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AND SUPPLY CHAIN MANAGEMENT**

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## INTRODUCTION

We are happy to invite you to get acquainted with the first issue of the new scientific and practical publication "Intellectualization of Logistics and Supply Chain Management".

We strongly believe that the launch of this magazine indicates the objective need to rethink a wide range of issues related to the development of theory and practice in logistics and supply chain management, awareness of the need to unite the scientific community and logistics practitioners, dissemination of modern knowledge and best practices for innovative development of the logistics services market.

The first issue of the magazine is published at a difficult time. The global coronavirus pandemic and the deep economic crisis have significantly worsened business activity in the world. Currently, global supply chains are collapsing, international trade is declining, and competition between global and regional logistics operators is intensifying. The most common thesis is that the world will never be the same again. Industry experts predict the emergence of new, more flexible and adaptive supply chain management strategies and approaches to logistics business process management. The trend towards collaborations, cooperation and unification of services is emerging, comprehensive proposals for clients are being developed. There is increasing talk about the need to build bimodal supply chains, which involves the development of different decision-making scenarios: the traditional approach - cost-effective efficiency, low risk, high predictability; a new approach "second mode" - rapid recognition of opportunities, adaptability, willingness to solve unexpected problems and look for new opportunities.

Radical transformations of the global and national markets for logistics services require appropriate scientific support. Logistics science has a special role to play in this process. Initiating the emergence of a new journal, we decided to focus on its coverage of problematic aspects of the formation and development of logistics systems at the micro, mezo and macro levels, supply chain management, digitization of logistics, methods and tools for optimizing processes in logistics and supply chains, sociopsychology relations and network interaction of enterprises using cloud technologies, artificial intelligence, e-learning, neural business process management systems, etc.

Therefore, we invite scientists, researchers and business representatives, as well as our colleagues from abroad, to cooperate and present the results of scientific research, to discuss and debate on them, to work together to develop the scientific theory of logistics and promote mutual intellectual enrichment.

We hope that the new scientific publication will become a theoretical guide for young researchers and representatives of other fields.

**HRYPHORAK Mariia**  
*Chief Editor*



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## THE ROLE OF THE STATE IN ENSURING SUSTAINABLE DEVELOPMENT OF AIR TRANSPORT IN THE POST-WAR

**Oleg Maksymov, Dmytro Bugayko.** *«The role of the state in ensuring sustainable development of air transport in the post-war».* The article examines the important role of the state in ensuring the sustainable development of air transport after the war. The influence of the state on various aspects of the aviation industry, including aviation safety, financial support for airlines, aircraft leasing fleet and infrastructure, is studied. The article discusses the need to modernize the state policy to influence the support and development of the aviation sector and create a favourable investment climate in Ukraine. It is important not only to restore the aviation industry after the war, but also to ensure its modernization and sustainable development, taking into account international experience and innovative approaches.

**Keywords:** role of the state, sustainable development, air transport, recovery strategies, post-war period.

**Олег Максимов, Дмитро Бугайко.** *«Роль держави в забезпеченні сталого розвитку повітряного транспорту в післявоєнний період».* У статті розглядається важлива роль держави в забезпеченні сталого розвитку авіаційного транспорту після війни. Досліджено вплив держави на різні аспекти авіаційної галузі, включаючи авіаційну безпеку, фінансову підтримку авіакомпаній, лізинговий парк повітряних суден та інфраструктуру. У статті обговорюється необхідність модернізації державної політики впливу на підтримку та розвиток авіаційної галузі та створення сприятливого інвестиційного клімату в Україні. Важливо не лише відновити авіаційну промисловість після війни, а й забезпечити її модернізацію та сталий розвиток з урахуванням міжнародного досвіду та інноваційних підходів.

**Ключові слова:** роль держави, сталий розвиток, повітряний транспорт, стратегії відновлення, післявоєнний період



**Introduction.** Aviation plays a crucial role in promoting socio-economic development and is an integral part of today's world, contributing to economic growth, social progress, and global integration. Even before February 24, 2022, Russia's war against Ukraine had a negative impact on airlines, and since the beginning of the full-scale invasion, all components of the aviation industry of Ukraine have suffered destructive losses, including not only airlines, but also airports, airfields, maintenance and repair organizations, ground handling companies, air traffic control systems, and others. Today's challenges threaten the very existence of the industry, emphasizing the urgent need of the state to develop comprehensive scenarios for the rapid recovery and sustainable development of air transport in Ukraine. The task of creating a new, effective and successful state policy for the development of the aviation industry of Ukraine, which would meet modern challenges and risks, by improving the appropriate mechanisms for its creation and implementation, becomes extremely important.

The aim of the article is to examine and substantiate the importance of state actions in ensuring the sustainable development of the aviation industry in the post-war period.

**Analysis of literature data and clarification of problems.** The problem of post-war resumption of air transportation is considered by a large number of experts. Aviation expert K. Novikov [9] emphasizes the importance of outlining scenarios and priorities for the recovery of the aviation industry, as well as the priority of the state's role in this matter. Expert, former Deputy Director General of Boryspil Airport for Commercial Activities and Strategic Development H. Zubko [19] points to the risks of losing qualified aviation personnel, emphasizing the importance of providing them with the opportunity to train and work in Ukraine after the end of the war. Zubko [4] also analyses the factors that will affect the speed of restoration of civilian airports in Ukraine after the war. N. Horbal and Y.

Radchenko [2] analyse the peculiarities of the development and current state of the air transport industry in Ukraine, as well as the issues of rapid recovery of aviation, in particular work with remaining companies such as SkyUp. In the work of D. Bugayko et al. [20], in order to formulate strategic scenarios for post-war recovery and sustainable development of air transport in Ukraine, it is proposed to use the Concept of national management of integrated risks of air transport of Ukraine. An indeterminate problem that has conceptual relevance and practical significance is the definition of the role of the state in ensuring the sustainable development of air transport in the post-war period.

**Presentation of the main results.** The sustainable development goals of Ukraine until 2030 require the state to take care of national interests aimed at supporting sustainable economic growth, developing of civil society, and strengthening the state to improve the standards and quality of life of citizens, as well as ensuring the observance of constitutional rights and freedoms of individuals and citizens. In this context, great emphasis is placed on achieving a balance between the economic, social, environmental and security aspects of sustainable development of Ukraine, including the need to take into account the development of the aviation industry.

It is worth noting that the aviation industry suffered serious losses due to the imposition of martial law and earlier due to quarantine restrictions related to the COVID-19 pandemic. Therefore, it requires comprehensive measures of state support based on an assessment of the state of infrastructure, as well as on programs for its improvement and expansion, which were already in the process of implementation in the pre-war period.

The post-war development of the country's aviation industry will require significant investment, including foreign capital. And this requires the implementation and execution of appropriate state policy,



because the need for investment and innovative renewal of the transport industry significantly exceeds the level of funding available at the moment.

Aviation constantly faces rapid and changing market conditions and intense competition. This reality dictates the need for a swift response to these challenges and requires a scientifically substantiated strategic vision to maintain a trajectory of sustainable development, the main ideas of which, at the national, regional, and local levels, are the harmonization of economic, social, and ecological components.

Since the aviation industry is strategically important, in the post-war period it is very important to resolve a number of urgent issues and discrepancies, without which it is absolutely impossible to ensure the sustainable development of the industry. These issues include:

- Ensuring aviation safety and security is a priority issue where there can be no compromises.
- Infrastructure investments for the restoration of damaged infrastructure and the financing of reconstruction and expansion of airports, runways, and other facilities.
- Implementation of programs aimed at ensuring a high level of training and education for professionals in the aviation industry.
- Improvement of the state asset management system in the field of aviation infrastructure.
- Support for the development of the aviation sector and the creation of conditions for supporting the sustainable growth of domestic aviation carriers [13].

World air transport is a complex system that is open to the influence of many interconnected and unrelated factors. One of the most vulnerable parts of this system is the activities of airlines. Their activities as an integral component of the global transport infrastructure are extremely vulnerable in the context of military conflicts, which has profound and multifaceted consequences for

the entire industry, the country's economy, and the well-being of society as a whole.

In the post-war period, all domestic airlines will face financial difficulties and government subsidies, loans or other forms of financial support will be essential for the recovery of the industry. In addition to resource challenges, the socio-economic consequences of the conflict, such as a decline in the purchasing power of the population, will lead to a change in demand patterns for air transportation [5].

Separately, emphasizing the leading place of airlines, it should be noted that they play a central role in the global air transportation system, acting as engines of economic growth and development. Their impact on the economy exceeds the mere provision of transport services, as they contribute to the generation of passenger and cargo flows that have a cascading impact on the entire aviation infrastructure and related businesses.

In the context of the air transportation system, airlines can be considered as primary, strategic elements that initiate and support cyclical and synergistic processes in the macroeconomic system. Their role is important not only to ensure the mobility of people and goods, but also to strengthen economic resilience and progress at the national and international levels. The functioning of airlines contributes to business activity, support for tourism, cargo transportation, exports and imports, which in turn strengthens international trade and global integration. In addition, airlines are significant employers, both directly and because of the multiplier effect they create in the employment sector, initiating job creation not only in aviation but also in other industries.

Ukrainian airlines will face unprecedented challenges after the war events, which will significantly complicate the process of recovery and further development of the aviation industry in the country as a whole. The situation, characterized by limited resources, both material and financial, will

require airlines to mobilize all available means for the effective revival of their activities.

The specifics of the labour market, particularly the reduction in the number of available skilled workers due to the migration of women abroad and the loss of men during hostilities, create additional obstacles.

This new economic reality requires airlines to take a more conservative approach to expanding their route network, optimizing costs, and investing in marketing.

Financial difficulties caused by a long period of instability require a strategic approach to budgeting and investment. The restoration of the fleet, infrastructure, optimization of routes, as well as the search for reliable partners for cooperation at the international level will become key aspects of the survival and development strategy. The implementation of concessions, supervisory boards and the engagement of professional management will also contribute to the creation of a stable and competitive aviation system in Ukraine.

Aviation expert K. Novikov asserts that in the post-war period, the role of the state in ensuring the sustainable development of air transport in Ukraine is determined by a set of measures [9]. It is necessary to prioritize the restoration of airports, especially in the eastern and southern parts of the country, involving experts, taking into account the needs in passenger and cargo transportation. State support for airlines and airports, including through subsidies, exchange with foreign partners, and training programs, is important for the preservation and development of qualified personnel.

In addition, the establishment of the State Agency for Restoration and Infrastructure Development of Ukraine is a key step in the development and implementation of the recovery plan, including prioritizing projects, dialogue with business entities, compliance with European standards, combating corruption, and the creation and operation of a strategic planning system for regional development.

It is important to emphasize that air transport is one of the key backbone industries that have deep connections to all areas of the economy and social development. In the post-war period, when Ukraine expands its domestic and international transport links, increases production and improves the lives of the population, the importance of transport and its role as a system-forming factor will only grow. Under such conditions, the development and modernization of the aviation industry should be carried out on the basis of a comprehensive analysis of its current state and in deep interaction with the general trends in the socio-economic development of the country and global strategic directions in the field of economy, through the creation and implementation of an effective and efficient state policy.

To ensure sustainable and competitive development of the aviation industry in Ukraine, first of all, it is necessary to improve the business environment in the country, create an attractive investment climate and maintain confidence in the state authorities as a body responsible for the socio-economic development of the country and, accordingly, the development of the aviation sector.

The development of comprehensive state support programs aimed at stimulating the recovery of airlines may include financial incentives, tax rebates, subsidies for fleet renewal, as well as special professional training programs for training and retraining of personnel. Such a multifaceted approach will help not only stabilize the aviation industry, but also ensure a gradual economic revival, strengthening the position of Ukrainian air carriers in the international arena.

How clear the government's vision is regarding the future development of the economy influences the key aspects of the country's macroeconomic stability. This stability is determined by maintaining the level of socio-economic growth, ensuring full employment of the population, price control, stability of the exchange rate of the national

currency and balance of payments, as well as reducing public debt relative to GDP [14].

It is very important to have a favourable business environment that guarantees predictability and stability, as well as provides enterprises with the opportunity to protect their rights and reduce the regulatory burden on business. This will help Ukraine compete for investment in the international capital market and contribute to the economic growth of the state, including the aviation industry.

The main pillars on which the restoration of aviation relies are security, infrastructure, financing and investment, incentives and innovation. The state plays a key role in ensuring the safety of air transport through the establishment of safety standards, inspection, and certification of air carriers and aircraft. The State is responsible for the development and maintenance of airports and airways that are essential for the development of air transport, establishes rules and regulations for the operation and maintenance of aircraft, and promotes fair competition in the field of air transportation.

H. Zubko emphasizes the relevance and necessity of constant assessment of the levels of risks and threats to flight safety. Because Ukraine, being in the highest risk group, must adjust plans and determine the potential capabilities of the aviation sector depending on the enemy's systems and means of destruction. Zoning of the regional airspace structure is an important step for a large geographic country such as Ukraine. It is emphasized that air travel should resume on certain safe routes, hoping to open the first air routes to airports in the west of the country in the near future, provided that there are appropriate safe conditions for flights.

To ensure the sustainable development of air transport in the post-war period, the state needs to implement specific mechanisms, such as:

1. Regulatory bodies, namely the establishment and functioning of relevant agencies and bodies to regulate air transport,

which establish safety and environmental standards.

2. Aviation policy, which includes the development of national aviation policies that define strategic goals and priorities for the development of the sector.

3. Financial support, which involves providing financial assistance to airlines and investing in the modernization and expansion of airport infrastructure.

4. Environmental standards, such as establishing emission rates and requirements to reduce the impact of aviation on the environment.

5. Supporting and funding research and development aimed at reducing emissions, improving technologies, and increasing the fuel efficiency of aircraft.

6. Training and education programs for professionals in the air transport sector with a focus on safety and sustainability.

7. Subsidies and incentives to encourage the use of environmentally friendly technologies and practices in air transport [13].

These mechanisms help states achieve a balance between the development of the aviation industry, maintaining sustainable development, and preserving the environment.

To implement the aforementioned actions for the sustainable development of air transport in Ukraine, financial resources are needed. The Government of Ukraine may allocate funds from the state budget for infrastructure projects, research and aviation safety improvement programs. Ukraine can receive financial support from international financial institutions and funds for the development and modernization of aviation infrastructure. It is especially valuable to attract investments and resources of private companies for joint projects and aviation development.

It is justified to create environmental funds, implement environmental levies for compensating CO<sub>2</sub> emissions from air transportation, and finance projects to reduce

the impact of aviation on the environment [18].

The state needs to actively search for opportunities to obtain grants from international organizations or donors for the implementation of specific projects in the field of aviation. Also work on attracting foreign investors to finance projects in the field of air transport.

It is important to effectively manage and use these financial resources to achieve the specific goals of maintaining the sustainable development of air transport in Ukraine.

In the context of seeking support from investors, it is worth raising the issue of greening air transport. In our firm belief, the post-war recovery of aviation should involve a radical transformation of the current state of the industry in accordance with the principles of sustainable development. Joining the European Green Deal aims to reduce transport emissions by 90% by 2050 [11].

It should be noted that in recent years, domestic airlines and airports have not actively developed programs to implement 'green' technological solutions into their operations. There is not a single airport in Ukraine that can be considered 'green'. The situation has now worsened even further, as the Russian army has inflicted damage to airports amounting to over 200 billion hryvnias. Of the 19 functioning civil airports, 12 have been destroyed or damaged.

The Ukrainian "Marshall Plan", presented in Lugano, envisages the reconstruction of 5-7 airports, which will be determined taking into account the goals of sustainable development and will reduce the harmful impact on the environment [6]. The State Aviation Administration of Ukraine and the Ministry of Digital Transformation of Ukraine have already created the portal "Fly Green: the Way to Green Aviation", which promotes practical tools for the implementation of "green technologies" at airports and contains advice on managing finances and natural resources. In particular, this involves the use of special materials (low-carbon concrete, wood, photocatalytic membranes, biofuels,

etc.), solar panels, the installation of various energy-saving systems, etc.

Professor A. Dligach, who is a co-founder of the Center for Economic Recovery, Chairman of Advanter Group, Professor of the Taras Shevchenko National University of Kyiv, highlights that in the coming years the main tasks are to resolve the contradiction between the militarization of the economy and its rapid growth. This requires the implementation of a complete modernization, and not just reconstruction after destruction. According to the expert, "the new strategy of economic development should be based not only on historical experience (countries that were able to recover from the war or double their GDP in 10 years), but also on revolutionary ideas that could create value for the whole world." [3].

However, it is important to adhere to other principles that will ensure the effectiveness of the strategy, including:

- The vision of a new course for Ukraine.
- Creating economic opportunities through an effective state.
- Ensuring security.
- A liberal, innovative economy that attracts global attention.
- Enhancing the well-being of citizens and developing human capital.
- Utilizing opportunities in international cooperation

Therefore, Ukraine needs modernization and innovative economic growth, which should take place over the next decades.

Since some indicators of sustainable development of air transport are compared relative to Ukraine's GDP, it is necessary to analyse the current and forecast values of both nominal and real GDP of the country. There are the following forecasts for Ukraine's real GDP until 2030:

- The EBRD envisages a 20% reduction in GDP.
- The IMF predicts a 35% decline in GDP.
- The National Bank of Ukraine expects GDP to contract by 33%.
- The World Bank envisages a 45% reduction in GDP [1].

Agreeing with the opinion of Y. Romanchuk, who argues that a return to pre-war economic policy, which will make it possible to achieve the level of 2021, is possible only by 2040, which is not an optimal approach, it is proposed to consider various recovery scenarios, as proposed by A. Dligach, as well as principles that should serve as the basis of Ukraine's economy for a decade after the end of the conflict. It is important to note that these proposals are declarative in nature, which means that they are necessary but not sufficient to achieve success. The same principles are proposed by the Ministry of Economy of Ukraine. Since some of the indicators of sustainable development of air transport depend on Ukraine's GDP, it is possible to consider possible scenarios for the recovery of air transport in the post-war period [15]:

1. Realistic
2. Optimistic
3. Entering the zone of optimal sustainable development.

Moreover, a realistic scenario envisages a level close to the pre-war state, the optimistic scenario exceeds the level of sustainable development of aviation transport for all years of its existence, and the scenario of entering the optimal zone of sustainable development of EU countries is the most desirable for the state.

Therefore, the main objective of the policy is to comply with the developed strategic plan through the development of appropriate regulatory measures to achieve the desired objective. Thus, the formation of reasonable response measures to hostilities

and adaptation of the trajectory ensures sustainable development to achieve strategically defined goals [7].

Aviation expert K. Novikov asserts that the main focus for the Ukrainian state should be on the phased reconstruction. In the first phase of reconstruction, attention should be concentrated on regional airports such as Chernivtsi, Ivano-Frankivsk, Kherson, Vinnytsia, Rivne, which have significant regional and economic importance. The second basket may include airports with great potential for local transportation and the development of low-cost international carriers. Considering the security situation, the expert believes it is advisable to create a state-private management company to manage newly created or reconstructed airports. In addition, involving the Armed Forces of Ukraine in building systems to protect airfields from aerial capture and investing in airport security are also extremely important aspects. These steps will help make Ukraine a successful transit country with a doubled number of ultra-modern airports and a developed intermodal transportation system [10].

In the study, Y. Kharazishvili, O. Kvilinsky, D. Bugayko, M. Hryhorak, V. Butorina and I. Yashchyshyna carried out quantitative calculations and depicted the strategic dynamics of gross value added (GVA) index of air transport, which makes possible to build its trajectory until 2030 relative to 2010 for the analysis of certain scenarios (Fig. 1) [16].



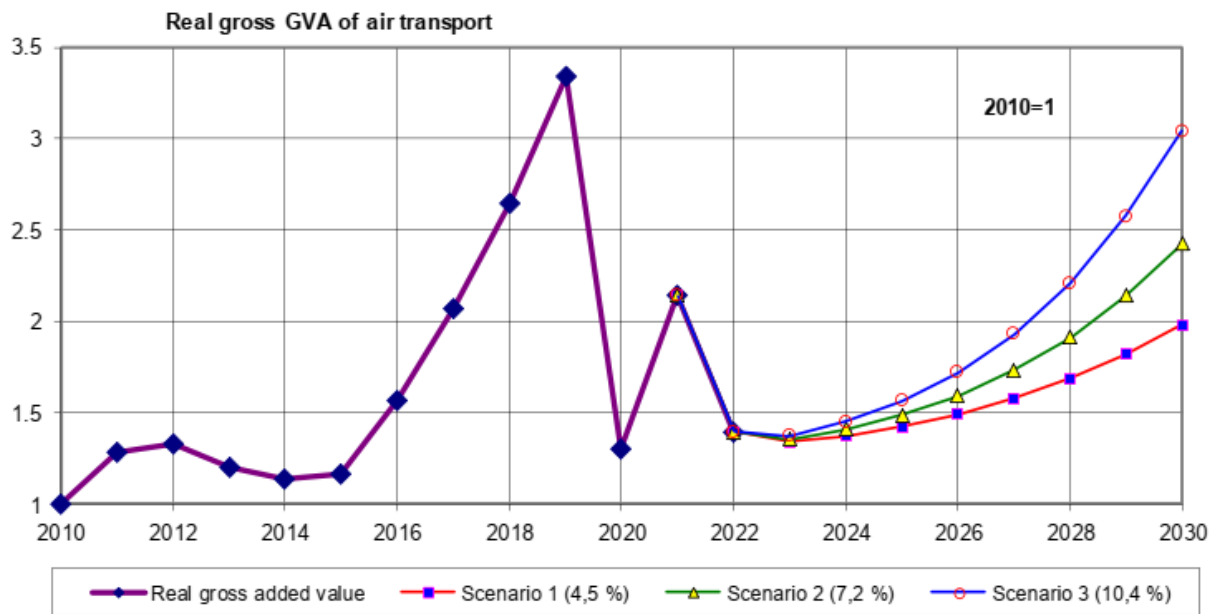


Figure 1. Strategic dynamics of GVA of air transport

Source: Kharizashvili et al. [16]

From the above figure (Fig. 1), it can be seen that under a realistic scenario, the real gross value added of air transport remains at the level of 2021; according to the optimistic scenario – at the level of 2018; according to the scenario of entering the optimal zone of sustainable development – at the level of 2019.

It is important to emphasize that the implementation of these scenarios is possible only under the condition of an absolute cessation of corruption and a significant reduction in the level of illegal schemes in the Ukrainian economy, including air transport, to the level typical for the countries of the European Union.

