.7	216,902.1	110.52

tion, the tree-like structure is selected based on the availability of route options at most nodal points of the route. The proposal for a tree-like structure of the logistics chain is due to the need to introduce an approach to the variability of route branches in real time with the prompt detection of an increase in threats in individual sections by an amount greater than on other possible paths. With a significant probability of loss of cargo, personnel, damage to the vehicle, the excess of increased fuel costs, the increase in transportation time may not be significant.

The integrated use of a tree-shaped logistics chain with a block strategy with duplication of the possibility of implementing blocks on different branches of routes, even cross-border routes, will significantly increase the adaptability of logistics companies not only to the threats of war but also to market challenges, as it will allow meeting demand with rapid changes in consumption. Taking into account rapid changes in consumption on external markets for perishable food products is especially relevant. This will increase the competitiveness of Ukrainian logistics companies. This radically changes the approaches to both operational and strategic management of a logistics company.

This also allows reducing the noted above level of uncertainty for logistics companies by implementing the aforementioned compensatory mechanisms.

The proposal of a tree-like structure of logistics routes also allows for the implementation of real-time optimization of cargo flows through border checkpoints, which is a characteristic feature of international logistics business projects. As it is known, large queues of vehicles are often formed at checkpoints for one reason or another. Therefore, it is advisable, if the threat of losing time in such a queue is promptly identified, to change the route in advance and use another checkpoint. Managers of logistics companies even complain that threats to the health and life of personnel due to air attacks, the likelihood of which increases with the accumulation of transport, fatigue from long queues at checkpoints lead to frequent cases of drivers and forwarders abandoning vehicles.

Changing the route, as indicated above, is a likely increase in fuel consumption, vehicle resource, and increased risk of accidents due to personnel fatigue, and this requires an integrated assessment of losses and benefits. The implementation of optimization will allow avoiding some of the threats to personnel by choosing the best possible cargo transportation option. From the point of view of management quality, this allows choos-

ing a transportation strategy taking into account the importance of explicit and implicit factors, for example, the importance of on-time delivery under the terms of the contract, which is especially important for international logistics business projects. In this case, it is advisable to introduce weighting factors for integer indicators into the optimization model, which, if necessary, can be changed by management. Thus, an expert compromise tool is also introduced into the optimization process, the level of which is determined by management. This necessitates the need to review the principles of building specialized logistics management systems.

The above-mentioned dynamics of the crisis challenges lead to a somewhat paradoxical situation – the need to increase the level of integration of strategic management of international business projects with tactical solutions to logistics problems, in particular, using digital tools to support the decision-making process. This integration is due to the need not only to promptly solve previously unforeseen problems, but also to the need to flexibly adjust long-term plans and forecasts of business processes in conditions of rapid changes in the impact of threats. This also allows making changes to risk management strategies, which will lead to increased sustainability of logistics processes and minimization of losses.

This required a radical revision of views on the requirements for managing the logistics system.

These include, in particular, the requirements:

- ensuring transparency of logistics chains, their permanent monitoring;
- flexibility in choosing partners for international business projects;
- multi-criteria evaluation of logistics processes, relying not only on cost minimization but also on logistics reliability;
- flexibility in the forms and methods of the logistics process, readiness for the widespread use of outsourcing;
- application of methods of planning and forecasting of business processes, relevant in the case of significant turbulence of external influences;
- implementation of effective management in conditions of uncertainty;
- flexible use of one’s own logistics capacities;
- relevant assessment of the prospects of nearshoring and fulfillment;
- readiness of logistics process management systems for rapid restructuring and scaling.

The above indicates that logistics in times of crisis ceases to be only a means of implementing production functions and becomes a strategic tool for ensuring the sustainability of manufacturing companies and traders.

Comparison of the indicators of the Ukrainian logistics system according to the World Bank [25] with the indicators of similar systems of those EU countries that actively participate in international business projects with Ukraine (Table 3) allows identifying problematic issues for the logistics process of Ukrainian companies.

The negative assessment of Ukrainian customs indicates the insufficiency of the state’s efforts to improve the customs process. To improve cross-border logistics and control unjustified cargo delays by customs officers, it is proposed to optimize cargo flows in real time through existing international checkpoints. This will require costs only for the introduction of appropriate digital tools.

Table 3

Components of the Logistics Performance Index by country, scores in the range 1–5

Components	Country				
	Ukraine	Latvia	Romania	Poland	Italy
Customs	2.40	3.3	2.70	3.40	3.50
Infrastructure	2.40	3.3	2.90	3.50	3.80
International shipments	2.80	3.2	3.40	3.30	3.40
Logistics competence	2.60	3.7	3.30	3.60	3.80
Timeliness	3.10	4.0	3.60	3.90	3.90
Tracing	2.60	3.6	3.50	3.80	3.90

The low level of cargo tracking indicates that logistics companies are not equipped with digital control tools. An inadequate level of logistics competence indicates a shortage of personnel. In the conditions of cooperation with international logistics operators, problems arise not only in introducing modern technologies into the logistics process, but also in ensuring the proper level of human capital of companies. This capital is determined by the qualifications of personnel and the presence of appropriate human qualities in the personnel – accuracy, diligence, etc.