All the above scenarios of post-war recovery are determined by uneven development of various aspects and indicators. Therefore, the next stage after entering the optimal zone of limit values will be to achieve the criterion of sustainable development according to the integral indicator of the average optimal values of all components and all indicators [16, 20].

Institutional actions to support the positive scenario of the post-war recovery of air transport in Ukraine include [12]:

1. Updating and revising the provisions of the State Target Program for the Development of Airports for the period up to 2023, the State Target Scientific and Technical Program for the Development of the Aviation Industry for 2021-2030 and the National Transport Strategy of Ukraine for the period up to 2030, taking into account the conditions of recovery and sustainable development after military conflicts.

2. Development of mechanisms to support the aviation sector of Ukraine after the war by the state, with special attention to creating attractive conditions for attracting investors.

Together, these measures aim to ensure the profitability of Ukraine's air transport in the third year after the end of the conflict.

**Conclusions.** Summing up, modern conditions require urgent modernization of the state policy on the development of the transport industry of Ukraine using the best international experience. Solving the problems that exist in the development of the aviation industry should take into account both national and international interests of our state in this area. Thus, the state policy regarding the further development of the aviation industry of Ukraine should be based

on a combination of national and advanced international experience, as well as our own realities.

For Ukraine, which is facing military challenges, addressing security issues related to the creation of an effective transport infrastructure are the biggest and most important steps to preserve its statehood, sovereignty and territorial integrity.

In order to solve the existing problems and conflicts related to the restructuring and modernization of the state policy for the development of the transport sector of Ukraine, it is important to give the highest priority to such aspects as forecasting and strategic planning of its development in the

short, medium and long term. The state has a key role to play in the recovery, from financing to regulation and creating a favorable environment for the sustainable development of the industry [20]. The state should become the driving force for the development and implementation of comprehensive strategic scenarios that will ensure the rapid recovery and sustainable development of air transport, including infrastructure investments, development of human resources, improvement of management, support for domestic aviation entities and promotion of fair competition in the field of air transportation and stimulation of the aviation sector as a key element of the national economy.

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## **POSSIBLE WAYS OF THE SUSTAINABLE DEVELOPMENT CONCEPT REALISATION BY LOGISTICS COMPANIES, THE NECESSITY OF USING «GREEN» TECHNOLOGIES FOR DECARBONISATION OF THEIR BUSINESS ACTIVITY**

**Vladyslav Marchenko, Dmytro Bugayko.** *«Possible ways of the sustainable development concept realisation by logistics companies, the necessity of using «green» technologies for decarbonisation of their business activity». Nowadays, more and more people are becoming seriously concerned about the problems of gradual environmental pollution and climate change. Over the past decades, they have become truly complex and global in scope. The long-term policy of ignoring these extremely important questions in the past has led to a staggering number of negative consequences that we are now seeing in all countries of the world. Today, it is no longer possible to continue to pretend that our activities have absolutely no impact on them. That is why, humanity is in constant search of new ideas that will be able to solve these problems, or at least slow down their pace. One of such, the most effective and promising examples was the creation of the extremely important concept of sustainable development. It has a very essential role in the spheres of logistics and management. Nowadays, all our activities in one way or another rely on them. In the global economy, the logistics sector is a major force that stimulates efficient trade and ensures the movement of goods. The logistics sphere works with a giant number of elements, various corporations, enterprises, companies, all possible transport vehicles and people. It connects them into a truly colossal in size and unified network. But it is always worth remembering that it has a huge impact on the above-mentioned problems. Currently, one of the key goals is to minimise the negative impact of logistics on the environment. That is why it is important to move this system in the direction of sustainable development, implementation of «green» initiatives, projects and technologies. In our time, the question of decarbonisation of logistics companies' activities is really important and highly relevant, and therefore researchers should continue to monitor, study and analyse the prospects for the development of the logistics sector in this direction.*

**Keywords:** sustainability, ecology, decarbonization, optimization, development, prospects, efficiency, transport, business, technologies

**Владислав Марченко, Дмитро Бугайко. «Можливі шляхи реалізації концепції сталого розвитку логістичними компаніями, необхідність використання «зелених» технологій задля декарбонізації їх бізнес-діяльності».** У наш час, все більше і більше людей починають серйозно перейматися проблемами поступового забруднення навколишнього середовища та зміни клімату. За останні десятиліття вони стали по-справжньому комплексними та глобальними за масштабом. Довготривала політика ігнорування цих надзвичайно важливих питань у минулому призвела до приголомшливої кількості негативних наслідків, які ми зараз спостерігаємо в усіх країнах світу. Сьогодні, більше неможливо продовжувати робити вигляд, що наша діяльність не має абсолютно жодного впливу на них. Саме тому, людство перебуває в постійному пошуку нових ідей, які зможуть вирішити ці проблеми, або принаймні сповільнити їх темпи. Одним з таких, найбільш ефективних та перспективних прикладів стало створення неймовірно важливої концепції сталого розвитку. Вона має дуже суттєву роль у сферах логістики та менеджменту. Сьогодні вся наша діяльність так чи інакше спирається на них. У глобальній економіці логістичний сектор є головною силою, що стимулює ефективну торгівлю та забезпечує переміщення товарів. Сфера логістики працює з гігантською кількістю елементів, різноманітними корпораціями, підприємствами, компаніями, усіма можливими транспортними засобами та людьми. Вона об'єднує їх у справді колосальну за розмірами та єдину мережу. Але завжди варто пам'ятати, що вона має величезний вплив на вищезгадані проблеми. Наразі однією з ключових цілей є мінімізація негативного впливу логістики на навколишнє середовище. Саме тому важливо рухати цю систему в напрямку сталого розвитку, впровадження «зелених» ініціатив, проєктів та технологій. В наш час, питання декарбонізації діяльності логістичних компаній є дійсно важливим і характеризується високою актуальністю, а тому дослідники повинні продовжувати відслідковувати, вивчати та аналізувати перспективи розвитку логістичної сфери в цьому напрямку.

**Ключові слова:** сталість, екологія, декарбонізація, оптимізація, розвиток, перспективи, ефективність, транспорт, бізнес, технології

**Introduction.** At present, we can clearly see that the consequences caused by the environmental pollution and climate change are becoming very serious and global in scale. That is why more and more people are becoming interested in sustainable development, which represents a new, effective concept that is aimed at counteracting these processes and has extremely high prospects. The growing attention to this direction qualitatively stimulates the search of possible variants of its improvement in different spheres of our life. Today, this concept represents a new, powerful comprehensive philosophy of our civilisation's development. It is rapidly gaining great popularity in the modern market, as it is based on the idea of achieving an optimal

balance between economic, social and environmental aspects. It relies on innovative solutions, green technologies, advanced scientific achievements, reforms, environmental awareness of people and modern technical solutions. Its high-quality implementation in different spheres of our life can really improve the situation with the above-mentioned problems. The task of implementing this concept in the areas of logistics and management is still a priority and is of great importance to all of humanity. Finding effective solutions that can minimize the level of harmful emissions into the atmosphere is particularly important. It is still on the agenda of world leaders and international organizations. The decarbonization of logistics activity has

become a critical issue. That is why it is so important today to continue to analyse and explore different ways to achieve these goals.

**The purpose of the article** is to research possible ways of implementing the concept of sustainable development on the example of «Nova Poshta» company and to explain the importance of decarbonizing the business activities of logistics companies. In this article, the «Nova Poshta» company will be researched, its activity in the direction of sustainable development will be analyzed, and the importance of the decarbonization of logistics companies' business activities will be explained. Based on the results of the conducted research, a conclusion will be formulated.

**Presentation of the main results.** The modern logistics sphere strives for qualitative changes and innovative ideas, especially in the field of sustainable development. Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs [1]. In our time, the level of market competition has reached such a high level that the practice of planning a few steps in advance is no longer enough. Real success will be achieved by those players who have a clear vision of their future, carefully think it through, effectively adapt to changes and follow modern tendencies. Today, the logic of an increasing number of people clearly states that if their company does not follow the concept of sustainable development, does not care and does not take real steps to positively resolve the previously mentioned issues of climate change, depletion of natural resources and environmental pollution, it demonstrates its indifference, imperfection and outdatedness, and therefore, they need to look for another representative who is aware of all this and acts appropriately.

«Meest Express», «Ukrposhta» and «Nova Poshta» are the main representatives of the logistics market in Ukraine that have

significant prospects in the field of sustainable development. These representatives are true leaders that adapt very quickly to new social needs and popular trends. This article will analyse the activity of the company «Nova Poshta», explore its achievements and prospects in the direction of sustainable development.

Nova Poshta is the largest private operator of postal services in Ukraine and one of the most dynamic and fast-growing companies in the country in general [2]. It operates both in the Ukrainian market and abroad. The company has succeeded by providing good postal services, raising the efficiency of transportation to a completely new level. Even now, not all Ukrainian companies can achieve such effectiveness. The mission of the company is making delivery easy for life and business, to simplify customers' life [3].

«Nova Poshta» is constantly introducing new services and creating attractive logistics offers. The company aims to meet all the highest international quality standards. To achieve this goal, it analyses and borrows the best international experience and practices. «Nova Poshta» is a good example of a modern logistics company that constantly strives for development and self-improvement. Its great effectiveness can be clearly seen on the example of its key operational quality indicators in Table 1.

Continuous improvement of services and work with clients, which the company carries out on a regular basis, has allowed it to achieve success and a good position in the market.

«Nova Poshta» is working to develop a really wide, modern network of automated parcel terminals. The company wants to increase its own level of operational efficiency in parcel processing by using modern sorting infrastructure, powerful equipment and different robotic systems.



Table 1. «Nova Poshta» key operational quality indicators as of 05.01.2024

№	Operational quality indicators	%
1	On time to the branch	98,54%
2	On time to the door	91,68%
3	Cargo collected on time	97%
4	Net Promoter Score	76%

Source: Developed by Vladyslav Marchenko&Dmytro Bugayko

The company's best sorting infrastructure is located in big cities, such as Kharkiv, Lviv,

Khmelnytskyi, Dnipro or Kyiv, which is well demonstrated in Fig. 1.



Figure 1 – «Nova Poshta» Kyiv Innovative Terminal

Source: <https://mc.today/shhodnya-tut-rozpodilyayut-283-tis-posilok-yak-pratsyuye-najbilshij-kiyivskij-terminal-novoyi-poshti/>

The company has efficient Innovative terminals with high sorting line capacity, which can be seen in Fig. 2.

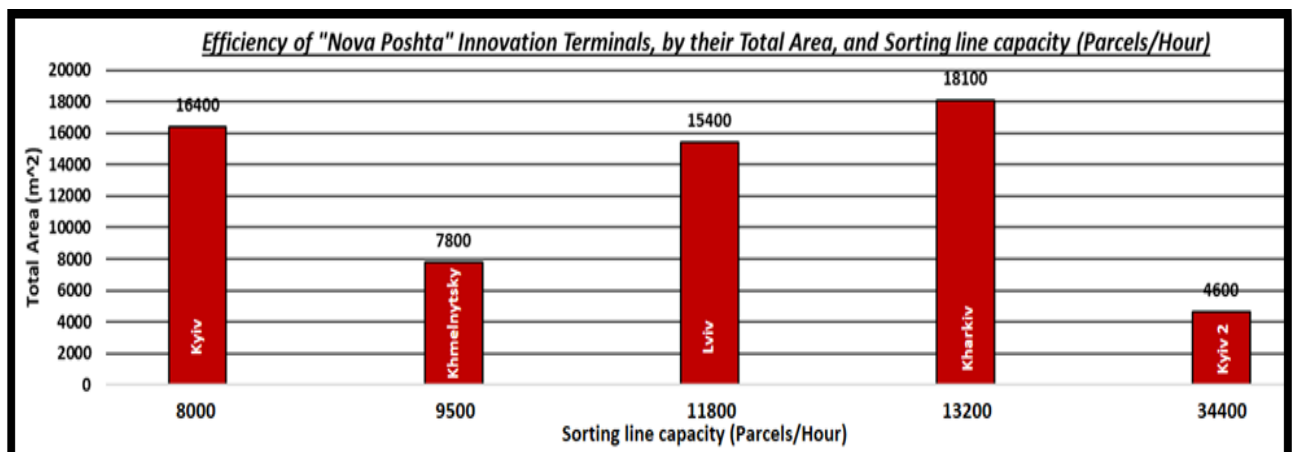


Figure 2 – Efficiency of «Nova Posta» Innovation Terminals

Source: Developed by Vladyslav Marchenko

Having analysed the company's reports, we can see that today, «Nova Poshta» is one of

the largest taxpayers to the Ukrainian budget. Its taxes in recent years can be seen in Fig. 3.

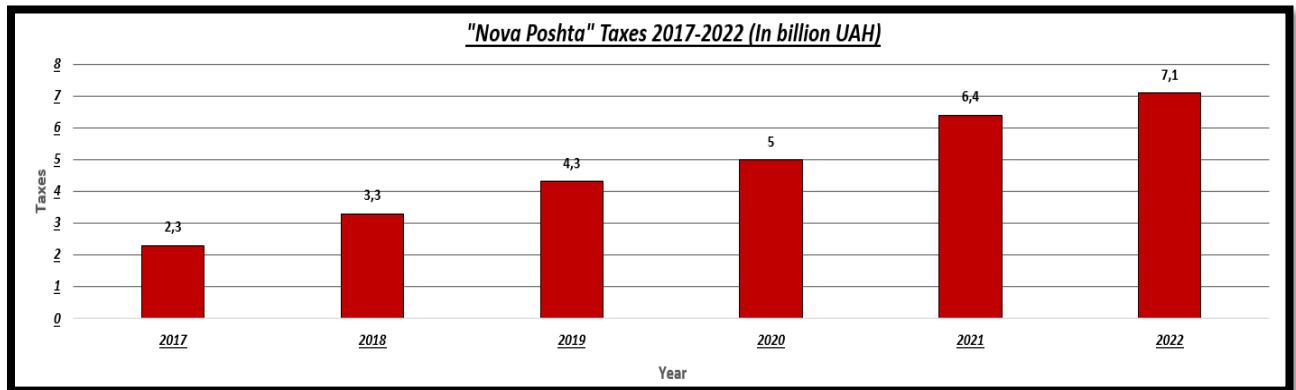


Figure 3 – «Nova Poshta» taxes in 2017-2022

Source: Developed by Vladyslav Marchenko

«Nova Poshta» has a flexible, well-thought-out strategy that gives its business divisions significant operational freedom in executing processes. This policy allows it to be very dynamic and provide customers with a good range of relevant business services. To conduct a qualitative assessment of a company, it is important to check its key results and performance indicators.

In Ukraine, the company holds a leading position in the field of express delivery. The number of «Nova Poshta» delivery points has grown significantly in recent years. In 2021, it delivered more than 370 million parcels and cargoes. The number of the company's shipments in 2017-2021 can be seen in Fig. 4.

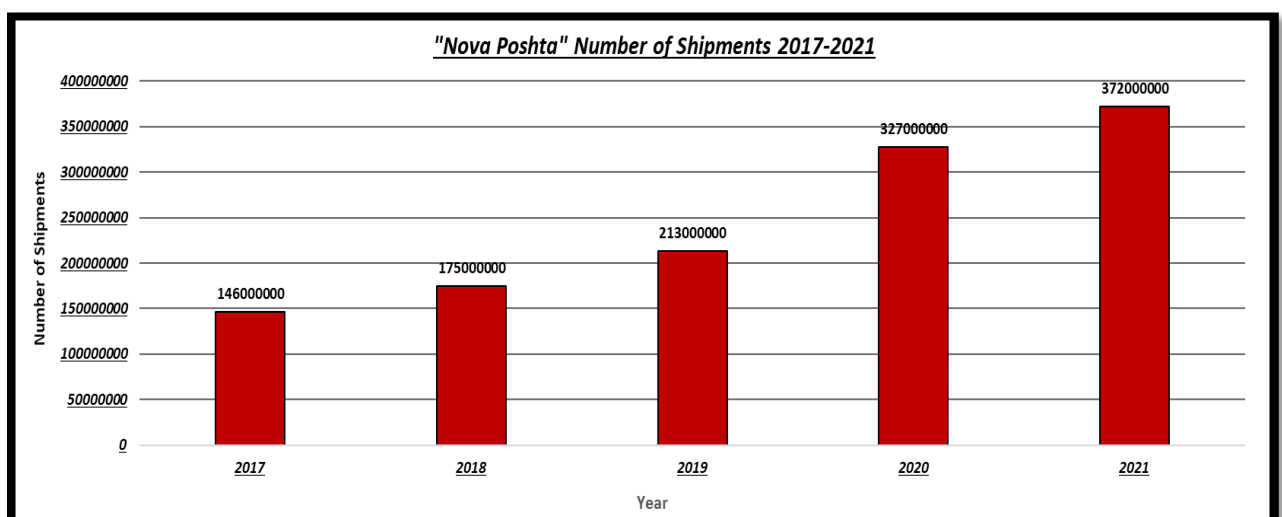


Figure 4 – «Nova Poshta» number of shipments in 2017-2021

Source: Developed by Vladyslav Marchenko

In order to better understand «Nova Poshta» efficiency, its key income indicators for recent years could be presented in a

convenient form of a column diagram in Fig. 5.

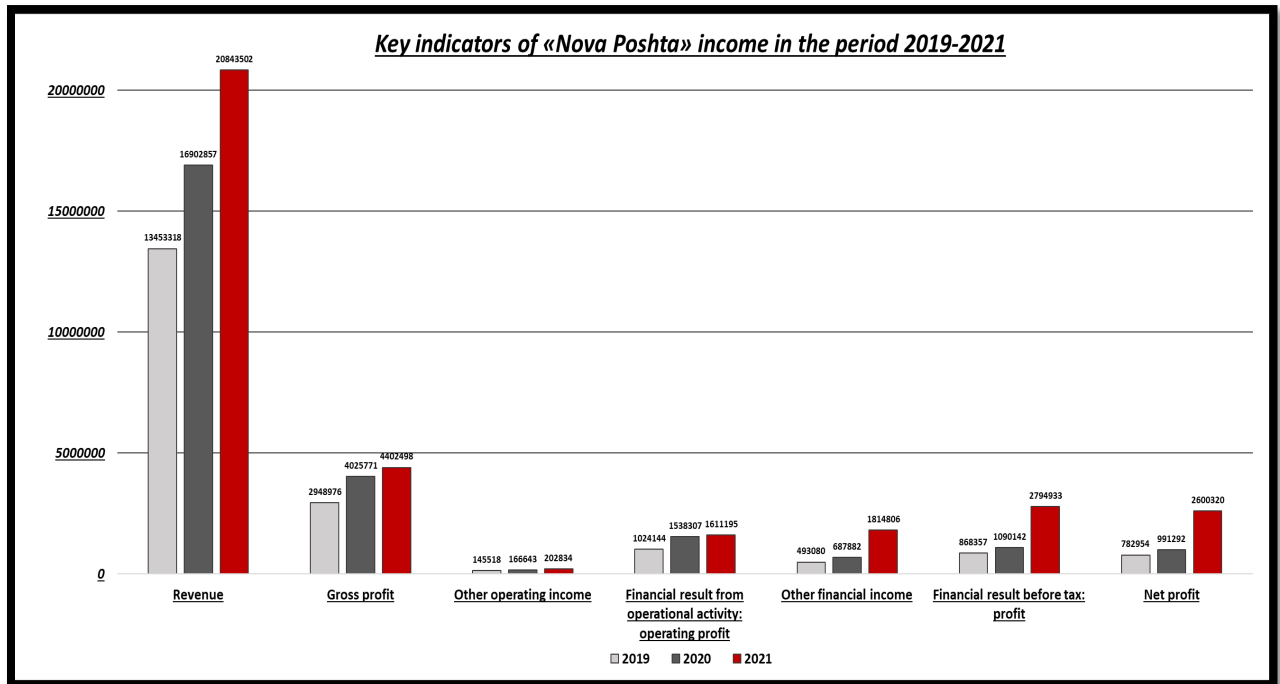


Figure 5 – Key indicators of «Nova Poshta» income in the period 2019-2021

Source: Developed by Vladyslav Marchenko

We can clearly see that all of the above indicators showed growth during this period, which of course demonstrates success, but some parameters had an average increase. No less interesting situation occurred with the

change of costs at «Nova Poshta». Similarly, to the previous case, the key cost indicators can be presented in the form of a column diagram in Fig. 6.

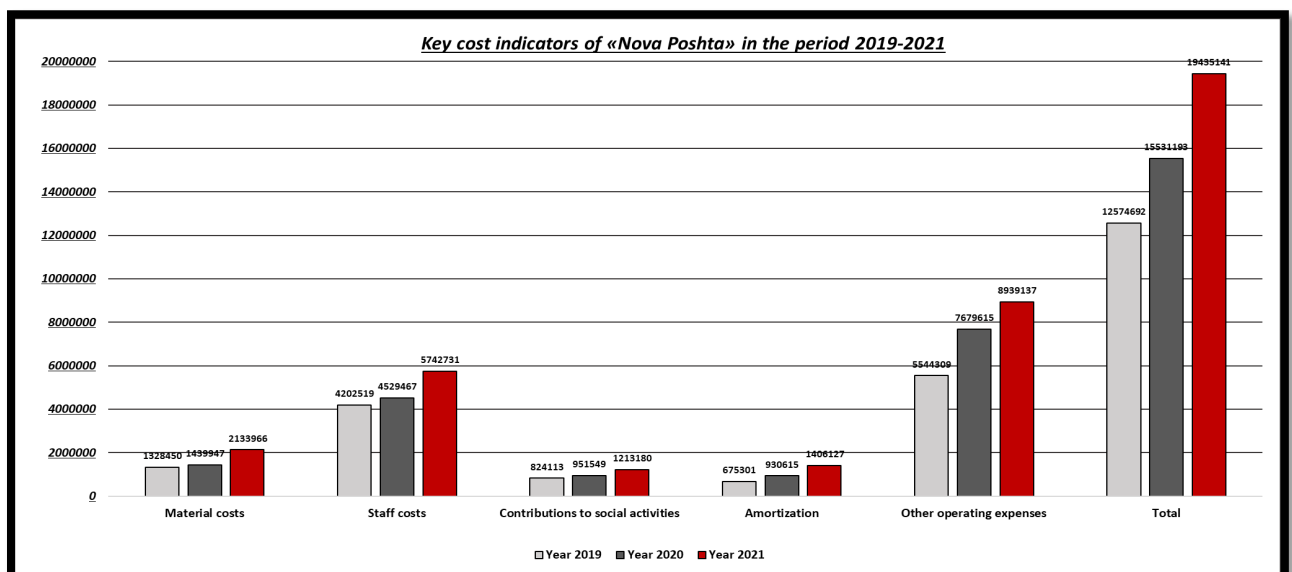


Figure 6 – Key cost indicators of «Nova Poshta» in the period 2019-2021

Source: Developed by Vladyslav Marchenko



The results demonstrate that «Nova Poshta» costs have also increased over these years. The main share of the company's expenses is represented by staff costs and other operating expenses. Of course, this was first and foremost due to the opening of a large number of new branches, a rapid increase in the number of shipments and services. The «COVID-19» pandemic also had a significant impact on this process.

An important practical step that will give us the opportunity to better understand this company and realise its major prospects, features and opportunities will be a SWOT analysis. Although this analysis is relatively simple, it is essential, as it allows us to compare the company's weaknesses and strengths, find opportunities for its future development and identify the main threats to the company. SWOT analysis of «Nova Poshta» company is presented in the Fig. 7.

		Positive	Negative
<b>Internal</b>	<b>STRENGTHS</b>	<ul style="list-style-type: none"> <li>● A wide range of services;</li> <li>● Very flexible pricing policy;</li> <li>● High quality of services, propositions and business offers;</li> <li>● Extensive work experience, both in Ukraine and on the international market;</li> <li>● Powerful network of branches and warehouses.</li> </ul>	<ul style="list-style-type: none"> <li>● Quite high prices for some services of the company;</li> <li>● Insufficiently complex marketing activity;</li> <li>● High workload for employees in some job positions;</li> <li>● Many employees do not have work experience;</li> <li>● Very simple «green» development strategy.</li> </ul>
	<b>EXTERNAL OPPORTUNITIES</b>	<ul style="list-style-type: none"> <li>● Innovations and robotics;</li> <li>● e-Commerce development;</li> <li>● Artificial intelligence;</li> <li>● Digitization;</li> <li>● Entering the markets of other neighboring countries;</li> </ul>	<b>THREATS</b>
<b>External</b>			<ul style="list-style-type: none"> <li>● Strong market players in Ukraine;</li> <li>● Aggravation of the economic, social, political and military situation in the country;</li> <li>● Rising prices for fuel;</li> <li>● Powerful competitors on the international market in other countries;</li> <li>● Complication of customs procedures;</li> </ul>

Figure 7 – SWOT analysis of «Nova Poshta»  
 Source: Developed by Vladyslav Marchenko & Dmytro Bugayko

Having identified the main parameters of all four categories, we carried out a more detailed research by creating a SWOT analysis matrix in Fig. 8.

The analysis showed that this company was able to succeed in the market by creating a system of reliable and efficient logistics services that focus on the key needs and desires of the people. The company's broad experience and well-thought-out flexible pricing policy allowed it to compete with other Ukrainian market players, quickly adapt

to various changes and develop rapidly. In order to remain highly mobile in this era of advanced technology, «Nova Poshta» must pay attention to its digital transformation and the introduction of modern computer systems. It is necessary not only to expand the company's transport network, but also to continue to comprehensively develop a system of tracking the stages of logistics operations.

External Internal	Internal Strength (S)	Internal Weaknesses (W)
External Opportunities (O)	<p><b>«SO» Strategy:</b></p> <ul style="list-style-type: none"> <li>- The introduction of modern Innovations, robotics and artificial intelligence into the company's activities will help it not only to create a large number of new services and offers, but also to bring their quality to a completely new level;</li> <li>- The company's comprehensive digitalization and consolidation of «Nova Poshta» LLC in the e-Commerce segment will allow it to maintain its flexible pricing policy and increase its experience;</li> <li>- The development of a powerful network of branches and warehouses will allow the company not only to increase its global competitiveness, but will also serve as an effective factor when entering the markets of neighboring countries.</li> </ul>	<p><b>«WO» Strategy:</b></p> <ul style="list-style-type: none"> <li>- Implementation of ecological innovations will allow «Nova Poshta» LLC to improve its «green» development strategy, and the use of robotics will provide an opportunity to simplify the work process for many employees;</li> <li>- Development in the direction of e-Commerce will allow the company to improve its marketing activities;</li> <li>- The introduction of modern AI into the company's activities and the digitization of many processes will significantly simplify the process of training new employees;</li> <li>- Qualitative consolidation of the company on the international market will make it possible to lower prices for various services in the future.</li> </ul>
External Threats (T)	<p><b>«ST» Strategy:</b></p> <ul style="list-style-type: none"> <li>- The company should continue to develop its services in various directions, since, with the emergence of a powerful player with new offers, «Nova Poshta» will continue not only to earn profits, but also to optimize the business to new high standards;</li> <li>- Continuation of the formation of a very flexible pricing policy of the company will allow it to quickly adapt to fuel price increases;</li> <li>- Establishing the price-quality principle will allow it to compete with representatives of other countries;</li> <li>- Powerful network of branches and warehouses will allow the company to quickly adapt to complicated customs procedures;</li> <li>- Extensive work experience will allow «Nova Poshta» to cope with various types of challenges.</li> </ul>	<p><b>«WT» Strategy:</b></p> <ul style="list-style-type: none"> <li>- The use of the «price-quality» system and constant adaptation to market changes will allow the company to qualitatively increase its competitiveness and recognition among citizens;</li> <li>- The introduction of innovations in the company's activities and the development of an effective training program for employees will allow a quick response to the complications of customs procedures or other problematic periods in the country;</li> <li>- The gradual development of the «green» strategy will allow the company's system to be balanced between different types of energy resources, and the mass introduction of «green» technologies will allow to reduce costs, significantly saving electricity and reducing the cost devoted to expensive fuel during energy crises.</li> </ul>

Figure 8 – SWOT analysis matrix of «Nova Poshta» company  
 Source: Developed by Vladyslav Marchenko & Dmytro Bugayko

The SWOT analysis of the company performed in this article has confirmed that «Nova Poshta» is a truly powerful representative of the Ukrainian express delivery market, which has great opportunities and prospects. Today, the company has a huge number of serious strengths, while its weaknesses are not critical. In our time, the threat to «Nova Poshta» may be the rapid development of its competitors or the emergence of other powerful players in the market that will be able to take the company's share of customers. For this reason, «Nova Poshta» needs to constantly take care of its progress and comprehensive improvement. There is no doubt that the company needs to continue to work hard to implement the concept of sustainable development step by step in its business activities. Today, sustainability

should be an integral part of developing corporate strategy [4].

And that is why this company sees incredible undiscovered potential in achieving sustainable development goals. «Nova Poshta» wants to implement both its own ideas and projects in this area and cooperate with other international companies and organisations.

More and more companies are now turning their attention to «green» development, as in case of its proper realization, it can not only help solve the above mentioned global problems, but also increase their income, improve their image and attract new customers. The implementation of such «green» initiatives and projects is widely supported by various investors and sponsors today.

«Nova Poshta» clearly understands its role, place and responsibility in this system

and is ready to move in this direction. The company aims to take various important steps to minimise the negative impact of its business activities.

«Nova Poshta» spends a lot of effort to remain a modern company with a good reputation. This makes it attractive to investors, shareholders, partners and customers. It tries to fully satisfy everyone, both ordinary citizens and other business representatives. The company wants each of its employees to be able to show their positive skills and strong sides, to fully realise their undiscovered potential. «Nova Poshta» is working to improve the image of Ukraine, representing our country around the world. Its movement towards sustainable development can set a positive example for other business representatives in terms of how to conduct their activities.

«Nova Poshta» has studied in detail the Sustainable Development Goals adopted at the UN Summit in 2015. That is why it is creating an effective management system

which is based on a balance of environmental, economic and social aspects. The responsibility for realization of the concept of sustainable development in the company lies on its employees and administration. They develop relevant plans and formulate the company's policy. The company's heads and department directors closely monitor the implementation of the provisions and principles of sustainable development in its operations.

«Nova Poshta» always tries to integrate the key aspects of the sustainability concept in the most thoughtful way, qualitatively implementing them in its processes. In the future, the company wants to achieve all seventeen goals. Despite the fact that it will not be easy, it is already possible to note that today, thanks to its work, the company has managed to achieve a significant number of them. Sustainable development goals achieved in «Nova Poshta» projects can be seen in Fig. 9.

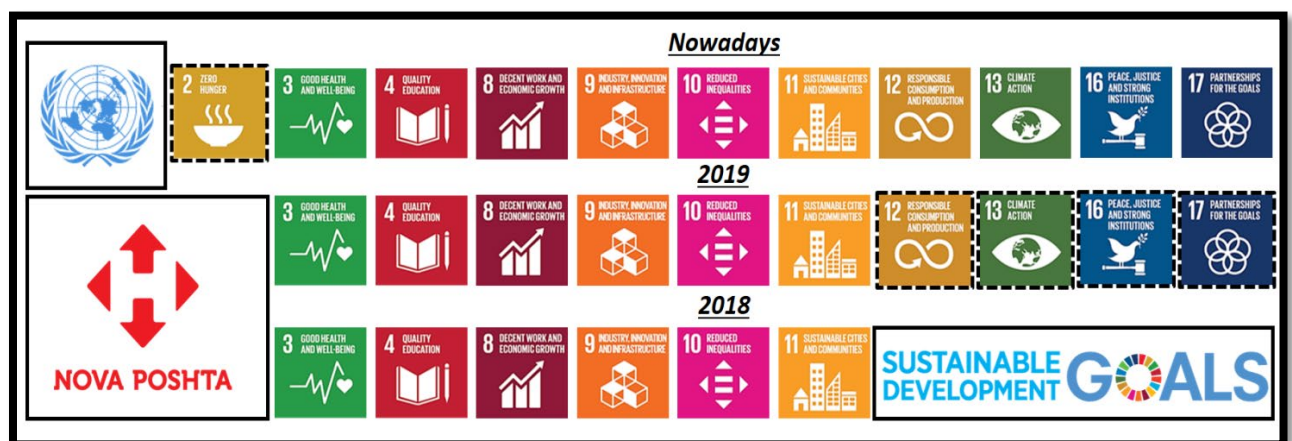


Figure 9 – Sustainable development goals achieved in «Nova Poshta» projects

Source: Developed by Vladyslav Marchenko

A more detailed analysis of the company's activities in this sphere shows that it: «Goal 2» - implemented a big project to deliver food packages to the elderly during the «COVID-19» pandemic; «Goal 3» - uses a health insurance programme for its employees and was one of the first to help medical institutions during the pandemic; «Goal 4» - works to raise the level of education

of its employees and has developed many relevant projects; Goal 8 - cares about its employees, creates and improves working conditions for them; «Goal 9» - invests a lot of money in improving its infrastructure; «Goal 10» - cares about the code of corporate ethics, promotes a healthy lifestyle and does not tolerate discrimination; «Goal 11» - increases the accessibility of its services to local

communities and develops them through humanitarian and educational initiatives; «Goal 12» - recycles waste and strives to achieve the most efficient use of resources; «Goal 13» - optimises its operations to minimise greenhouse gas emissions; «Goal 16» - helps to implement humanitarian projects aimed at restoring peaceful life in

Ukraine; «Goal 17» - cooperates with other market players and various government organisations to achieve sustainable development goals. «Nova Poshta» is so effective in this field because of its fundamental practices, which are shown in Fig. 10.

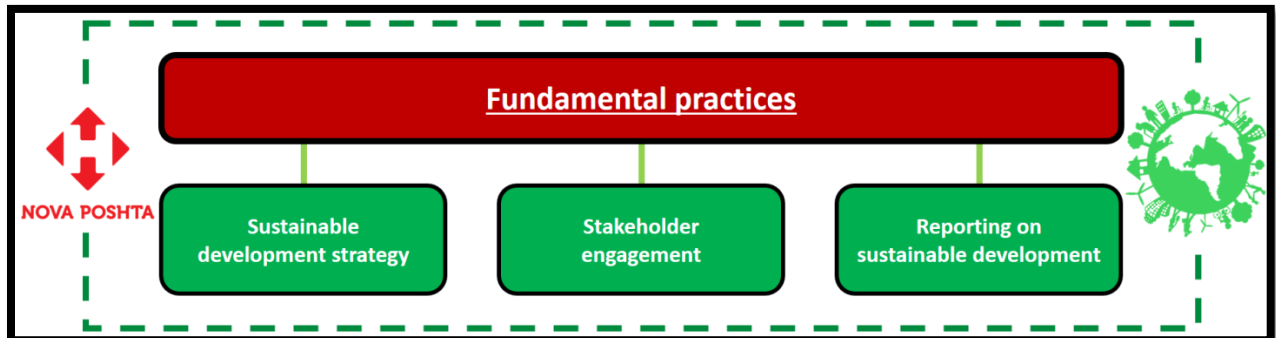


Figure 10 – Fundamental practices of «Nova Poshta» company

Source: Developed by Vladyslav Marchenko&Dmytro Bugayko

In order to write this article, a large number of company reports and various official sources of information were analysed. After reviewing and studying the company's sustainability reports, it was found that «Nova

Poshta» focuses its «green» activity on the following three key areas: Energy saving, 3R principle and CO<sub>2</sub> emissions, which can be seen in Fig. 11.



Figure 11 – The main areas of the company's «green activity»

Source: Developed by Vladyslav Marchenko

In the last years, the company has spent a lot of time implementing a modern electricity accounting system as well as developing a set of energy consumption rules, which is also important. The company's decision to install new LED lamps and replace obsolete lighting

sources with better analogues has enabled it to save resources. And the continuous process of installing modern energy-efficient heaters has enabled the company to cut costs during the heating season.



No less important step was the establishment of the «3R» principle, which is based on the norm: 1. Reduce; 2. Reuse; 3. Recycle.

In the case of «Reduce», the company rejected to use foam and presented a new, modern packaging in the form of a special box-transformer with different height parameters. Equally important was the decision to optimise the boxes, which made it possible to significantly reduce the use of the company's finances and resources. For general «Tube 120» by 4%, and for «Tube 60» by as much as 33%, which is a very good result.

In the case of «Reuse», a positive decision was to launch a promising project aimed at the reuse of different cardboard boxes. This initiative showed great success, as only in the first 2 months from the start of the project, the company managed to reuse 16.5 thousand boxes.

And in the case of «Recycle», a good initiative was the expansion of the project on high-quality installation of recycling containers at the points of delivery, the example of which can be clearly seen in Fig. 12.



Figure 12 – Example of company's recycling bins

Source: <https://rubryka.com/2020/01/28/np-zbyraye-vtorsyrovynu-u-viddilenyah-diznaly-novi-detali-pro-initsiatyvu/>

According to the company's statistics, a huge number of delivery points from all over the country have taken part in this promising project. As a result, more than 1500 points of delivery have been equipped with them by now, which is undoubtedly an excellent indicator. Moreover, it is important to remember that the company has recently started to install additional units in various sorting centres, which will certainly improve the result even further. Based on the latest available statistics from the company's sustainable development report, in 2020, it collected and sent 278501 kg of polyethylene and 1913403 kg of waste paper for recycling.

This has really shown a certain progress in increasing these indicators.

And the last very important question in the field of ecology that this company really cares about is carbon dioxide emissions into the atmosphere. The decarbonisation of the logistics sector is of critical importance, since for a long period of time it has traditionally been powered by fossil fuels. When they are burned, large amounts of carbon dioxide are released into the atmosphere. This leads to environmental pollution, climate change and air quality deterioration. At present, the importance of decarbonisation is becoming absolutely clear to more and more people. This procedure involves a large number of

important steps: the use of different environmentally friendly energy sources, optimisation and improvement of supply chains, application of «green» technologies, implementation of circular economy principles, etc.

Such a serious evolutionary step requires comprehensive approaches that include new policies, technological advances, and stakeholder engagement. Today, governments around the world have begun to legislate emissions targets and establish carbon pricing mechanisms. Logistics businesses have begun investing in electric vehicles, exploring alternative fuels, optimising their transport networks and improving energy efficiency. Today, customers are interested in products that are produced and transported in a sustainable manner.

Without a comprehensive effort to decarbonise logistics, humanity risks facing a climate crisis, severe regulatory pressure and an erosion of public confidence in terms of finding a balance between environmental protection and fast industrial progress. The logistics sphere must continue its course

towards decarbonisation, which will be achieved through «green» technologies and innovations, awareness of our responsibility and commitment to environmental protection.

The worsening of the situation with environmental pollution is connected with the irrational use of resources and the unwillingness of various enterprises to adjust their complex operational activities in accordance with new, modern environmental tendencies. Environmental pollution is a global threat to all of humanity. At present, the logistics sector has a huge effect on the environment, and therefore it is important to find effective ways to minimise this impact. The core advantage of «green» logistics direction development today is that it is based on the most reliable, safe and efficient technological processes.

«Nova Poshta» optimising delivery routes, using higher European fuel standards, and replacing outdated vehicles with more efficient models. In 2020, out of more than 5800 transport vehicles, only 25% had «Euro 3» or lower standard, which can be seen in Fig. 13.

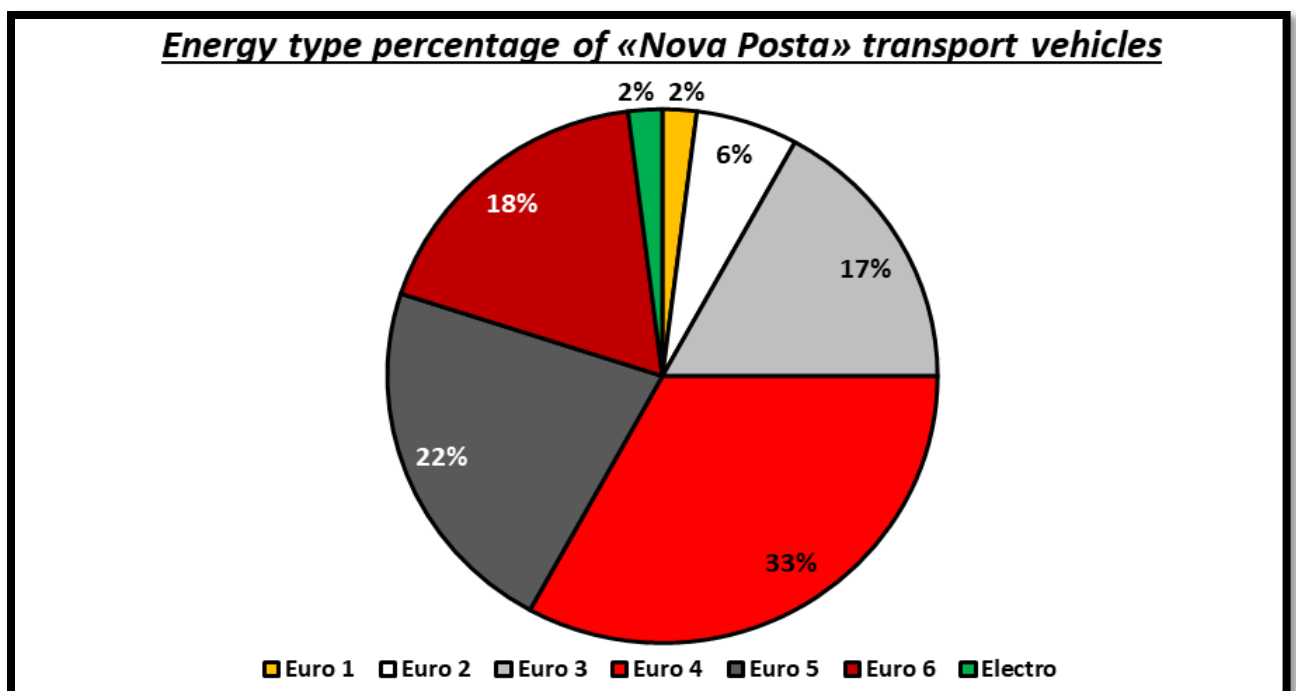


Figure 13 – Energy type percentage of «Nova Poshta» transport vehicles

Source: Developed by Vladyslav Marchenko

In this article, special attention was placed on demonstrating the importance of transport vehicles electrification, as this decision can significantly reduce carbon dioxide emissions. This paper is especially focused on this direction because, according

to the company's reports, only 2% of all its vehicles are electric, and these are not some big trucks that could deliver a large amount of cargo, but mostly ordinary electric scooters, which can be seen in Fig. 14.

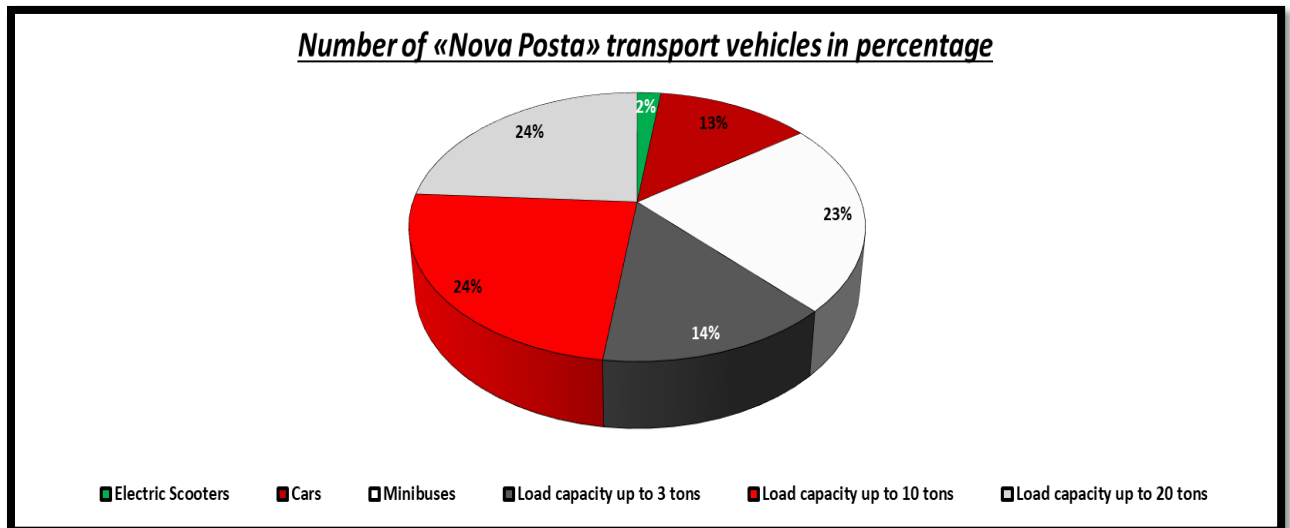


Figure 14 – Number of «Nova Posta» transport vehicles in percentage

Source: Developed by Vladyslav Marchenko

For logistics companies in Ukraine, the use of renewable energy sources, and especially the creation of strategic plans for the electrification of transport vehicles, is of great importance. The modern business strategy of the company should be supplemented by a plan of more intensive replacement of obsolete vehicles with new, more effective electric models. This path will not be easy. Taking into account the current situation in the country, it would be better to start with a special transitional phase - when the company will try to start moving in this direction, with the purchase of more efficient vehicles and the use of hybrid models, and then finally start to fully switch to electric transport. A great benefit is that today, «Nova Poshta» can easily obtain a lot of valuable information, recommendations and experience from such well-known international giants as «FedEx», «DHL» or «Amazon». They have already succeeded in implementing such initiatives and are planning many new projects, especially

«Amazon», which can be clearly seen in Fig. 15.