A significant gap in the indicator “International transportation” signifies the level of unpreparedness of the Ukrainian logistics system for integration with the logistics systems of the European Union countries. Even non-compliance with sustainable development requirements can lead to a reduction in cooperation with foreign logistics companies. For foreign partners, this will mean the loss of the opportunity to receive state subsidies and other types of institutional financial support. Discipline in this regard for EU logistics companies increased by 7.5 times only for the period 2022–2024 [18].

The indicated lag of Ukraine in the components of the Logistics Efficiency Index is a consequence of the use of traditional management methods, the significant impact of the crisis and the high level of uncertainty of the logistics process in Ukraine. This indicates not only the need to improve the strategies of companies that are customers of logistics services, but also the need to revise corporate policies regarding the systemic integration of production and business processes with logistics processes. This, in turn, requires constant operational audit and monitoring of logistics systems. This is also an additional argument in the need to integrate software complexes of logistics companies and DSS and ERP systems of counterparties.

Significant fluctuations in the volume of cargo transportation for international business projects lead to the need for manufacturers and traders to fully or partially rely on outsourcing logistics services, to use contract logistics. Although today, forwarding services are becoming more and more in demand, which extend not only to cargo escort, but also to coordination of logistics processes, operational change of routes in the event of increased threats in short periods of time. This also provides preferential tariffs, facilitation of the customs clearance procedure for cargo, etc. Therefore, attention to complex contract logistics is increasing.

Contract logistics nowadays has moved from the stage of renting warehouses or transport to ensuring the

logistics process using a complex system of interconnected procedures. Only powerful, primarily international corporations operating in Ukraine, integrate their own logistics into their management strategies. An example of this is Epicenter, Rozetka, EVA, which have formed their own powerful logistics centers in Ukraine, PJSC “Myronivskiy Hliboproduct”, which acquired a logistics company, etc. The development of their own production by companies whose activities are aimed at participating in international business projects also necessitates the improvement of their own logistics structures.

There is a tendency to accept orders for external logistics services from companies with a developed logistics system of their own, characterized by a high level of digital support, with their own warehouses and provided that the logistics system is not replenished with their own products. This contributes to the development of a competitive logistics market, which, in particular, encourages even non-specialized logistics companies to invest significantly in digital transport management systems, warehouse automation, and to improve the level of technological discipline and personnel qualifications to increase the efficiency and quality of logistics services.

At the same time, the growth in the volume of supplies of products by Ukrainian manufacturers under international business projects stimulates the rapid development of the capacities of logistics companies to meet demand. The stage of making a decision on restructuring one’s own logistics or choosing a contract logistics system is reaching the critical limit of the following parameters:

- throughput of one’s own warehouses;
- the level of loading of one’s own logistics system;
- the share of logistics costs in the cost of one’s own products;
- the intervals of fluctuations in the storage time of products at each warehouse and the time of transportation along each transport chain, which leads to a decrease in the efficiency of the logistics process.

The latter is a significant characteristic for determining the possible excessive load of one of the chains of the logistics system, which can lead to its collapse as a whole.

The use of contract logistics also increases the adaptation of manufacturers to changes in external conditions, in particular, rapid changes in demand. This contributes to the rejection of traditional fixed costs for logistics and the introduction of variable cost management.

This reinforces the trend of a gradual departure from providing the logistics process with one’s own resources for certain types of economic activity that are not related to mass deliveries of homogeneous cargo, for example, grain, coal, petroleum products, etc.

This trend is differentiated by logistics functions. Thus, even with the use of logistics outsourcing, more than half of all logistics costs are directed to providing logistics functions that are performed directly within companies (warehouse, packaging operations, etc.). At the same time, outsourcing is not only a reduction in logistics costs and improving their accounting. It is, first of all, an incentive for all participants in the logistics process to accelerate their organizational transformation and change approaches to management.

In strategic terms, the implementation of outsourcing is a combination of management aimed at saving costs

and management that ensures the optimization of business processes. This is especially important for international projects when forming a long-term strategy aimed at increasing the company's competitiveness in the global market. It is also important that international business projects contribute to the formation of cross-border logistics chains, which, in turn, accelerates the process of integrating national and global logistics systems.

This indicates a trend towards the integration of logistics, production and distribution processes, which is a significant step for the national logistics space on the way to its inclusion in the global logistics system.

The above allows one to consider the logistics process of a country with cargo flows, information, personnel and financial flows as an open system, taking into account the dynamic change of logistics service providers, the internationalization of virtual logistics, and the broad international coordination and integration of logistics processes both between companies and between countries.

At present, the logistics process, in addition to traditional cargo supply management operations, in particular, their storage, picking, packaging, also includes the tasks of configuring specialized digital systems (WMS; TMS; Logistics 4.0; blockchain technologies, etc.).