There are different efficient solutions that can make a company more sustainable. Some of the main examples are: the use of various «green» technologies; development of transport infrastructure; application of innovative ecological solutions; optimisation of the transport network; global development of multimodal transport; optimisation of traffic flows; replacement of obsolete vehicles with new powerful analogues; purchase of modern electric vehicles.

The last example is especially important, as it has great prospects. In our time, this option is gaining more and more popularity. The policy of gradual replacement of obsolete vehicles with modern, ecological models represents one of the most effective and practical ways in terms of «green» development of logistics companies. This process is not fast and simple, as it involves the application of new technological solutions and a significant re-equipment of different systems to modern innovative



models. Despite its complexity, many companies around the world have already begun to implement it, as they see the

«green» course as a new future philosophy of logistics.



Figure 15 – Example of «Amazon» electric transport initiative

Source: <https://autogeek.com.ua/amazon-pochynaie-ekspluatatsiiu-odrazu-300-elektrychnykh-furhoniv-rivian-u-yevropi/>

When implementing the idea of replacing the company's obsolete transport vehicles with new electric analogues, key examples of the benefits for «Nova Poshta» include: significant reduction in fuel costs; maximisation of quality, safety and reliability; the possibility of creating new services and offers; minimisation of operating costs; growth in labour productivity; reduction of costs for vehicles maintenance; minimisation of downtime costs; improvement of the company's image both in our market and abroad; creation of a powerful marketing strategy; increasing the environmental friendliness of its vehicles. At the same time, it is important to remember that electric vehicles have not yet reached their full potential. Despite the fact that they have a lot of serious advantages, we must not forget that they also have another side, with a list of drawbacks. If we are talking about their advantages, we can provide a really wide list of examples.

1. Price. Such transport is no longer something rare and expensive, as it was not so long ago. Every year, the number of such vehicles is growing, technologies are improving, and new manufacturers are appearing on the market. Competition

creates availability, good deals and discounts. The situation depends on the specific characteristics and model, but it is changing for the better side.

2. Reduced financial costs for fuel. Using an electric vehicle allows to stop buying expensive fuel on a daily basis and instead use ordinary electricity as a clean source of energy, which is much cheaper and more convenient. Nowadays, we see a new wave of the energy crisis, and that is why electric vehicles are highly relevant.

3. Ease of maintenance. These vehicles are safe, reliable and do not require the same high level of comprehensive maintenance as regular vehicles, as they simply do not have a large number of components and parts that need to be replaced regularly or constantly monitored. In addition, they do not require as much financial investment as ordinary transport.

4. Low noise level. Unlike very noisy vehicles with an internal combustion engine, electric vehicles are very quiet.

5. Novelty. Society's demand for innovation and the implementation of the green course allows manufacturers to improve these vehicles at a very fast pace, use

various technical solutions, create new models, etc.

6. Security. The most modern video surveillance systems control access to transport and monitor its condition. Security and anti-theft alarms are installed in electric vehicles. There is simply no such thing as a fuel leak in the event of an accident, which means there is no high risk of fire or explosion. In addition, in case of a severe collision on the road, airbags are deployed in such vehicles to save the driver and passengers. The built-in equipment in the vehicle is standardly programmed to automatically disconnect the battery in order to completely stop the vehicle even in such difficult situations.

7. Popularity. Nowadays, electric transport is a new vector of vehicle development, which is considered by society as a new effective and fashionable solution. A huge number of world stars, singers, actors and other people buy them in order to be in the trend of events and stand out from the crowd, showing that they are part of modern society and keep up with the times.

8. Environmental friendliness. Electric vehicles do not have an internal combustion engine but are powered by a battery. Their activity is characterised by the absence of exhaust emissions, and this aspect is very important for environmental protection.

When considering the disadvantages of electric vehicles, a number of quite obvious drawbacks can be identified.

1. The battery. Despite the fact that the situation in this area is improving and its characteristics are getting better, we state that electric vehicles still cannot achieve the same high level of operational performance. Although there is progress in this regard, but it is usually related to individual companies and their luxury models.

2. Slow charging. Nowadays, time is a very valuable resource. When using a standard 220V network, the charging process can take several hours. On the other hand, by using specialised, modern stations, it is possible to fully charge the battery in 50 minutes, which

is much better, but in today's realities, it is still a lot.

3. Not cheap batteries. In our time, the popular warranty period provided by the manufacturer usually ranges from five to eight years. It's important to remember about the process of gradual decrease in battery capacity, which happens slowly but still occurs over a certain period of time. Moreover, different experts emphasise the sensitivity of such batteries to temperature, stating that their capacity decreases during cold periods, and that is why owners need to take this factor into account when they are planning some activities. It is important to be aware of personal needs and the mode of vehicle operation. Reduced vehicle performance in the future can force the client to replace the battery with a new one.

4. Insufficient number of charging stations. When in many EU countries their number has increased significantly, in Ukraine these indicators are still very low, and this is a really serious minus. Besides, we should not forget that in most cases these are ordinary, slow charging stations, not fast ones. In small towns or villages, there are usually no specialised charging stations, so the only real way out of this situation in such places remains charging the vehicle from a regular outlet, whether in the office or at home.

5. Limited speed. Currently, in most cases, the maximum speed of electric transport is represented by a range of 80-100 km/h, as this mode of operation saves battery power. That is why it is important to take this factor into account.

6. Limited range. Such transport, depending on the model and configuration, on a single charge can usually drive from one hundred kilometres to two hundred and fifty. Today, it is quite difficult to achieve much greater results.

Thus, thanks to the conducted analysis of the main advantages and disadvantages of electric transport, it can be stated that these vehicles can already bring their owners a great number of benefits. But, at the same time, we should not forget about the

mentioned limitations. Of course, most of these key problems are directly connected with the transitional technological and service period and will definitely be gradually resolved.

Taking into account all these important factors, the company realised that if it wants to maintain its leadership in the express delivery market, it must start preparing for such major changes now.

Today, it represents a very powerful and active company which, over the many years of

its operation, has been able to learn how to adapt very quickly and effectively to any difficulties. For this reason, «Nova Poshta» regularly discusses the great prospects of the «green» course in logistics. A positive signal for such changes is that in recent years we have seen huge investments in decarbonisation technologies, which is shown in Fig. 16.

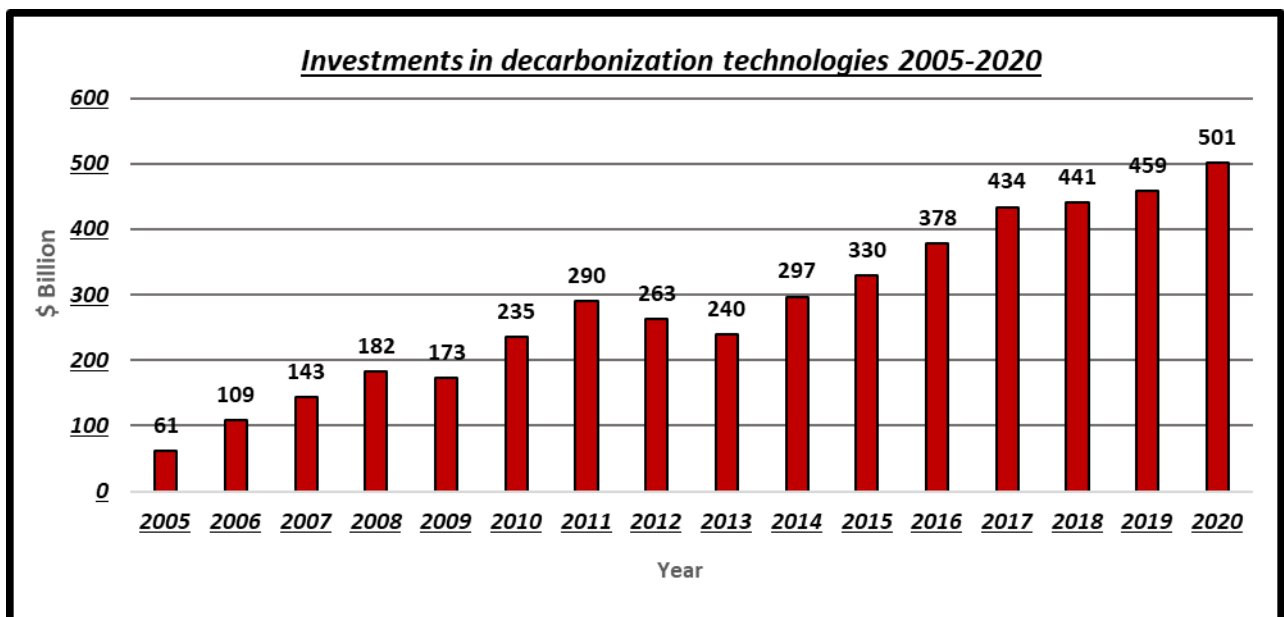


Figure 16 – Investments in decarbonisation technologies in 2005-2020

Source: Developed by Vladyslav Marchenko

Comparing each year with the previous one, it becomes clear that the only moments of decline in the last years were in 2009, 2012 and 2013. The largest share of these investments goes to renewable energy. Moreover, since 2006, the electrification of heat supply has played a much more important role. We can observe a very positive

growth in investment in electric transport starting from 2016 and up to 2020.

Returning to the Ukrainian situation, we can highlight the waves of growth and decline in the level of investments in renewable energy sources, as shown in Fig. 17.

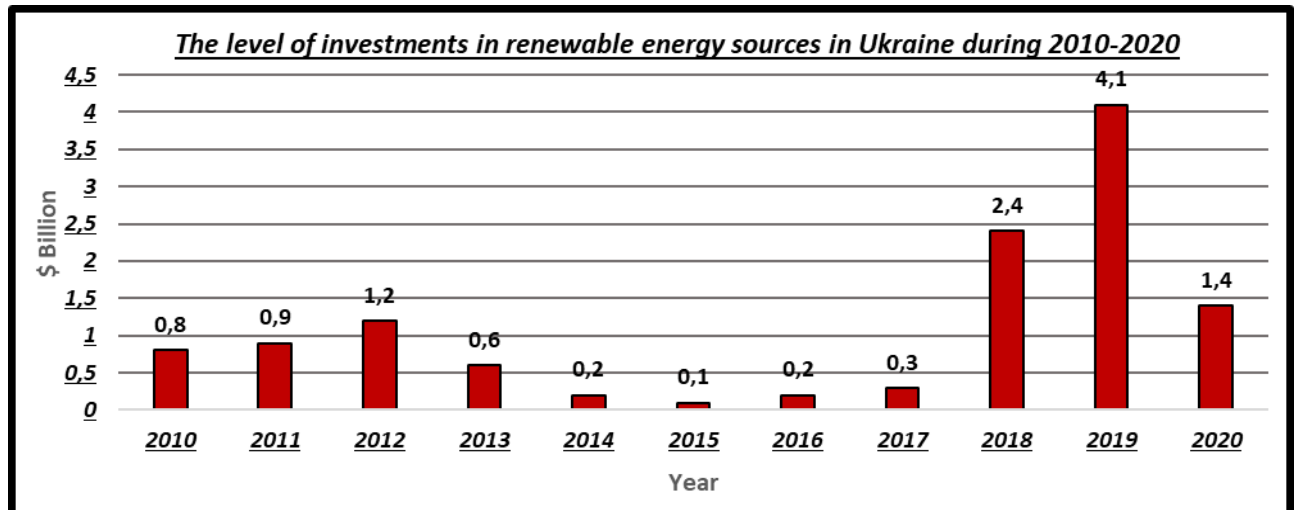


Figure 17 – Investments in renewable energy sources in Ukraine during 2010-2020  
 Source: Developed by Vladyslav Marchenko

As we can see, a significant growth in 2010-2012 was followed by a decline in 2013-2015, and the beginning of an improvement in 2016-2019, then fell again in 2020. The question of reducing the level of greenhouse gases in the atmosphere remains a global problem that can only be solved through cooperation. Such a very important attempt was made by the UN Framework Convention

on Climate Change, which was strengthened a few years later by an additional document known as the Kyoto Protocol.

One of the reasons why changes are going slowly can be understood by looking at the system of established taxes. The carbon taxes policy in European countries in 2022 is shown in Fig. 18.

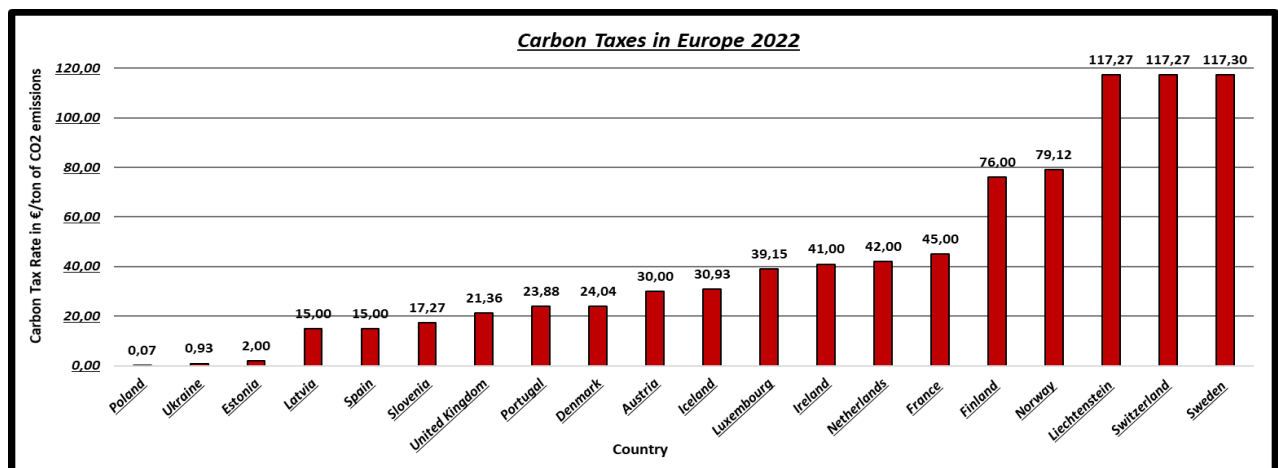


Figure 18 – Carbon taxes in Europe in 2022  
 Source: Developed by Vladyslav Marchenko

Based on all the data shown in the figure, it is possible to state that most of these countries have too weak tax policy. It is not able to force businesses to comprehensively move towards the implementation of a «green» course. In order to succeed in this process, countries need to develop a flexible system of transition period, when, on the one

hand, stricter requirements and norms will be set for business, and, on the other hand, positive benefits, assistance, investments, and various grants will be provided. Only such a model will be able to motivate people to act and make real decisions in this field.

It is also important to understand the situation on the market for electric and hybrid

vehicles. Many people are still sceptical about them, but in reality, such transport is incredibly promising. According to available statistics, in 2021, global sales of electric vehicles reached 6.75 million vehicles, which is undoubtedly a great result, as it is more than twice higher than the previous result. If in 2020 the share of electric vehicles (PHEV and BEV) in global car sales was 4.2%, in the next one it increased to 8.3%. It is worth noting that this includes not only ordinary cars or small commercial transport, but also so popular trucks. Analysing this issue in more

detail, it can be pointed out that the percentage of PHEV (29%) in the total sales of electric vehicles is much lower than that of regular BEV (71%). It is also impossible not to mention the negative impact of the «COVID-19» pandemic, during which in 2019 and 2020 the development of this market was slowed down and the initially expected results were not achieved. Only in 2021, when the world gradually recovered and adapted to the new realities, the positive dynamics continued. BEV + PHEV sales (by region) is shown in Fig. 19.

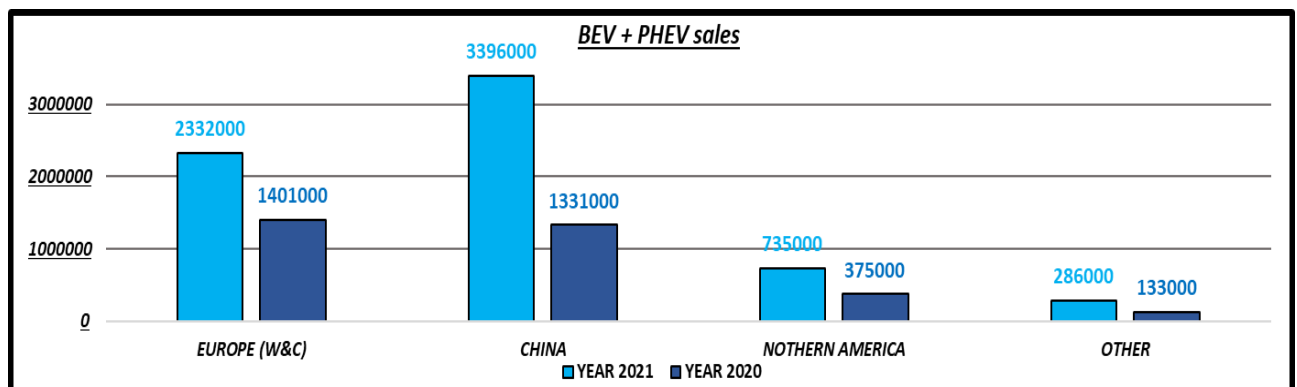


Figure 19 – BEV + PHEV sales (by region)  
Source: Developed by Vladyslav Marchenko

Comparing 2021 and 2020, we can see a sharp increase in China's indicator. If in 2020 the number of sales in it was slightly lower than in Europe, in 2021 its indicator more than

doubled, while Europe increased by 66%. Registration of new EV by region can be seen in Fig. 20.

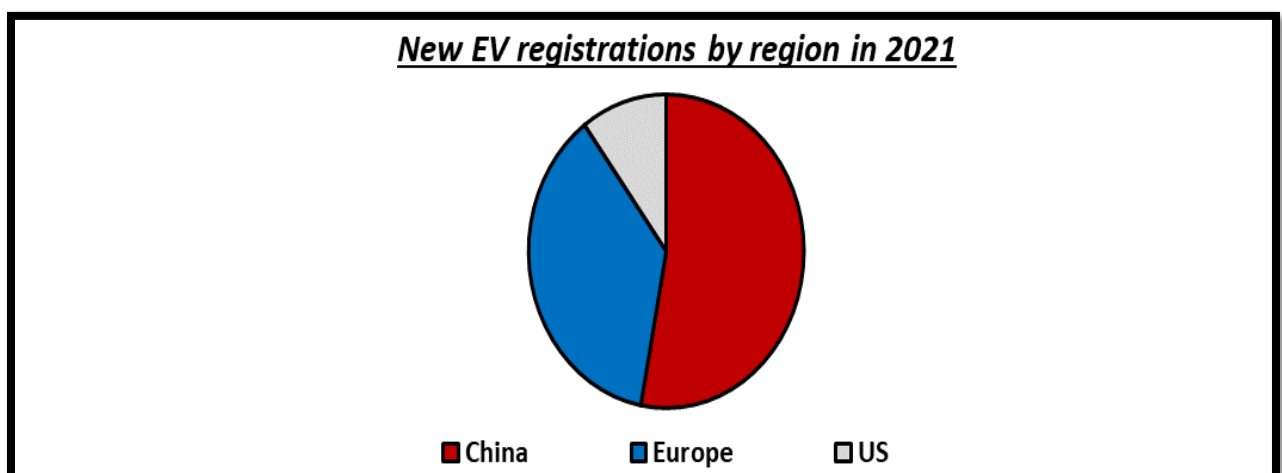


Figure 20 – New EV registrations by region in 2021  
Source: Developed by Vladyslav Marchenko & Dmytro Bugayko



Thus, in 2021, China was in first place with 3.3 million units, Europe was in second place with 2.3 million units, and the US was in third place with 630 thousand units. If we consider

European countries, the leading markets are: Sweden, Norway, Germany and Iceland. Global BEV & PHEV sales and EV market share in 2013-2021 can be seen in Fig. 21.

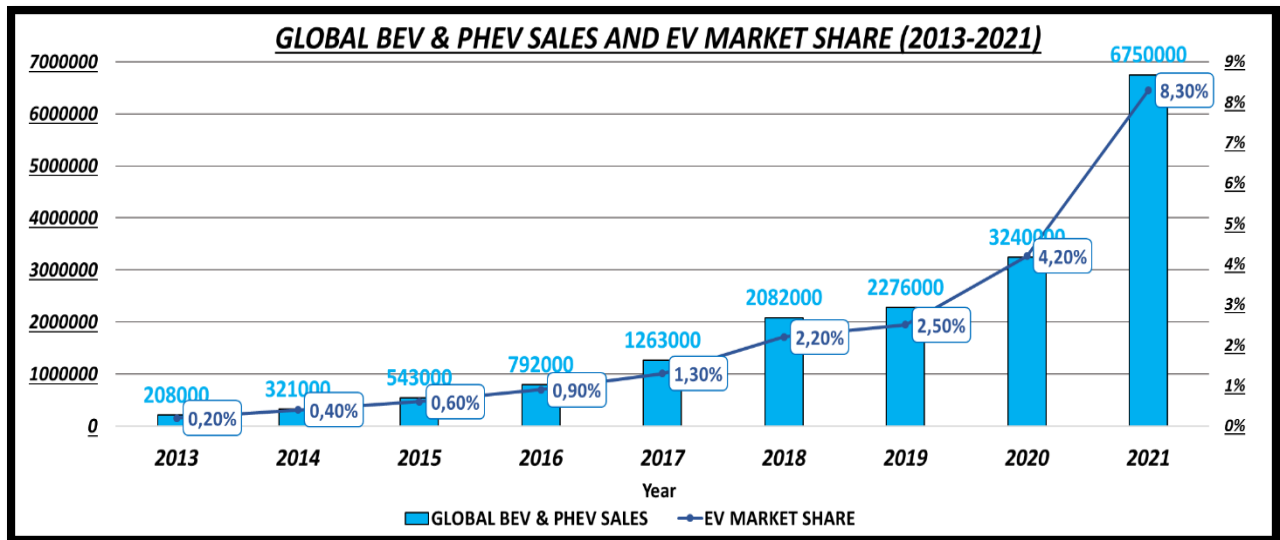


Figure 21 – Global BEV & PHEV sales and EV market share in 2013-2021  
Source: Developed by Vladyslav Marchenko

The greatest increase in EV market share compared to the previous year was in 2018, 2020 and 2021. And in the case of global BEV and PHEV sales, it was in 2015, 2018 and 2021.

Based on the information above, it is possible to state that a gradual transition to modern electric vehicles is one of the key decisions needed to achieve the future goal of zero emissions. In order to counteract the global challenges mentioned in this article, companies need to use modern «green» technologies to decarbonise their business activities. The logistics industry has already begun to fully prepare for such serious changes. At the same time, we should not have any illusions that this process will be quick and easy. On the contrary, it will be very difficult. The set goal is absolutely real, but complex. Taking all these things into account, it is clear why sustainable development is so important today. This article is a logical continuation of the authors' publications on sustainable development [5-8].

**Conclusions.** As a result of the research carried out in this article, all the set tasks have been completed. In this work, we have

explained that such problems as environmental pollution, climate change and depletion of earth's resources are global in scale. In this paper, their seriousness and threat were highlighted. It was pointed out that the long-term policy of ignoring these problems by humanity has only worsened the current situation. In order to overcome these problems, or at least slow down their pace, comprehensive efforts are needed. In this article, the importance of the concept of sustainable development was explained as one of the most promising solutions. Much attention was paid to its realisation in the logistics industry. In this article, the «Nova Poshta» company and its «green» activities were researched in detail. In this work, it was emphasised that this successful company perfectly demonstrates a wide range of possible directions for realisation of the concept of sustainable development in the logistics sphere. Particular attention in this paper was paid to the use of «green» technologies in order to decarbonise the activities of logistics companies. In this article, it was not only explained the importance of

this process, but also paid attention to the high prospects of using electric transport, explained its key advantages and disadvantages. After analysing the situation in this market, positive trends for its future development were noted. In addition, this paper emphasises that Ukrainian companies can borrow significant experience from global leaders that have already succeeded in this area. Special attention was paid to the need to develop a flexible transition system, when, on

the one hand, stricter requirements and norms will be set for business, and, on the other hand, positive benefits, assistance, investments and various grants will be provided. The paper points out that the implementation of this idea is realistic, but complex. As a final result, it was stated that sustainable development is of great importance today and that is why it is very important to continue to research and develop this concept.

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## **THE IMPACT OF THE SAFETY INDICATOR ON THE POSSIBILITY OF THE AIRLINE JOINING THE STRATEGIC ALLIANCE**

**Taghiyev Tahir Taghi, Damirov Mahir Rasim, Bugayko Dmytro.** *"The Impact of The Safety Indicator On The Possibility Of The Airline Joining The Strategic Alliance".* The airlines themselves and competent civil aviation organizations constantly monitor and improve activities aimed at improving safety. Safety reports are constantly being printed, all cases of disasters and incidents are thoroughly investigated, and the results of the investigation are published in the open press. This gives people the opportunity to decide which airline they will use. Along with safety, users are also interested in the issues of self-replacement achievement of the scheduled item, comfort and quality of service during the flight, convenience of the schedule and the possibility of easily purchasing a ticket for the flight of interest. As ties between countries expanded, tourism developed and more and more people wanted to get acquainted with the culture and history of other peoples. The number of trips has increased many times and there is a need to reduce travel time. It is clear that one, even a large airline, if chosen by a passenger, cannot cover all continents and countries of the world, not to mention cities. Hence the need for airline interaction in order to jointly provide passengers with the opportunity to catch up with the intended goal with the least cost and time. If at the beginning of the airline achieved these goals by concluding bilateral agreements such as interline or code-sharing, then further tightening of competition led them to the idea of creating associations of airlines – alliances. As you know, today there are three global alliances in the world, under the control of which there are more than 60% of air transportation in the world.

*This is Star Alliance, One world and Sky Team. Currently, many airlines are seeking to join one of these alliances, but for this they must meet certain requirements and one of them is – high level of security.*

**Keywords:** security, route network, airline, alliance, rating, airport

**Тазієв Тахір Тагі, Даміров Махір Расім, Бугайко Дмитро. «Вплив індикатора безпеки на можливість приєднання авіакомпанії до стратегічного альянсу».** Авіакомпанії та компетентні організації цивільної авіації постійно контролюють та вдосконалюють діяльність, спрямовану на підвищення безпеки. Звіти про безпеку постійно друкуються, всі випадки катастроф та інцидентів ретельно розслідуються, а результати розслідування публікуються у відкритій пресі. Це дає людям можливість вирішити, яку авіакомпанію вони використовуватимуть. Поряд із безпекою, користувачів також цікавлять питання заміни дати запланованого рейсу, комфорту та якості обслуговування під час польоту, зручність розкладу та можливість легко придбати квиток на цікавий рейс. В процесі розширення міжнародних зв'язків між країнами активно розвивався туризм, і все більше людей хотіли ознайомитись з культурою та історією інших народів. Кількість поїздок багато разів зростала, і потрібно було скоротити час подорожі. Зрозуміло, що одна, навіть велика авіакомпанія, якщо її обирає пасажир, не може охопити всі континенти та країни світу, не кажучи вже про міста. Звідси необхідність взаємодії авіакомпанії, з метою спільного забезпечення можливості забезпечення широкої географії польотів з найменшими витратами та часом. Якщо на початку авіакомпанії досягали цих цілей шляхом розвитку двосторонніх угоди, таких як інтерлайн та код шер угоди, потім подальше посилення конкуренції призвело їх до ідеї створення асоціацій авіакомпаній – альянсів. Як відомо, сьогодні у світі існує три глобальні альянси, під контролем яких понад 60% повітряних перевезень у світі. Це Star Alliance, Oneworld та Sky Team. В даний час багато авіакомпаній прагнуть приєднатися до одного з цих альянсів, але для цього вони повинні відповідати певним вимогам, і одна з них – високий рівень безпеки.

**Ключові слова:** безпека, маршрутна мережа, авіакомпанія, альянс, рейтинг, аеропорт.

**Introduction.** The assertion that aviation — is the safest mode of transport is already axiomatic. According to the International Air Transport Association (IATA), over 15 billion passengers were transported by air in 2019-23. As a result of accidents during this transport, 926 people were killed (in the number not included in the process of military transportation). Except for 176 passengers killed in a Ukrainian plane shot down in Tehran (IR) in 2020, which took place not due to the fault of air transport enterprises, this number is 750 people. As noted in the UN General Assembly, this figure is even higher in road transport (about 1.3 million people).

Of course, these figures do not objectively reflect the real situation, as if some 4.5 billion people are transported annually by air, the number of passengers transported by rail and road is now transported, many times more. Thus, in Azerbaijan alone, 1.5 million

passengers are transported annually by these modes of transport. In this regard, let us turn to figures that more objectively reflect the situation. If on air transport for every 160 million km (100 million miles) the number of deaths is 0.6, this figure in rail transport is 0.9 and 1.6 in road transport. It should also be noted that the latter figure is not included in motorcycles and mopeds. In these two modes of transport, 160 million km of deaths reach 42. Thus, it can be concluded once again that air transport – is the safest mode of transport.

**Presentation of the main results.** The high level of safety in air transport is due to the fact that this issue is the most important, even an absolute indicator of the industry. All other indicators – economic, environmental, social, etc., directly depend on the level of security. It is for this reason that from the first moments of the operation of air transport as an independent industry of countries and the

world economy as a whole, much work has been done and continues to be done towards bringing security to a high level and maintaining it's at this level. These include making appropriate adjustments to the design of aircraft, training flight and maintenance personnel at a higher level and regular retraining throughout their entire period of operation, carrying out repair work at a higher level, improving fuel quality and other issues.

It should be noted that the rigidity of competition in civil aviation also forces airlines to pay attention to maintaining a high level of security. This issue is one of the main priorities of ICAO (International Civil Aviation Organization). ICAO pays serious attention to the continuous improvement of aviation activities, as well as the control and management of aviation security of its member states. For other associations existing in world civil aviation, including IATA, European Civil Aviation Conference (ECAC), uniting more than 44 CA administrations, African Civil Aviation Commission (ACAC), with 54 members, Latin American Civil Aviation Commission (LACAC), which brings together representatives of 20 countries and others, security issues are also a priority in their activities.

It is known that safety in aviation consists of two parts:

- aviation security;
- flight safety.

Flight safety refers to navigation tasks performed in the management of air traffic and the provision of meteorological information. It should be noted that to date, the accident (collision of two aircraft in 1977), resulting in the death of the largest number of passengers (578 people), it was due to misunderstandings between the Spanish manager and the crew of the Dutch aircraft. Similar incidents have occurred in other parts of the world. For example, in Croatia, in 1976, two aircraft were found in the air as a result of an error by the dispatcher, killing 176 people. As a result of the error of the dispatchers there are cases of collision of aircraft with

mountains. In 1993 in North Macedonia (116 deaths), in 1997 in Indonesia (234 deaths), etc. The examples given show that this part of the security problem is very important and there is always a need to take the work being done in this direction more seriously and to improve it.

The second part of the security problem – aviation security – is related to the solution of broader issues. Here, in addition to the activities of the security services of airlines, the work of the relevant airport services, the activities of customs and immigration services and the correct establishment of relations between them are of great importance.

Observation of passengers from the moment of their entry into the airport, detection of persons wanted by law enforcement agencies and law enforcement agencies through the use of modern facial recognition systems, checking of baggage and the passenger itself without direct contact. The implementation of such conditions will allow, on the one hand, to ensure a thorough inspection of passengers, causing them a minimum of inconvenience, and on the other hand, will increase the capacity of airports by reducing time, spent on checking each passenger.

The urgency of the problem of increasing capacity for major modern airports and for the civil aviation sector as a whole is constantly increasing. Currently, the busiest airports in the world serve millions of passengers a year. This can be seen in the table below. Looking at the numbers in the table, we see that the 10 busiest airports in 2022 served more than 679.5 million passengers. According to IATA, about 3 billion passengers were transported in that year as a whole. Thus, 23% of all passengers transported were transported at least through one of these ten airports. On average, 1.86 million passengers pass through these airports in one day. Thus, each of these airports should receive and send an average of 7.75 thousand passengers per hour. Of course, checking them all is a complex technical and social problem in itself.

There is also an indirect effect of the widespread use of the above-mentioned systems. The departing and arriving passengers remain more satisfied as they spend less time at airports, which increases

the rating of this airport and indirectly improves the image of the airline, using this airport as a base port.

Table 1. The busiest airports in the world in 2022

	<b>Airport name</b>	<b>Code IATA</b>	<b>Country</b>	<b>Number of passengers</b>
1.	Hartsfield–Jackson Atlanta International Airport	ATL	USA	93 699 630
2	Dallas Fort Worth International Airport	DFW	USA	73 362 946
3	Denver International Airport	DEN	USA	69 286 461
4.	O'Hare International Airport	ORD	USA	68 340 619
5.	Dubai International Airport	DXB	UAE	66 069 981
6.	Los Angeles International Airport	LAX	USA	65 924 298
7.	Istanbul Airport	IST	Turkey	64 289 107
8.	Heathrow Airport	LHR	U. Kingdom	61 614 508
9.	Indira Gandhi International Airport	DEL	India	59 490 074
10.	Charles de Gaulle Airport	CDG	France	57 474 033

Source: International Airport Council report "World Airport Traffic Dataset 2022"

It should be noted that practical work is being carried out at all eight international airports of Azerbaijan to maintain a high level of aviation security. Airports are equipped with the necessary equipment, all work on training of personnel is carried out. At Heydar Aliyev airport, which is the main air gate of our republic, a large amount of work has been carried out in these directions, which continue today. As a result, in 2014, the airport was awarded 4 stars from SKYTRAX, a prestigious private English consulting company specializing in the study of services offered by airlines and airports. In 2018, the number of stars reached five. In 2023, the airport received two SKYTRAX – awards the best airport in Central Asia and the CIS and the airport with the best staff. As mentioned above, these awards have a positive impact on the image of "Azerbaijan Airlines – AZAL" and «Silkway Airlines» based here. Of course, the high image gives the airline additional opportunities in competition, increases the number of customers and, as a consequence, provides an opportunity to get higher profits. High profits, in turn, allow the use of more

modern equipment, attract high-level specialists and thus create favorable conditions for more active work in the direction of improving the quality of services provided.

As is known, in the field of civil aviation, several authoritative organizations are engaged in the analysis of security issues and the compilation of airline ratings.

The German company JACDEC annually publishes the rating of airlines. All accidents on board the aircraft are studied for its co-production. The criterion for drawing up the re-tiring is the security index. Newly established airlines are assigned an indicator of 0. The index of 0.001 is considered a good indicator without mortality. JACDEC accident database is limited to 30 years. Incidents during training, freight and test flights are not taken into account. Only flights with passengers are taken into account.

According to the experts of the Swiss agency ATRA, one of the criteria for calculating the safety factor is the level of training of pilots and dispatchers.

As a result of the analysis of accidents and accidents, ATRA identified 15 main safety factors:

- Financial position of the company;
- Passenger occupancy;
- Number of employees and pilots on board;
- Total flight carried out by plane;
- Number of aircraft in service and discontinued;
- Average age of aircraft in operation (service life);
- Composition of aircraft fleet (Airbus or Boeing);
- Number of aircraft at risk;
- Number of accidents in the last 10 years.

The data for the calculations are taken from IATA materials and Flight Global aerospace magazine.

The main goal of any – enterprise is to exist and work as long as possible. The company, including the airline, must be successful in order to achieve its goals. Tough competition in the air transport market forces airlines to use different types of cooperation. At the dawn of the development of this industry, airlines were more likely to prefer agency or «pool» contracts. Thanks to these agreements, airlines have been able to expand their route network. Thanks to «pool» contracts, relatively small and limited airlines have been able to manage specific routes on equal terms with large transnational airlines, and the profits earned are more equitable. Later, the companies began to give preference to «code-sharing» agreements.

However, as the number of companies increased and the air transport market expanded, the effectiveness of these contracts was insufficient. It is for this reason that at the end of the XX century multilateral agreements were concluded between airlines and the formation of alliances began. The Alliance is an association of airlines in order to achieve the maximum level of cooperation in the field of air transport on a paid basis. Each member of the alliance, while maintaining its independence, must follow certain general rules.

Air carriers are united in alliances primarily for mutual benefit and cost minimization. The airline, which is a member of the alliance, can offer its customers a route of any length and complexity, as part of this route will be performed by another member or members of the alliance. This gives the airline an opportunity to expand the route network without the purchase of new aircraft and additional staff. In addition, members of the alliance can use the same reservation systems (distribution), sometimes can attract the same staff at airports and other service points, can jointly purchase various equipment and thus achieve significant savings. Joining the alliance allows airlines to solve some legal issues and overcome the legislative restrictions of different countries. For example, «Lufthansa» (Germany) allows the passenger to carry only one piece of baggage free of charge during a flight from Europe to America or back. Turkish Airlines, which is with him in one alliance (Star Alliance), allows two free seats on this route. If a passenger bought a ticket from «Turkish Airlines», but flies by plane «Lufthansa», he is allowed to carry two pieces of baggage free of charge.

There are currently three global strategic alliances in the global air transport market: Star Alliance, Sky Team, One World.

It is clear that only the interests of airlines are not enough to join alliances. Alliances themselves should be interested in making this company a member. First of all, the airline's contribution to the alliance is to expand the route network and create the possibility of entering new regional markets. In our opinion, "Azerbaijan Airlines – AZAL" from this point of view are in an advantageous position. Russia's continued aggression against Ukraine has left a large Russian air transport market outside the world airbase. Since political interests prevail over economic interests in this case, many airlines in the world do not have the opportunity and desire to fly to various cities of Russia, at the same time, Russian airlines are unable to fly to many foreign countries. With this in mind, alliances



may be interested in having "Azerbaijan Airlines – AZAL" become their member to

restore its route network through it both in Ukraine and in Russia.

Table 2. Strategic alliances in the air transport market

Title	Star Alliance	Sky Team	One World
Time of education	1997	2000	1999
Number of participants	26	19	13
Service area (countries)	over 195	over 170	over 158
Number of destinations	over 1300	over 1036	over 1000
Number of daily departures	over 19000	over 15445	over 14000
Number of passengers (per year)	over 762 mln.	over 676 mln.	over 528 mln.

Source: Star Alliance, Sky Team, One World

To become a member of the alliance, the airline must meet certain requirements, in addition to being of interest to the alliance for the above reasons, and among these requirements, security issues are in the forefront. This can be seen from the table compiled by JACDEC for 2023 and supplemented by the author.

As can be seen from the table, eight of the ten largest airlines are members of a global

alliance. Taking into account that the two companies from the UAE, which are in the top ten, «Etihad Airways» and «Emirates», are themselves founding members of the regional alliance and do not want to be members of strategic alliances, that number could have been higher.

Table 3. List of airlines ranked first ten in 2023

No	Name of the airline	Country	Number of aircraft	Average age of aircraft, years	Member of which alliance
1.	Qantas Airlines	Australia	125	12	One World
2.	Air New Zealand	N. Zealand	107	9,2	Star Alliance
3.	Etihad Airways	UAE	90	7,0	-
4.	Qatar Airways	Qatar	255	5,0	One World
5.	Singapore Airlines	Singapore	152	7,0	Star Alliance
6.	TAP Air	Portugal	84	11,5	Star Alliance
7.	Emirates	UAE	272	9	-
8.	Alaska Airlines	USA	~ 300	8	One World
9.	EVA Air	Taiwan	86	8,5	Star Alliance
10.	Virgin Australia /Atlantic (Group)	Australia/Great Britain	87 41	11,7 7	Sky Team

**Conclusions.** It should be noted that AZAL is a suitable candidate for joining the strategic alliance and from the point of view of security. To verify this, we will refer to the list of the top 100 companies in the world, compiled by Skytrax. In compiling the list, the

company refers to various indicators, among which safety indicators come to the fore. "Azerbaijan Airlines – AZAL" is in 50th place on this list, and this can be seen as a very good indicator, as well as an argument in favor of its candidacy.



Referring to the question of which of the alliances is more preferable for "Azerbaijan Airlines – AZAL", it seems to us that the most suitable is «Star Alliance». Two arguments lead us to this conclusion: first, the «Star Alliance» includes many European and American airlines and they may have interests through us to open the Central Asian air market; secondly, a member of this alliance is

«Turkish Airlines», which can support AZAL, which is important in the process of receiving a airline, thirdly, participation in the alliance will make us interesting for russian, iranian tourists who want to get to the countries of the west, which will benefit the alliance itself.

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## THE LATEST APPROACHES AND TECHNOLOGIES TO INCREASE THE COMPETITIVENESS OF AVIATION ENTERPRISES IN MODERN CONDITIONS

**Olga Karpun, Valeriya Yakovenko.** *"The latest approaches and technologies to increase the competitiveness of aviation enterprises in modern conditions".* The article discusses the essence of the concept of enterprise competitiveness management, encompassing all enterprise management processes, such as production, sale of products, provision of services, and others. It has been identified that the spectrum of existing research on scientific approaches to competitiveness management requires some structuring and refinement, taking into account the latest trends and the specifics of the activities of aviation enterprises in modern conditions.

A unique perspective on structuring scientific approaches to managing the competitiveness of aviation enterprises has been proposed, according to which the discussed approaches are categorized depending on the object, target parameters, scientific directions, innovative technologies, and combined objects. The advantage of such structuring lies in a better understanding of the specifics of existing approaches and the identification of innovative scientific approaches to enterprise competitiveness management that require further research.

Special attention has been paid to the study of key aspects and specifics of the logistic approach, which involves finding a compromise and balance of interests and responsibilities, consistency and coordination of actions, subordination of partial to general, and measuring the results of activities not only from the perspective of resource savings but also the magnitude of losses caused by irrational actions of chain participants. The logistic approach to managing the competitiveness of aviation enterprises lies in the implementation of the supply chain management concept, aimed at effectively servicing demand and creating additional value for consumers, and realizes a customer-oriented approach to competitiveness management.

Direct tools of the logistic approach that can be effective in managing aviation logistic processes have been identified in the article, such as ESG technologies, CALS technologies, Agile approach, IoT, Blockchain, Artificial Intelligence, robotic systems. The advantages of these tools and their application areas are indicated.

*Thus, the use of various approaches and technologies will enable aviation enterprises to find optimal solutions to enhance their competitiveness in modern conditions.*

**Keywords:** competitiveness, aviation enterprises, competitiveness management, scientific approaches to competitiveness management, logistic approach, latest technologies

**Ольга Карпунь, Валерія Яковенко.** *«Новітні підходи та технології для підвищення конкурентоспроможності авіатранспортних підприємств в сучасних умовах».* У статті розглянуто сутність поняття управління конкурентоспроможністю підприємств, що включає всі процеси управління підприємством, такі як виробництво і реалізація продукції, надання послуг та інші. Було визначено, що спектр наявних досліджень щодо наукових підходів до управління конкурентоспроможністю потребує певної структуризації та доопрацювання з рахуванням новітніх тенденцій та специфіки діяльності авіатранспортних підприємств в сучасних умовах.

Був запропонований власний погляд на структурування наукових підходів до управління конкурентоспроможністю авіатранспортних підприємств, згідно з яким розглянуті підходи поділяються залежно від об'єкту, цільових параметрів, наукових напрямів, новітніх технологій, поєднаних об'єктів. Перевагою такого структурування стало краще розуміння специфіки існуючих підходів, а також визначення новітніх наукових підходів до управління конкурентоспроможністю підприємств, які потребують подальшого дослідження.

Особлива увага була приділена дослідженню ключових аспектів та специфіки логістичного підходу, котрий передбачає знаходження компромісу й балансу інтересів і відповідальності, узгодженості і координації дій, підпорядкування часткового загальному й вимір результатів діяльності не тільки з позицій економії ресурсів, але й величини втрат, викликаних нераціональними діями учасників ланцюгу. Логістичний підхід до управління конкурентоспроможністю авіатранспортних підприємств полягає в втіленні концепції управління ланцюгами поставок, що має своєю метою ефективне обслуговування попиту і створення додаткової цінності для споживачів і реалізує клієнтоорієнтований підхід до управління конкурентоспроможністю.