Accordingly, this leads to the differentiation of strategic logistics process management in the following areas:

1. Organization of their own logistics activities by both manufacturers and traders.
2. Specialized activities for a separate component of the logistics process (warehouse, terminal, transport, etc.).
3. Ensuring the full logistics process at the tactical level, for example, with a limited number of shipments or along a single supply chain.
4. Ensuring the full logistics process with the achievement of strategic goals of the logistics company, manufacturer or trader, integration of activities with other, mainly foreign logistics, legal and consulting companies.

**Conclusions.** Promising directions for adapting the logistics process to crisis conditions are indicated.

It is noted that the dynamism of challenges requires an increase in the level of integration of strategic management with tactical solutions to logistical problems, and requires flexible adjustment of long-term plans and risk management strategies. It is noted that the sustainability of business processes today is determined not only by the immediate threats of war, but also by the ability of companies to form and implement long-term strategies. It is indicated that the difficulty in forming management strategies lies in the increased uncertainty for business processes. The reasons for this uncertainty are identified. It is indicated that uncertainty is increased not only due to the influence of war and internal factors, but also by the significant uncertainty of the trade policy of Ukraine's partner countries in international business projects. It is established that the level of this uncertainty is almost an order of magnitude higher than during the crisis caused by the pandemic.

It is noted that due to the need to disperse logistics infrastructure facilities as a result of its targeted bombing, problems arise not only of their rational placement but also of their effective management. Thus, automated warehouse and transport management systems should now provide for high synchronization of cargo transportation from geographically dispersed facilities, in par-

ticular, for the rational formation of mixed cargo, reduction of customs clearance time, etc. Also, to improve cross-border logistics, optimization of cargo flows in real time through existing international checkpoints is proposed. This requires changing the principles of building specialized logistics digital systems.

In order to increase the efficiency of strategic management of dispersed logistics infrastructure facilities, it is proposed to move away from traditional approaches to territorial management and implement operational and block methods.

To provide a new quality to strategic management, it is proposed to form an integrated digital system, which should combine not only the functions of specialized logistics digital systems, but also digital systems for preparation and decision-making and integrated counterparty management systems. This will not only solve tactical management problems but also ensure the proper quality of strategic management in times of crisis and, importantly, accelerate the integration of the national logistics system into the global logistics process.

It is also proposed to expand the state's participation in the development of transport hubs, which should become structural elements of a developed system of variable routes. This will allow the formation of multipolar strategies for managing logistics processes, reduce the threat of damage and allow maneuvering along routes taking into account the level of risk on them in real time.

It is indicated that in wartime, the logistics chain in the process of planning management measures should cease to be treated as a linearly ordered set of links, and should be considered as a variable tree-like structure, the routes of which are chosen to minimize risks. The tree-like structure is a more generalized approach to modeling and managing the logistics process because it includes a linear logistics chain as one of the options. The integrated use of a tree-shaped logistics chain with a block strategy will significantly increase the adaptability of logistics companies not only to the threats of war but also to market challenges. This radically changes the approaches to both operational and strategic management of a logistics company.

In conditions of constant change the proposed approach will allow one to promptly find the optimum in terms of integrated indicators of money-time-quality.

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## Стратегічне управління міжнародними бізнес-проектами в умовах логістичної кризи

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**Мета.** Дослідити стан національної логістичної системи України й запропонувати заходи поліпшення логістичних процесів у сфері управління міжнародними бізнес-проектами, транскордонної логістики. Запропонувати підходи до адаптації логістичних процесів в умовах кризи, та виявити фактори ускладнення стратегічного управління в цих умовах.

**Методика.** Діалектичний метод дозволив визначити значущість впливу невизначеності торговельної політики країн-партнерів для національного логістичного процесу. За використання комплексного методу запропоноване формування спеціалізованих цифрових логістичних систем і реалізація інтегрованої цифрової системи, що має поєднувати функції логістичних систем і ППР- й ERP-систем виробників. Метод порівняння за складовими Індексу ефективності логістики дозволив указати на проблеми національної логістичної системи.

**Результати.** Запропоновано переглянути принципи побудови спеціалізованих логістичних систем управління й запровадити оптимізацію вантажопотоків у реальному часі через пункти пропуску на кордонах. Запропоноване формування інтегрованої цифрової системи, що має поєднувати функції програмних комплексів логістичних компаній і цифрових систем контрагентів. Зазначено, що формування стратегій управління ускладнюється посиленням невизначеності бізнес-процесів. Встановлено, що ця невизначеність є не лише наслідком війни та внутрішніх факторів, але й наслідком впливу невизначеності торговельної політики країн-партнерів.

**Наукова новизна.** Вказано, що логістичний ланцюг не має трактуватися як лінійно впорядкована сукупність ланок, а має розглядатися як більш універсальна варіабельна деревовидна структура, маршрути якої обираються з урахуванням ризиків. Запропоноване комплексне застосування деревовидного логістичного ланцюга із блочною стратегією збільшить адаптабельність логістичних компаній до викликів і їхню конкурентоспроможність.

**Практична значимість.** Визначені перспективні напрями адаптації логістичного процесу до умов кризи, запропоновані напрями вдосконалення стратегій управління для міжнародних бізнес-проектів.

**Ключові слова:** стратегічне управління, логістична криза, бізнес-проекти

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