В роботі визначено безпосередні інструменти логістичного підходу, які можуть бути ефективними в управлінні авіатранспортними логістичними процесами, такі як ESG-технології, CALS-технології, Agile-підхід, IoT, Blockchain, Штучний інтелект, роботизовані системи. Зазначено переваги даних інструментів та сфери їх застосування.

Таким чином, використання різноманітних підходів та технологій дасть можливість авіатранспортним підприємствам знайти оптимальне рішення для підвищення своєї конкурентоспроможності в сучасних умовах.

**Ключові слова:** конкурентоспроможність, авіатранспортні підприємства, управління конкурентоспроможністю, наукові підходи до управління конкурентоспроможністю, логістичний підхід, новітні технології.

**Introduction.** In today's conditions of globalization and rapid technological development, aviation enterprises are becoming essential participants in the global economic space. Ensuring the competitiveness of these enterprises is an urgent problem that requires a comprehensive and fundamental approach to achieve success in global competition.

The modern aviation sector faces unprecedented challenges and opportunities, linked to changes in climate conditions, growth in passenger traffic, the constant need for safety enhancements, and technological transformation. In this context, the issue of enhancing the competitiveness of aviation enterprises becomes crucial for their sustainable development.

The specificity of the aviation industry, its global nature and relationship with various sectors of the economy make this issue extremely important for research. Given the complex challenges facing aviation enterprises, considering these issues from the point of view of competitiveness opens new horizons for understanding and optimizing their functioning.

**Problem statement (formulation of research purposes).** In modern conditions, the competitiveness of an enterprise is a set of competitive advantages that provide the enterprise with stable profit regardless of changes in the external conditions of the enterprise [based on 5, 10, 14].

According to some authors [11, 14], speaking of competitiveness as the most important market category that characterizes the state of the enterprise in this particular market in contrast to its competitors, it can be concluded that competitiveness must be managed.

Therefore, the management of the enterprises competitiveness, including the aviation industry, is a complex, continuous process, which is formed on the basis of the implementation of successive actions, regarding the choice of a certain strategy aimed at improving the competitive position of the enterprise [11]. According to scientists, competitiveness management includes all processes of enterprise management, such as

production, sale of products, provision of services, and others.

Conducted thorough studies of scientific approaches to enterprises competitiveness management revealed that the most extensive list of them was given in his work by N.P. Zakharkevich [14] (Table 1).

However, in our opinion, this list requires some structuring and refinement to account for recent trends and the specific nature of aviation enterprises' activities in modern conditions.

That is why the purpose of this article is to research the latest approaches and technologies that will contribute to increasing the competitiveness of aviation enterprises in modern conditions, as well as practical recommendations for their implementation.

**The main material and results of the research.** So, as it was mentioned, the management of enterprise competitiveness is a purposeful process that involves constant updating and development of the competitive advantages of the enterprise, taking into account the influence of external and internal factors of the operating environment [based on 5].

Based on this, we propose our own vision for structuring scientific approaches to competitiveness management, taking into account recent trends, which will look as follows (Fig. 1).

Table 1. Scientific approaches to competitiveness management

The name of the approach	Content of the approach
1	2
System approach	Study of objects as systems. The essence of competitiveness management is considered as a set of concepts: management organization, management process and information.
Functional approach	Increasing the competitiveness of the organization during the clear distribution of functions among units and their implementation by specific employees.
Process approach	Forms the relationship of all functions of competitiveness management.
Comprehensive approach	Management of the organization's competitiveness by taking into account technological, socio-economic, organizational and psychological aspects of management.

End of table 1

1	2
Innovative approach	The formation of a competitive position due to the development of innovative activities in the field of basic science-intensive branches of the organization.
Global approach	Solving most competitiveness management issues should meet the requirements of systematic, logical, and comprehensive approaches within the global standards.
Situational approach	Considers the application of various methods of competitiveness management, guided by a specific situation.
Structural approach	It consists in determining the importance of priorities among competitiveness factors in order to establish the rationality of the ratio and increase the reasonableness of the resources allocation.
Normative approach	The goal is to establish competitiveness standards.
Marketing approach	Increasing competitive advantages due to consumer orientation (consumer market analysis, analysis of benefits, improvement of service quality, etc.).
Virtual approach	The use of Internet resources, mobile communication and other means of electronic communication in order to form virtual organizational structures for the transfer of information on a global scale without direct contact with customers and partners in modern conditions becomes a competitive advantage.

Scientific approaches to competitiveness management, which were not taken into account before, are highlighted in green in the figure. In our opinion, existing trends in the market require consideration and implementation of the specified scientific approaches in the activities of aviation enterprises.

The conducted studies revealed that according to the resource approach, the level of competitiveness of aviation enterprises is determined by analyzing the available resources and the efficiency of their use [10].

Under the reproducible approach, attention is focused on the constant reproduction of the goods production to meet the needs of a specific market with the lowest total costs per unit of useful effect compared to the best similar product in this market [4].

Further studies showed that the target approach allows considering the analysis of the level of aviation enterprises competitiveness as a process of determining estimates that reflect the economic results of the enterprise in comparison with the corresponding target indicators of competitors [10].

At the same time, the qualitative approach is based on the study of the

products competitiveness of aviation enterprises, which affects its overall competitiveness [10].

The essence of the competency approach is the development and practical application of competency models of employees, their selection, assessment and training in accordance with these models. At the same time, the competence model can be considered as a complete set of competence and behavior indicators necessary for an employee to successfully perform his functions, which are manifested in the appropriate situations and time, for a specific organization with its individual goals and corporate culture [9].

The main goal of competitiveness management of aviation enterprises within the competence approach is the realization of competencies in technological, managerial, operational and other types of competitive advantages [1, 2]. The competence approach as a personnel management tool provides a clear definition of the professional and behavioral requirements that are imposed on the employee depending on his management level, profession, position and tasks performed.



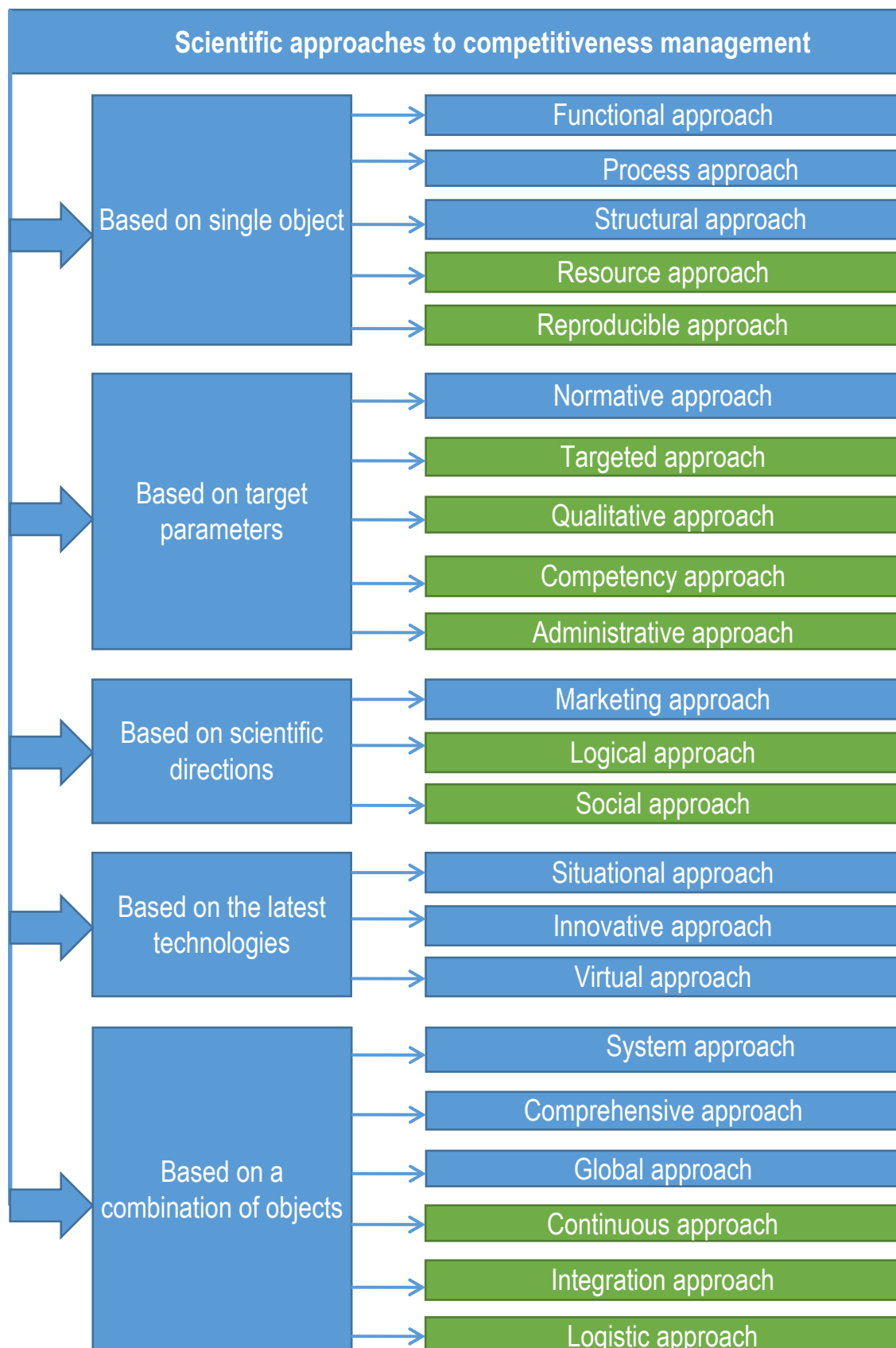


Figure 1 – Structuring of scientific approaches to competitiveness management of aviation enterprises

Source: own development

We consider that the application and successful implementation of the competence approach will increase the pace of innovative development, as well as directly increase the competitiveness of the aviation industry [1].

According to the results of further research, we can confirm that the administrative approach to ensuring the competitiveness of aviation enterprises involves the regulation of functions, rights, obligations, and standards of subsystems in normative acts (orders, standards, instructions, regulations, programs, methodological documentation, etc.) [4].

As for scientific approaches, which are based on scientific directions, a logical approach should be highlighted, which consists in establishing a set of indicators for assessing the competitiveness of the enterprise and their weight coefficients based on logical analysis.

According to the conducted research, the social approach to ensuring the competitiveness of aviation enterprises assumes that the central place in the system is occupied by the personnel (i.e. the workforce), for which all conditions must be created, namely: for the development of personal potential; for full self-realization and self-expression; for professional growth and confidence in the future; ensuring legal protection of personnel at the enterprise; fair wages for work; comfortable relationships in the team; a worthy place of work in the life of a person, etc. [4].

Further studies showed that the continuous approach makes it possible to consider ensuring the competitiveness of aviation enterprises as a continuity of interdependent functions, namely: planning, forecasting, modeling, adjustment, adaptation, information selection, conducting research, etc., which affect the achievement of strategic goals of competitive management and socio-economic development of the aviation enterprise as a whole [4].

As for the integration approach, it is aimed at bringing together and strengthening the relationship between the structural divisions of aviation enterprises for their cooperation and coordinated actions [3, 4].

Logistic approach to competitiveness management of aviation enterprises involves optimizing the management of all resource flows and establishing priorities to find the optimal balance between various activities to enhance the overall system efficiency [8]. This approach entails finding compromises and balancing interests and responsibilities, ensuring consistency and coordination of actions, subordinating partial to general, and measuring the results of activities not only from the perspective of resource savings but also the magnitude of losses caused by irrational actions of chain participants.

The existence of inconsistency in the management of business processes of aviation enterprises highlights the need for implementing an integrated logistic approach to ensure their organizational and economic stability and further increase competitiveness.

The logistic approach to managing the competitiveness of aviation enterprises involves implementing the concept of supply chain management, aiming to efficiently serve demand and create additional value for consumers, thus adopting a customer-centric approach to competitiveness management. The goal of the logistic approach is to minimize costs while maintaining a specified level of development [8].

The implementation of the logistic approach can target one or several functional areas of the aviation enterprise and may also have a comprehensive nature. The choice of how to apply the logistic approach depends on the degree of integration of the enterprise's subsystems. The effective functioning of logistic systems should serve as the primary basis for applying the logistic approach [12].

Additionally, it can be argued that the logistic approach to organizing aviation

activities is based on a systemic approach to economic processes aimed at their efficient integration and development of logistic systems and chains. It entails the optimization of flows and processes as a fundamental principle. Key conditions for the creation and development of logistic mechanisms in the aviation sector at all levels include integration, the use of information technologies, and the globalization of economic processes and structures arising from the need to enhance resource utilization efficiency under constraints. One of the major advantages of the logistic approach in managing aviation enterprises is its focus on solving loosely structured problems and finding optimal solutions for them.

For effective management of aviation enterprises and the attainment of competitive advantages in the market, continuous organizational and technical restructuring is imperative. This will enable bridging the gap between the actual

production level and its optimal design, aligning with the achieved levels of knowledge, technology, organization, and management. Such restructuring is impossible without continuous and flexible adaptation of the enterprise to the ever-changing market conditions. It requires the logistics-driven transformation of the economy as a whole and management in particular, which is unattainable without the transformation of the existing management system and the adoption of progressive entrepreneurship management methods based on logistics principles [6].

The implementation of the logistic approach in managing aviation enterprises, as an innovative model of development and management, is a key condition for achieving sustainable competitiveness in the market. Direct instruments of the logistic approach applicable to aviation enterprises are presented in Fig. 2.

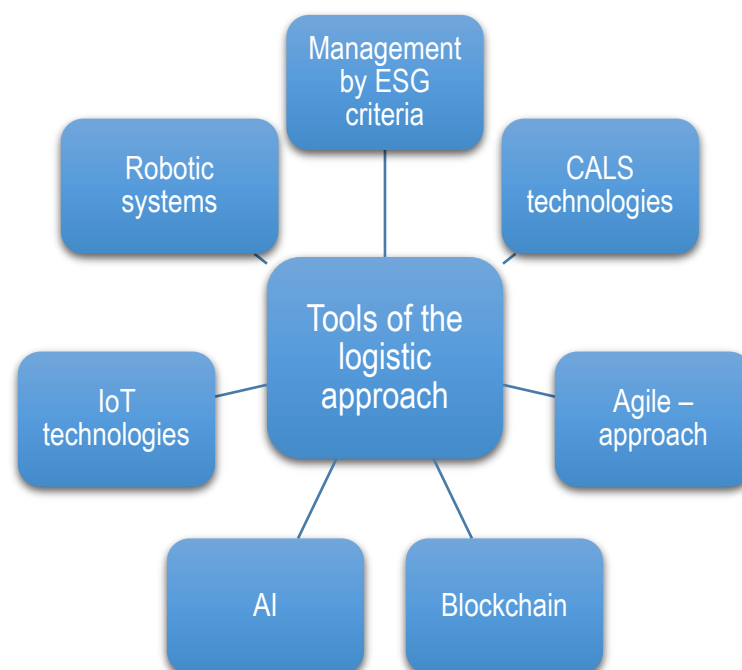


Figure 2 – Tools of the logistic approach to increasing the competitiveness of aviation enterprises

The acronym ESG stands for «environmental, social, and governance» [7]. In a broad sense, it represents sustainable

development of commercial activities built on the following principles:

- responsible environmental stewardship (E – environment);

- high social responsibility (S – social);
- high-quality corporate governance (G – governance).

According to conducted research, it has been determined that the components of ESG criteria enable the expansion of performance indicators for evaluating a company's activity in the market. Business social responsibility, in this regard, refers to a company's responsible approach to its product or service, consumers, employees, and partners; it involves the active social stance of the company, characterized by harmonious coexistence, interaction, and constant dialogue with society, as well as participation in addressing social issues.

The application of ESG criteria may attract investment from those companies whose activities adhere to certain standards of corporate social responsibility, ethical norms, and earn a certain reputational capital in the eyes of consumers and society at large. To attract influential investors, aviation companies need to strive to meet ESG criteria and maintain a balance among all criteria.

CALS technologies (Continuous Acquisition and Life cycle Support) represent an approach to the design and production of high-tech and knowledge-intensive products, involving the use of computer and information technologies at all stages of the product lifecycle. The implementation of CALS technologies in aviation enterprises allows for the automation and optimization of production processes, providing rapid access to current information and reducing decision-making time. Research has shown that CALS technologies contribute to improving teamwork and effective data exchange between departments, which is crucial in high-tech enterprises. They also facilitate the creation of a unified information environment, simplifying analysis and decision-making at all stages of the product lifecycle.

To ensure flexibility in managing the quality of business processes in aviation enterprises, it is advisable to use Agile methodology. This approach allows the enterprise to flexibly respond to changes in

the external and internal environment, which is particularly important for aviation companies that need to quickly adapt to new regulations, technologies, and market conditions. Additionally, the Agile approach enables rapid response to changes in market demands and enhances product quality. This is especially crucial for the aviation sector, where safety and reliability are paramount factors. According to the results of conducted research, the Agile approach contributes to reducing the time from idea development to product launch in the market. Considering the specificity of the aviation industry and using Agile frameworks such as Lean Manufacturing, Six Sigma, Lean Six Sigma, Kanban, TPM, and 5S can optimize production and logistics processes.

The use of IoT (Internet of Things) technologies allows for tracking the movement of goods, controlling temperature and humidity in premises and vehicles, as well as monitoring the condition of vehicles and equipment. The utilization of IoT enables precise and rapid monitoring of logistics processes, reducing the risk of problems and facilitating quick response to them.

Regarding robotic systems, they can be used to automate processes in warehouses and during transportation of goods by air. Implementing robotic systems enables a reduction in the number of people involved in cargo operations, thereby enhancing safety and reducing the risks of problems.

According to research findings, Blockchain technologies ensure accuracy and security in data exchange among participants in the aviation supply chain. The use of Blockchain ensures inaccessibility to malicious actors and provides traceability of each operation in the logistics chain, ensuring security and trust among participants in the logistics process.

Artificial intelligence (AI) can be used to forecast demand for goods, plan routes, and optimize logistics processes involving aviation transport. Utilizing artificial intelligence reduces the number of human errors and enhances the efficiency of logistics

processes, ensuring safety and reducing the risks of problems.

Thus, we see that the discussed tools of the logistic approach to enhancing the competitiveness of aviation enterprises have their specificities and are aimed at improving the efficiency of various areas of aviation enterprises' activities. However, collectively, they are components of the logistic approach and contribute to enhancing the competitiveness of aviation enterprises in modern conditions.

**Conclusions.** Among the considered modern scientific approaches to enhancing the competitiveness of aviation enterprises in contemporary conditions, the best solution would be the utilization of a systemic, process-oriented, comprehensive, integrated, or logistic approach. These approaches are based on the combination of elements.

Among the mentioned approaches, the use of a logistic approach to managing the

competitiveness of aviation enterprises was proposed. This is because the logistic approach to organizing aviation activities is based on a systemic approach to economic processes, aimed at their efficient integration and development of logistic systems and chains, and it involves the optimization of flows and processes as a fundamental principle. Overall, the logistic approach to managing the competitiveness of aviation enterprises entails the implementation of the supply chain management concept, which is based on efficiently serving demand and creating additional value for consumers through customer orientation.

Within the framework of the logistic approach, it is advisable for aviation enterprises to employ various innovative technologies that would be effective in today's operating conditions of aviation enterprises.

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## **ADAPTATION OF A LOGISTICS COMPANY'S BUSINESS MODEL IN THE ERA OF DIGITALIZATION**

**Oksana Pozniak, Yurchenko Kateryna.** *"Adaptation of a logistics company's business model in the era of digitalization".* The article is devoted to the study of the adaptive capabilities of logistics companies in the conditions of global digitalization. The developed conceptual model of logistics company adaptation defines the tasks, principles, components, and stages of adaptive management, allowing the logistics company to obtain a synergistic effect from the implementation of the model as a complete system, provides an opportunity to improve the quality of management, forming a proactive adaptation management mechanism. Taking into account modern trends, in the conceptual model adaptation and sustainable development are highlighted as its main components, since sustainable development is based on compliance with the principles of environmental sustainability and social responsibility, adaptation is defined as a tool for the effective implementation of these principles in a logistics company in a changing environment. It was determined that to make corrective changes to the existing business model, it is necessary to assess the existing level of adaptability of the logistics company. To implement this approach, a system for evaluating the effectiveness of adaptive management of business processes of a logistics company has been developed, which consists of 7 subsystems, having a variable character, oriented to any stage of the company's digitalization. Applying a comprehensive approach to the system of evaluating the effectiveness of adaptive management based on the calculation of integral criteria for each subsystem is justified, which are summarized in a total integral indicator that summarizes the influence of all factors and determines the degree of adaptability of the logistics company's business model.

**Keywords:** business model, logistics company, adaptation, adaptive management, digitalization, integral indicator

**Оксана Позняк, Катерина Юрченко.** «Адаптація бізнес-моделі логістичної компанії в епоху цифровізації». Стаття присвячена дослідженню адаптаційних можливостей логістичних компаній в умовах глобальної діджиталізації. Розроблена концептуальна модель адаптації логістичної компанії визначає завдання, принципи, компоненти та етапи адаптивного управління,

що дозволяє логістичній компанії отримати синергетичний ефект від впровадження моделі як цілісної системи, дає можливість підвищити якість управління, формування проактивного механізму управління адаптацією. Враховуючи сучасні тенденції, у концептуальній моделі адаптація та сталий розвиток виділені як її основні складові, оскільки сталий розвиток ґрунтується на дотриманні принципів екологічної стійкості та соціальної відповідальності, адаптація визначається як інструмент ефективної реалізації цих принципів в логістичній компанії в мінливому середовищі. Визначено, що для внесення корегуючих змін в існуючу бізнес-модель необхідно оцінити наявний рівень адаптивності логістичної компанії. Для реалізації даного підходу розроблено систему оцінки ефективності адаптивного управління бізнес-процесами логістичної компанії, що складається з 7 підсистем, які мають варіативний характер, орієнтованих на будь-який етап діджиталізація компанії. Обґрунтовано застосування комплексного підходу до системи оцінки ефективності адаптивного управління на основі розрахунку інтегральних критеріїв для кожної підсистеми та загального інтегрального показника, який узагальнює вплив усіх факторів і визначає ступінь адаптивності бізнес-моделі логістичної компанії.

**Ключові слова:** бізнес-модель, логістична компанія, адаптація, адаптивний менеджмент, діджиталізація, інтегральний показник

**Introduction.** Modern business realities are characterized by the increasing digitization of business relations in the global economic environment, forming new forms of interaction between partners in supply chains. These changes are caused by the varying degree of implementation of innovative trends, which are defined in the Logistics Trend Radar [4], developed by the leading logistics company DHL, and have an impact not only on the development of the logistics industry but also on the entire global economic environment, causing a rethinking of business principles and orientation towards more flexible approaches to decision-making, requiring constant monitoring and maximum adaptation to changes in the external environment. Accordingly, conducting business under modern conditions requires the management of a logistics company to develop skills for the rapid adaptation of the existing business model to ensure and maintain the efficiency of operations and the formation of the company's development potential. Thus, logistics companies, to gain competitive advantages in the logistics services market, must adapt the existing business model to the challenges of both the external and internal

environment, introducing modern digital tools and forming a digital business model.

**Analysis of recent research and publications.** The article expands the research begun by the authors on the problems of identifying and classifying business models of a logistics company, forming an optimal business model [6-7], as well as assessing the effectiveness of logistics assets formed within the framework of the existing business model of a logistics company [5], delving into the issues adapting the business model of a logistics company in the context of digitalization [8].

The expansion of the problem was due to the growing interest of scientists in identifying the impact of innovative digital trends on the formation and adaptation of a company's business model. This is confirmed by the article [3], which summarizes the results of expert surveys conducted by international organizations as a method of empirical research with the aim of identifying current problems, features and trends in providing customer-oriented logistics services to consumers in the digital space.

According to another survey [2] that summarizes the evolutionary trends in the business models of companies in the road freight transport sector, identifies the

importance of business integration on digital platforms to optimize resources and provide better services by creating unified interfaces for contracting, customer service, shows the importance of technology adoption and assimilation of changing customer needs and values in the development and planning of business models.

Bortnik [1] highlights the key aspects of the digital transformation of a business model in the context of creating value standards for all stakeholders. Adaptation of the model to digital and social changes is proposed to be considered as a transformation of a new form of doing business in connection with the growing use of digital assets, which is most suitable and satisfies the conditions of functioning in the digital economy. builds relationships with digital consumers and partners.

The conceptual and applied foundations of adaptive strategic management in the conditions of digital transformation of business are reflected in [10], where the principles and approaches of adaptive strategic management in the conditions of digitalization of business are defined, current methods of diagnosis of prerequisites for strategy implementation, selection and implementation of its optimal option are systematized, and the toolkit of adaptive management is defined.

The issue of business model adaptation in the context of the digitalization of the economy of Ukraine was considered in [9] on the basis of a system-activity approach, which determines the consideration of this issue in the context of the entire country, and not a separate entity.

The variety of aspects of this issue determines the relevance of further research, especially taking into account the possibility of adaptation of logistics companies of Ukraine in the conditions of martial law.

**Objectives statement.** The purpose of the article is to develop a conceptual approach to the adaptation of the business model in the conditions of digitalization to

optimize the strategic and operational activities of the logistics company.

**Basic material and results.** The adaptation process is very important for any company, as it affects the company's business model, and ineffective adaptation management can lead to serious losses. The organization of control is one of the most important parts of ensuring the fulfillment of assigned tasks and making corrective decisions when indicators deviate from the planned ones.

To achieve this goal, it is necessary to update the strategic management methodology and develop modern methods and mechanisms, investment, and financial instruments. Developing strategic goals requires the adoption of strategic plans in the medium and long term, a plan for adapting to change, the use of digital resources, and the adoption and promotion of innovation.

To fully adapt a company, it is necessary to determine the main goals, understand what actions to take, what needs to be changed to fit the new business model, what this can lead to, etc. Therefore, the company must have a clear model with all the stages that the adaptation process takes on. Based on the conducted analysis of approaches to the adaptation models, a conceptual model of adaptation of a logistics company in the context of digitalization is proposed. The conceptual model is shown in Fig. 1.

This model helps a logistics company to determine not only how to adapt its management to the conditions of digitalization, but also helps to reveal important aspects of this process. Thus, this conceptual model describes the components of adaptive management, namely adaptive management in the conditions of digitalization and the conditions of modern development. Furthermore, managers have more opportunities to study this issue through the model and choose the type of management that is more suitable for a logistics company.

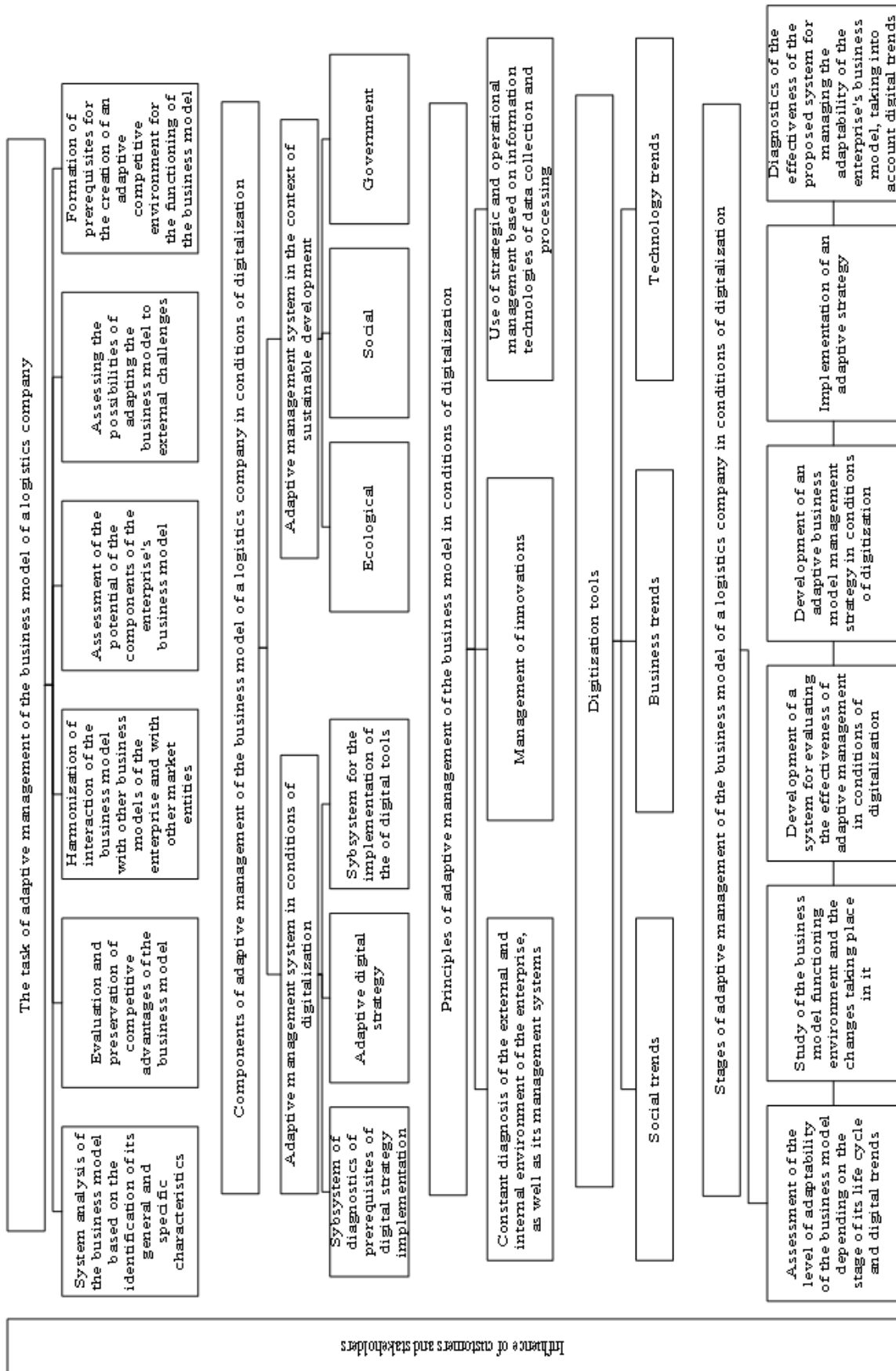


Figure 1 – Conceptual model of adaptation of a logistics company in the context of digitalization  
 Source: compiled by the authors



The conceptual model represents a system consisting of certain component blocks, each of which determines the specific features of this model, which forms the mechanism for the adaptation of a logistics company in modern conditions of digitalization and sustainable development.

The model describes the main tasks of adaptive management in conditions of digitalization, which directly helps managers to determine what goals should be set for themselves in the company, how to distribute responsibilities between departments for more effective management, and what basic conditions must be met. This also applies to digitization tools. Modern trends change faster than companies have time to adapt to something new, so you need to constantly monitor such trends and offer customers approaches with a certain novelty. Constantly adapting to changes, the logistics company increases its responsiveness, and change management potential, which affects both the general level of company management and all levels of the hierarchy, which affects the so-called "outputs" and "outcomes" - improving the quality of logistics services, in accordance with potential and existing customer requirements; increase in the number of loyal customers; proactive response to external and internal environment risks; adaptation of the management system, corporate responsibility to modern trends, such as sustainable development, etc.

Considering the above, sustainable development is defined as the main component of adaptive management of the business model of a logistics company, accordingly, it is necessary to identify stakeholders and customers as subjects that determine the occurrence of changes and receive benefits from their implementation in conditions of digitalization.

The implementation of digital tools in the areas identified in the Logistics Trend Radar, which was developed by the logistics services market leader - the logistics company DHL, forms the innovative adaptation potential of

the logistics company and becomes an impetus for other global operators of the logistics services market to develop their own Trend Radars (in particular, the logistics company DSV), which makes it possible to identify digitalization as one of the company's main strategies and adapt the business model to the implementation of these changes.

The model clearly describes the stages of adaptive management, which helps a logistics company form a comprehensive vision of the business model adaptation process and makes it possible to improve the quality of management by forming a proactive adaptation management mechanism. This model is quite flexible, and an important aspect of the adaptation process is the step-by-step understanding of each microprocessor in a given system. Without a clear description, any company may experience disruptions, so it cannot be fully said that the company is effectively adapting to digitalization. In addition, given changes in customer behavior and requirements, without "step-by-step" instructions, a company may simply lose customers because it will not be able to adapt to changes in customer behavior, service requirements, etc.

During the implementation of this model, it is necessary to determine the current state of the logistics company and its ability to implement changes and adapt the existing business model. To implement these goals, the following stages are presented in the model:

1. *Assessments of the level of adaptability of the business model depending on the stage of its life cycle and digital trends.* This is a very important stage of the model, as it determines the feasibility of using digital tools depending on the stage of the life cycle. At the early stages of a logistics company's life cycle, it is possible to implement various digital tools, forming an innovative model, but this requires significant investment, which may not always be economically feasible. As the logistics company develops, the business model may change, and the introduction of

digital tools allows it to obtain and maintain competitive advantages in the market.

2. *Study of the business model functioning environment and the changes taking place in it.* As already mentioned, factors and subjects of the external environment have a decisive influence on the expediency of adapting the existing business model, therefore, the study of these factors allows determining the degree of their influence in order to form a mechanism for responding to them.

3. *Development of a system for evaluating the effectiveness of adaptive management in conditions of digitalization.* This stage is determined by a high degree of variability of those indicators that a logistics company can use to assess the existing state of adaptability and determine its growth potential.

4. *Development of an adaptive business model management strategy in conditions of digitalization.* Depending on the conducted assessment of the effectiveness of adaptive management of the logistics company, it is necessary to adjust the existing strategy and define digital trends that should be implemented in the logistics company.

5. *Implementation of an adaptive strategy.* This stage is determined by the implementation project of the strategy established in the previous stage.

6. *Diagnostics of the effectiveness of the proposed system for managing the adaptability of the enterprise's business model,* taking into account digital trends, determines the effectiveness of the proposed changes, the feasibility of corrective actions, characterizes the transition of the logistics company to a new level - the level of formation of a digital business model. Digitalization is changing the world around us, companies, industries, business models and business processes. It is important to adapt flexibly and quickly to new challenges by changing and restructuring some production processes. Digital transformation not only leads to changes in the product environment, but also initiates

changes in business models, which changes the life cycle of the company.

The effectiveness of business process management in the context of digitalization can be assessed by the following criteria:

- private and consolidated integral performance indicators of business process management in the context of the digitalization of the economy;
- indicators of indicative assessment of the effectiveness of the business process management system. It is based on the use of a set of partial indicators and makes it possible to assess the relationship between the effectiveness of the management system of a business entity and its production, financial, and non-financial indicators, the effectiveness of the management system of a business entity at different stages of management decision-making, and to conduct a comparative assessment of effectiveness before and after the implementation of measures as part of adaptation to the requirements of digitalization;
- determination of the content of the digital environment of the business process presented as a result of the intelligent integration of elements and tools of digital transformation, digital communication, and data transmission channels, private digital platforms of basic information technologies, software, and databases of various enterprise systems, the analysis of which will allow a qualitative assessment of the current digital maturity of the business entity, develop proposals for reforming the structure of the digital environment.

The effectiveness of adaptive management of business processes in conditions of digitalization can be traced in detail by the following subsystems of indicators:

Subsystem 1. Effectiveness of a logistics company: the stage of achievement of the established goals for a logistics company in a context of digitalization.

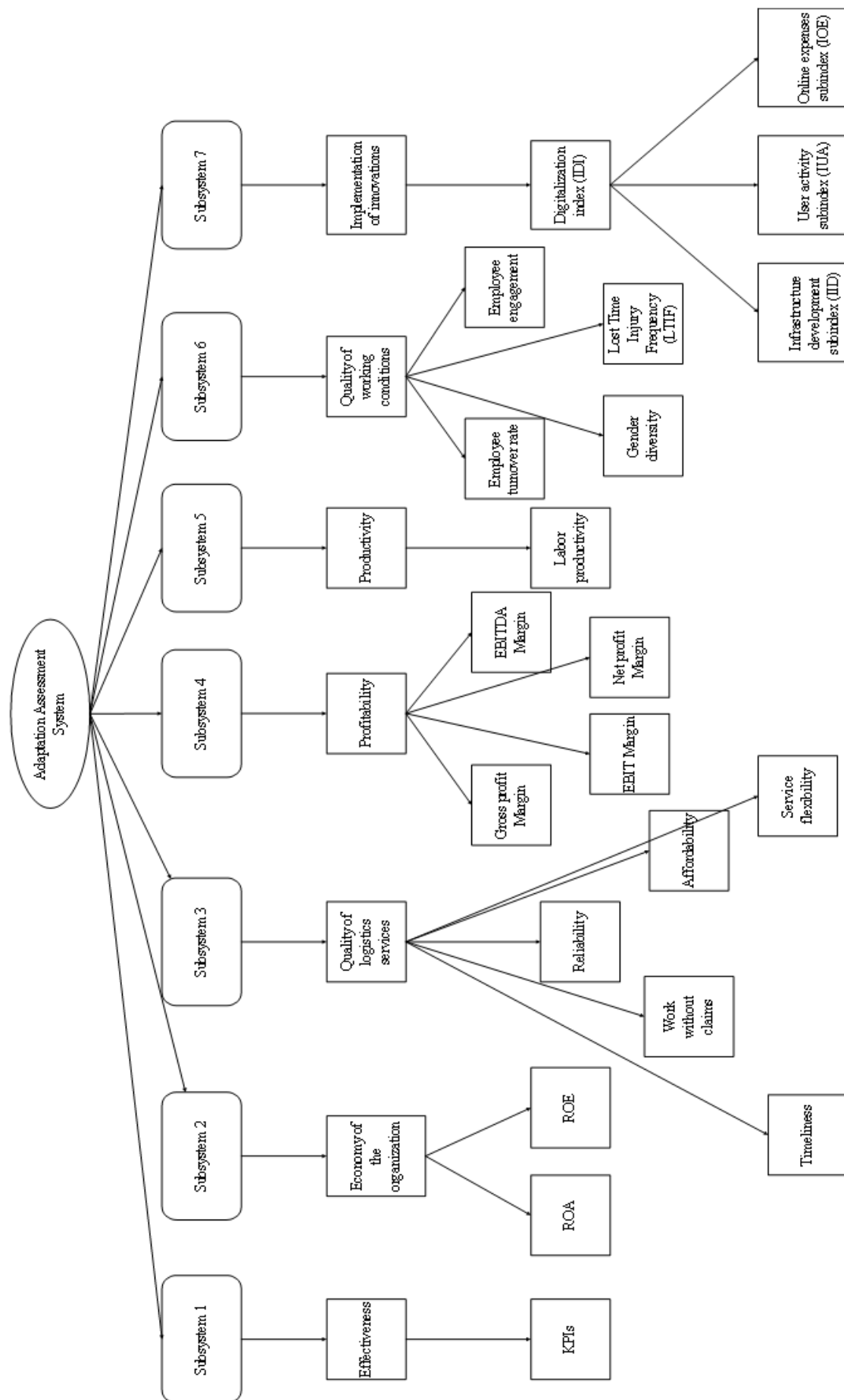


Figure 2 – System for evaluating the effectiveness of adaptive management of a logistics company's business model  
 Source: compiled by the authors

Subsystem 2. Economy of a logistics company: characterizes the strategy and tactics of the formation and use of economic resources of the logistics company depending on the chosen business model and taking into account digital trends.

Subsystem 3. Quality of logistics services: characterizes the the level of quality of logistics services, based on the assessment carried out by the logistics company itself, as well as the assessment of customers.

Subsystem 4. Profitability of company`s activity: characterizes the financial stability of the company`s structure.

Subsystem 5. Productivity: characterizes the efficiency of workforce (labor productivity).

Subsystem 6. Quality of working conditions. This subsystem of indicators supports the definition of sustainable development as the main component of the adaptation model of the business model of a logistics company and evaluates the impact of the implementation of digital tools on both the workforce and the change in the quality of working conditions.

Subsystem 7. Implementation of innovations. Determines the level of innovation in the company and allows to assess the impact of digital and information and communication technologies on the

technical and technological stability of the logistics company.

The proposed system of indicators makes it possible to assess the degree of adaptation of the logistics company as a whole and its individual components, to assess the impact of the implementation of digital tools on the main economic resources of the company, financial performance indicators, as well as on the established strategy. The indicators included in each subsystem may vary, depending on the meaningful component that the management of the logistics company determines for its evaluation, the KPI system implemented in the company, etc.

Fig. 2 presents the system for evaluating the effectiveness of the adaptive management of a logistics company`s business model developed by the authors, which consists of 7 subsystems, and the indicators corresponding to each subsystem, which evaluate the current level of adaptation, how effectively the logistics company carries out adaptation, which aspects require more attention and changes, and which indicators have already normalized and become positive for companies.

The details of the proposed system of indicators, which are grouped by subsystems, are summarized in Table 1.

Table 1. Main indicators of subsystems for evaluating the effectiveness of adaptive management of a logistics company`s business model in the context of digitalization

No	Subsystem	Main indicator	Formula
1	2	3	4
1	Subsystem 1: Effectiveness	KPIs	Depends on the company`s main goals. Usually shows the deviation between the forecasting indicator and the result of the company for the year. Can be used the following indicators: - <i>Net profit margin;</i> - <i>Market share;</i> - <i>Satisfactory index;</i> - <i>CapEx.</i>

Continue Table 1

1	2	3	4
2	Subsystem 2: Economy of a logistics company	ROA	$ROA = \text{Net income} / \text{Average total assets}$
		ROE	$ROE = \text{Net income} / \text{Average total equity}$
3	Subsystem 3: Quality of logistics services	Timeliness	$T = \frac{1}{n} \sum_{i=1}^n \frac{t_{exp\_i}}{t_{fact\_i}}$ , where $t_{exp\_i}$ – orders fulfillment time, expected by customer; $t_{fact\_i}$ – the actual time of orders fulfillment; $n$ – the total number of customers.
		Work without claims	$Y = \frac{\sum Q_{ex} - \sum Q_{cl}}{\sum Q_{ex}}$ , where $Q_{cl}$ – the total number of orders, which was made with claims from customers; $Q_{ex}$ – the total number of executed orders.
		Reliability	$R = \frac{\sum Q_{rel}}{\sum Q_{ex}}$ , where $Q_{rel}$ – the total number of orders, which was made with all contractual terms.
		Affordability	$A = \frac{1}{n} \sum_{i=1}^n \frac{C_{exp\_i}}{C_{fact\_i}}$ , where $C_{exp\_i}$ – price (cost) of orders, expected by customer; $C_{fact\_i}$ – the actual price (cost) of orders for customer; $n$ – the total number of customers.
		Service flexibility	$F = \frac{\sum Q_{ex}}{\sum Q_{req}}$ , where $Q_{req}$ – the total number of customers requests (contacts).
4	Subsystem 4: Profitability	Gross profit Margin	$\text{Gross profit Margin} = \text{Gross Profit} / \text{Revenue}$
		EBITDA Margin	$\text{EBITDA Margin} = (\text{Net income} + \text{Interest} + \text{Tax} + \text{D\&A Expenses}) / \text{Revenue} = \text{EBITDA} / \text{Revenue}$
		EBIT Margin	$\text{EBIT Margin} = (\text{Net income} + \text{Interest} + \text{Tax}) / \text{Revenue} = \text{EBIT} / \text{Revenue}$
		Net profit Margin	$\text{Net profit Margin} = \text{Net income} / \text{Revenue}$
5	Subsystem 5: Productivity	Labor productivity	$\text{Labor productivity} = \text{Revenue} / \text{Number of staff}$



End of table 1

1	2	3	4
6	Subsystem 6: Quality working conditions	Employee turnover rate	$Employee\ turnover\ rate = Employee\ who\ left / 0,5 * (Employee\ at\ the\ beginning + Employee\ at\ the\ end) * 100$
		Gender diversity	Represents the percentage of female in the company.
		Lost Time Injury Frequency (LTIF)	$LTIF = ([Number\ of\ lost\ time\ injuries\ in\ the\ reporting\ period] \times 1,000,000) / (Total\ hours\ worked\ in\ the\ reporting\ period)$
		Employee engagement	$Employee\ engagement\ rate = Number\ of\ employees\ whose\ score\ of\ engagement\ is\ higher\ than\ 7 / Total\ number\ of\ employees * 100$
7	Subsystem 7: Implementation of innovations	Digitalization index	$DI = \frac{\sum_{i=1}^n Weight_n * Metric_n}{Total\ Weight}$ <p>where <math>Weight_n</math> – weighting coefficients for each metric;  <math>Metric_n</math> – metrics characterizing the company's digital                      readiness;  <math>Total\ Weight</math> – the sum of all weighting coefficients.</p>

Using groups of indicators corresponding to each subsystem, it is possible to conduct a detailed analysis of the entire company's activities, since all the main indicators have been identified, reflecting not only the effectiveness of the company's adaptation to digitalization but also the efficiency of the logistics company. Applying the proposed assessment system, it is possible to assess the company's performance and the level of its involvement in ensuring a safe working environment, determine the company's digitalization indicators, and also analyze how effectively the company operates using KPIs. Certainly, not all indicators have clearly defined formulas, since the company can analyze some indicators using its own examples. For example, different companies

may have their own KPI systems, which, in turn, helps analyze their activities. Also, for example, a company may have a certain level of gender diversity, the norm of which the company chooses for itself, which determines a certain level of variability in the proposed system.

To determine the contribution to the formation of the assessment system, it is necessary to summarize each indicator of the subsystem by creating integral criteria. Based on the integral indicators of each subsystem, the overall integral indicator of the company can be determined. The formulas for these indicators are as follows:

$$IC_n = \sqrt[m]{\prod_{i=1}^m C_i}, \quad (1)$$

where

IC – integral criteria of subsystem;

n – number of subsystem;

m – the number of the criterions analyzed;

$C_i$  – value of criterions analyzed.

$$IC_{total} = \sum_{i=1}^n IC_n, \quad (2)$$

where

$IC_{total}$  – total integral criteria;

$n$  – number of subsystem;

$IC_n$  – value of integral criteria of subsystem.

This comprehensive assessment system forms the base for conducting a holistic analysis of the company, determining the level of services and quality of its work, and assessing the effectiveness of using different types of economic resources, especially the workforce, efficiency, and profitability of a logistics company. After such a detailed analysis, the company can decide for itself whether to remain at the current level or improve its activities through the introduction of digital tools, or by, analyzing the work of other companies with a similar business model, understand what changes can improve the efficiency of the logistics company. The use of an integral indicator calculated both for each of the subsystems and a general integral indicator helps to summarize all subsystems together and highlights the general trend of the company's development. Thus, the analysis of subsystems, combined into a single structure, forms a basis for considering the effectiveness of adaptive management and determining at what stages changes need to be made.

Using the system for evaluating the effectiveness of adaptive management of a logistics company's business model, it is important to form aspects of the business model of the company and provide a full analysis of all indicators to understand the situation of the company. It is important to underestimate the full analysis of a company's effectiveness, quality of services, profitability, productivity, etc. This model allows the company to distribute responsibilities for managing all aspects affected by the system, to monitor which indicators are returning to normal, and where the company has bottlenecks. To overcome

the bottlenecks of the company, it is important to understand the main aspects that influence the company's performance. Such a system also helps with that understanding, since the company would be able to analyze all fields of its work.

In addition, this system is aimed at analyzing indicators that will reveal the company's full potential, which in turn can help it decide which digital system can be implemented. For example, if a company has a high productivity indicator, then the company has good working conditions, and therefore the quality of working conditions is also high. This helps the company develop social sustainability; in turn, working conditions can be improved by introducing robotization or artificial intelligence. After all, if the company has good conditions for employees, then it will not be difficult for them to switch to new technologies.

Moreover, for example, a company may have high-quality indicators for the services provided, which means that the company has a close and profitable relationship with clients who can rely on the logistics company. Consequently, this company can develop in the direction of working with clients and introduce the same CRM system, which will improve this relationship even more.

Thus, this system can open up the potential for a company, indicate both strengths and weaknesses and show in which industry the company should develop and invest, if any. In addition, this system will indicate where the company is not yet ready to implement digital projects, but where it is worth paying attention and improving performance so that the company has even more potential in the future.

This adaptation assessment system can help the company navigate and quickly respond to changes in any aspect of the company's work, and determine where the company should pay more attention. Also, this system can show in real time the company's readiness for any changes that relate not only to digitalization.

**Conclusions.** The conceptual model for adapting the business model of a logistics company and the system for assessing the effectiveness of adaptive management in the context of digitalization, developed by the authors, allows to comprehensively assess the prospects for the company's development in the digital environment, creating the potential for a rapid flexible response, adaptation, and adjustment in case of changes in the conditions of the external and internal environment. This makes it possible to improve the quality of management, to form a management mechanism for proactive adaptation, which leads to a fundamental change in the entire strategy of the logistics company, determines proactive management actions in relation to the factors of the external environment, and as a result of adaptation, changes of a qualitative nature are formed - an increase in the overall potential of the logistics company, actualizing

this issue in the context of global digitalization.

Digitization of the world economy is happening at a very fast pace, the types of digital tools that can be implemented, according to the Logistics Trend Radar, are determined based on its life cycle, the company's readiness for digitalization, and the existing level of implementation of innovative technologies. The implementation of a system for evaluating the effectiveness of adaptive management of business processes of a logistics company, which is focused on any stage of the company's digitalization, allows to generalize the influence of all factors and determines the degree of adaptability of the logistics company's business model, its readiness for future digitalization. The implementation of digital technologies and the creation of radars of technological trends allow for the formation of a digital business model that takes the digital transformation of business to a qualitatively new level. This identifies new directions for further research and opportunities for creating digital supply chain ecosystems. Consider promising research in the field of creating digital ecosystems of supply chains, creating digital trend radars, and developing models of digital transformation of the business model of a logistics company.

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## THE CONCEPT AND ESSENCE OF CORPORATE GOVERNANCE

**Serhii Chikalkin. "The concept and essence of corporate governance".** The article is devoted to the study of the basic concepts and essence of corporate governance. The main aspects of corporate governance are characterized, including its objectives, functions, principles, structure and role in the stable functioning of enterprises.

*It is determined that corporate governance can be viewed as a set of legal, economic, organizational norms and rules within which a corporation (company) operates, and on the basis of which the relations between all its participants are built. Corporate governance unites various participants in corporate relations, each of which takes care of its own interests, establishes mechanisms and methods of interaction between them.*

*It is highlighted that most studies related to corporate governance have a rather narrow focus and are conducted exclusively at one of these levels.*

*The issue under study is multifaceted and also includes the definition of functions and components of corporate governance, which include: creating a strategy and setting goals, ensuring financial stability, ensuring transparency and compliance, and facilitating interaction with stakeholders.*

**Keywords:** corporate governance, enterprise, management, corporation, shareholders, corporate relations.

**Сергій Чікалкін. «Основні поняття та сутність корпоративного управління».** Стаття присвячена дослідженню основних понять та сутності корпоративного управління. Охарактеризовано основні аспекти корпоративного управління, включаючи його цілі, функції, принципи, структуру та роль у стабільному функціонуванні підприємств.

*Визначено, що корпоративне управління можна розглядати як сукупність юридичних, економічних, організаційних норм і правил, у рамках яких функціонує корпорація (товариство), і на базі яких будуються: взаємовідносини між усіма її учасниками. Корпоративне управління поєднує різних учасників корпоративних відносин, кожний з яких дбає про свої власні інтереси, установлює між ними механізми і способи взаємодії.*

*Висвітлено, що більшість досліджень, що стосуються корпоративного управління, мають досить вузьку спрямованість і проводяться виключно на одному з цих рівнів.*

*Досліджуване питання є багатограним і включає в себе також визначення функцій та складових корпоративного управління, до яких можна віднести: створення стратегії та визначення цілей, забезпечення фінансової стійкості, забезпечення прозорості та відповідності, сприяння взаємодії зі зацікавленими сторонами.*

**Ключові слова:** корпоративне управління, підприємство, управління, корпорація, акціонери, корпоративні відносини



**Introduction.** The relevance of corporate governance research is constantly growing in the modern world, especially in the context of the ever-changing economic and social situation. Famous leading scientists have studied the concept of corporate governance and its features in their works. The growth of international trade and investment leads to the need to develop effective corporate governance strategies for the successful operation of companies in the international market. The transition from traditional ownership structures to new forms, such as corporate groups, associations and start-ups, requires the development of new corporate governance models that meet the current conditions. Society and stakeholders are increasingly demanding transparency, openness and ethical behavior from companies, which challenges traditional approaches to corporate governance and requires new strategies.

**Analysis of recent research and publications.** The theoretical foundations of corporate governance are actively studied in the works of both foreign and domestic scientist: F. Neubauer, A. Lank, L. Van den Berg, S. Carshon, M. Khus, A. Kostyuk, O. Khart, M. Fratiani O. Bilashenko and others.

However, many questions that are really important have not yet been sufficiently researched and are waiting for consideration and a new scientific perspective.

**The formulation of the goals of the article** is to systematize and review the key concepts, basic principles and functions that form the basis of corporate governance in order to ensure a clear understanding of the essence of this concept.

**Presentation of the main results.** Corporate governance has a two-pronged effect. On the one hand, it is a new sphere of activity and interests of state and non-state institutions (enterprises), executives and managers, shareholders and employees in transition economies. On the other hand, corporate practice in transition economies complements and rethinks the corporate

governance system in economically developed countries.

The development of the corporate sector is crucial not only for improving the efficiency of the management system of business entities, but most of all for the successful functioning of the country's economy as a whole in the context of market transformations, in particular at the level of public administration.

The diversity of scientific works on corporate governance shows that there is no unanimously accepted definition of corporate governance. This array of different views on corporate governance in the literature makes it difficult to formulate a single comprehensive definition of corporate governance.

Corporate governance is a general term, according to scholars F. Neubauer and A. Lank [1]. The term includes specific issues generated by complex interactions between internal and external actors present in the corporate environment (top management, shareholders, boards of directors, other corporate stakeholders, etc.)

The term "governance" is defined by the Oxford English Dictionary as "the act or manner of governing" [2]; in the archaic sense of the term, it is explained as "influence". As a rule, governance refers to how something is regulated, while "to govern" means: to administer, direct, order, control, dominate, rule, supervise. The basis for these explanations of the general terms "governance" and "management" is the idea of leadership and control.

Thus, the specific term "corporate governance" refers to the way companies are managed and controlled. The practice of corporate governance can be analyzed from five different perspectives, defined by L. Van den Berg and S. Carshon [3]:

1) Corporate governance can be understood at the level of the board of directors;

2) Corporate governance can be understood at the level of the so-called

"corporate governance triangle" consisting of managers, the board of directors and owners;

3) Corporate governance can be understood from the perspective of the company's direct stakeholders employees, suppliers and customers;

4) Corporate governance can be understood from the perspective of the company's indirect stakeholders the government, the environment and society as a whole;

5) Corporate governance can be understood from the perspective of the company's stakeholders the public. However, most research on corporate governance has a rather narrow focus and is conducted exclusively at one of these levels. In fact, corporate governance can be dealt with in a narrow or broad sense, as Solomon argues [4].

From a narrow perspective, corporate governance is limited to the relationship between a company and its shareholders. This definition reflects the traditional paradigm of finance expressed in the "agency theory". According to this theory, resource owners (shareholders) act as managers who entrust their resources to managers of business entities, who act as agents, to manage these resources and create additional value. Such narrow definitions are rather shareholder-oriented, such as the Walker Review definition [5]: "the role of corporate governance is to protect and promote the interests of shareholders by setting the strategic direction of the company and appointing a skilled board capable of achieving those goals".

From a broader perspective, corporate governance can be viewed as a network of relationships not only between the company and its owners (shareholders), but also between the company and a wide range of other persons who are part of the company: employees, customers, suppliers, etc.

In general, broader definitions of corporate governance emphasize a broader level of responsibility to shareholders and other stakeholders. According to the broadest definitions, companies are considered

responsible to the whole society, future generations and the environment. Such a broad view of corporate governance is shared by the scientist A.D. Suson, who defines [6] that corporate governance is "a system of checks and balances, both internal and external to companies, which thereby ensures that companies adhere to their responsibility to all their stakeholders and act on the basis of social responsibility in all areas of their business activities".

Different definitions of corporate governance used in academic discussion are often influenced by different values, ideologies or worldviews of those who use them. For example, according to the legal approach of O. Khart and M. Fratiani [7], it is believed that the focus of corporate governance is to ensure responsible corporate behavior in matters that are not directly addressed through contracts. On the other hand, from a narrow point of view, corporate governance is concerned with how creditors of corporations assure themselves that they will get their investments back.

In terms of the management approach, corporate governance is defined by A.N. Kostiuk as follows [8]: "Corporate governance establishes clear structures for accountability, responsibility and transparency at the top of the company and defines the role of the board and management". In terms of compliance, the definition has a changed focus: "Corporate governance defines a clear structure for the relationships and responsibilities between the various participants in a corporation, such as the board, managers, shareholders, and other stakeholders, and establishes rules and procedures for making decisions on corporate affairs. In fulfilling this function, it also provides a framework by which the company's objectives and the means to achieve those objectives are set and their effectiveness monitored (OECD Corporate Governance Guidelines) [9].

In Ukraine, corporate governance has been developing for a long time independently. However, paradoxically, the

situation changed for the better after the 2008 financial crisis.

In our country, as in the rest of the world, there is now an understanding that corporate governance is not only a set of certain procedures, but also an important risk management tool. By the way, this approach has already been reflected in a number of EU regulations, in particular the Basel Committee.

Scientist M. Khus [10] defines other categories of views on corporate governance: external and internal perspectives, and perspectives of unity and balancing. On the one hand, the external perspective focuses on value protection or value distribution, while the internal perspective focuses on value creation. On the other hand, the unitary perspective is short-term and board members play the role of agents working for shareholders or management, while the balancing perspective is long-term and the board is an independent organizational body at the top of the corporation.

Thus, M. Khus presents four groups of definitions of corporate governance: 1) The managerial definition of corporate governance, which emphasizes what is best for management. This is an internal and unitary perspective. 2) The shareholder preference focus, which is about how the board, managers, and corporations are instruments to achieve shareholder goals. This is an external and unitary perspective. 3) Interaction, triangulation, or stakeholder perspective of corporate governance emphasizes the relationship between the entities that participate in the decision-making process and control the resources of the enterprise. Thus, corporate governance is defined as a structure of rights and obligations between stakeholders. This is an external and balancing perspective of corporate governance. 4) A clear definition of corporate governance emphasizes what is best for the corporation and focuses on how the board contributes to value creation through the value chain. This is an internal

and balancing perspective of corporate governance [10].

Corporate governance functions are a set of tasks and responsibilities performed by the company's management to ensure efficient operation and achievement of strategic goals. The main functions of corporate governance include:

- creating a strategy and setting goals. The company's management should develop a development strategy and set specific goals that need to be achieved to be successful;

- overseeing the implementation of the strategy. Corporate governance is responsible for monitoring and evaluating the implementation of the strategy, making sure that the company is moving in line with the goals set;

- ensuring financial stability. Corporate governance is responsible for controlling the company's financial resources, defining and optimizing the financial strategy, and ensuring effective risk management;

- ensuring transparency and compliance. Corporate governance ensures compliance with transparent and ethical management standards, as well as compliance with laws and regulatory requirements;

- promoting stakeholder engagement: Corporate governance promotes interaction with shareholders, customers, partners and other stakeholders to ensure their interests and support the company's sustainable development;

- development of human resources. Corporate governance is responsible for the development of the company's human resources, including the selection and development of qualified managers and employees [11].

The functions are aimed at ensuring the effective functioning of the company and maximizing its performance and value for all stakeholders. Corporate governance functions are key elements necessary for the successful operation of any company. They define the role of management in setting strategy, monitoring the implementation of that strategy, and effectively allocating

resources and making decisions. In addition, they ensure transparency, effective communication and compliance with legislation and corporate governance standards. The overall success of the company directly depends on how effectively management performs these functions, taking into account the needs and expectations of all stakeholders [12].

Considering all of the above, it becomes obvious that there are various perspectives in corporate governance and that there is no single, consistent definition of this concept in the scientific literature. There are narrow and broad perspectives, external and internal perspectives, unitary and balancing perspectives, managerial and agency theory perspectives, etc.

The definition of corporate governance depends on the view of those who formulate it and for what purpose they use it.

In their works, the authors try to give a relatively broad definition of corporate governance, based on the definitions presented in this study, it is possible to form a definition: corporate governance is a system of checks and balances of the internal and external environment of the enterprise, which determines the rules and certain decision-making procedures that distribute its responsibilities, rights and obligations to all direct and indirect stakeholders; the corporate governance system also includes the rights, claims and responsibilities of all members of the corporation, as well as the rules and procedures used in the decision-making process at all levels of the corporation; an appropriate corporate governance system provides means for establishing and achieving corporate goals, as well as for constant monitoring and adjustment of the level of achieved results.

Corporate governance is an important element of the modern business environment, which is constantly evolving and changing. Modernity poses new challenges and requirements for companies,

to which corporate governance must respond to ensure sustainability, efficiency and competitiveness.

One of the key aspects of modern corporate governance is taking into account the interests of various stakeholders, such as shareholders, customers, employees, governmental and non-governmental organizations, and society as a whole. Ensuring transparency, openness and accountability to all stakeholders is becoming a key task of corporate governance in today's environment.

Another important aspect is the use of modern technologies in corporate governance, such as artificial intelligence, data analytics, blockchain, etc. This allows to optimize management processes, make more informed decisions and increase the efficiency of companies.

In addition, modern corporate governance takes into account general trends in society, such as changes in environmental and social standards, the development of sustainable development and corporate social responsibility concepts.

In today's competitive business environment, corporate governance plays a strategic role in ensuring the success and sustainable development of companies, adapting to new challenges and requirements of the present.

**Conclusions.** Thus, in Ukraine, practical and theoretical corporate governance is constantly being actively developed, and this concept is widely considered in organizational structures and enterprises. Achieving high efficiency of corporate governance requires ensuring the unity of organizational principles that regulate corporate relations and ensure the realization of the interests of all stakeholders, economic indicators for assessing efficiency and making and implementing management decisions, taking into account environmental factors.

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## FUNDAMENTAL PRINCIPLES OF PLANNING INNOVATIVE ACTIVITIES AT THE ENTERPRISE

**Serhii Dolynskiy, Yaroslava Slyvka, Maria Shcherban.** *"Fundamental principles of planning innovative activities at the enterprise". This article defines and establishes the essence of the concept of "innovation activity" and also identifies the stages of the innovation process, which are four in total.*

*The types of planning and peculiarities of their application to innovation activities are considered. It is determined that the types of plans differ in terms of objectives, subject matter, level, content and planning period. According to the target orientation, there are strategic, current and operational planning of innovations. Strategic planning as an element of strategic management is to define the mission of the organization at each stage of its life cycle, to form a system of goals and a strategy for behavior in the innovation markets.*

*The author summarizes that the main condition for the formation of the innovation market is the volume of investments in both scientific and scientific and technical activities. Given the 3-5-year duration of the innovation process, long-term and medium-term investments play a key role, providing financing for innovations throughout their entire life cycle*

*It is determined that innovation activity is aimed at the practical use of scientific, scientific and technical results and intellectual potential in order to obtain new or radically improved products, production technology*

*and satisfaction of effective consumer demand for high-quality goods and services, and improvement of social services.*

**Keywords:** innovation, innovation activity, enterprise, competitiveness, innovation planning, innovation development.

**Сергій Долинський, Ярослава Сливка, Марія Щербан. «Фундаментальні засади планування інноваційної діяльності на підприємстві».** У цій статті визначено та встановлено сутність поняття «інноваційна діяльність», а також виокремлено стадії інноваційного процесу, яких загалом є чотири.

Розглянуто види планування та особливості їх застосування до інноваційної діяльності. Визначено, що види планів розрізняються за цілями, предметом, рівнем, змістом і періодом планування. За цільовою орієнтацією розрізняють стратегічне, поточне й оперативне планування інновацій. Стратегічне планування як елемент стратегічного управління полягає у визначенні місії організації на кожній стадії її життєвого циклу, формуванні системи цілей діяльності і стратегії поведінки на ринках інновацій.

Узагальнено, що основною умовою формування ринку інновації є об'єми інвестицій як у сфері наукової, так і науково-технічної діяльності. Враховуючи протяжність інноваційного процесу 3-5 років, головну роль відіграють довгострокові та середньострокові інвестиції, які забезпечують фінансування новацій на протязі всього життєвого циклу.

Визначено, що інноваційна діяльність спрямована на практичне використання наукового, науково-технічного результату й інтелектуального потенціалу з метою одержання нової чи радикально поліпшеної виробленої продукції, технології її виробництва і задоволення платоспроможного попиту споживачів у високоякісних товарах і послугах, удосконалення соціального обслуговування.

**Ключові слова:** інновації, інноваційна діяльність, підприємство, конкурентоспроможність, планування інноваційної діяльності, інноваційний розвиток

**Introduction.** Starting from the second half of the XX century, innovations began to be launched for the development of mankind as a result of the combination of the results of scientific activity and their further practical implementation in various fields of social activity. Innovation, which is defined as a type of activity related to the transformation of scientific research and development, other scientific and technological achievements into a new or improved product introduced to the market, and a technological process used in practical activities, or a new approach to social services, remains today perhaps the most important factor in ensuring the effective operation of both individual enterprises and the global economic system as a whole.

**Analysis of recent research and publications.** The issue of studying the theoretical foundations and essence of

innovation activity at an enterprise is the subject of the works of many domestic and foreign economists: V.O. Vasylenko, S. M. Illiashenko, O.V. Kovalenko, P.M. Koiuda, Y.V. Lavrova, S. V. Lehominova, I.A. Sheiko, O.I. Shamanska, O.H. Spykuliak and others. However, some aspects of innovation planning require clarification and further development.

**The formulation of the goals of the article** is to consider and analyze the fundamental principles underlying the planning of innovative activities at the enterprise. This analysis is aimed at the study of theoretical concepts and practical approaches to the planning of the innovation process in order to ensure the effective implementation of innovation strategies in the enterprise.

**Presentation of the main results.** Innovatoin (eng.) is formed from two words

latin "innovatio" (novelty, innovation) and the english prefix "in", which means "into", "introduction". Therefore, in english, "innovation" means: the introduction of something new, renewal [1].

Innovation is the use of the results of intellectual work, technological developments aimed at improving socio-economic activity in a particular area of social activity (production, economic, legal and social relations, science, culture, education, etc.), i.e. the use of something new, progressive, promising. However, this new, progressive, promising does not always appear on the surface with full brightness. It needs to be identified, perceived, verified, proven when organizing financing of innovative projects, and their attractiveness to investors needs to be determined. Innovation, an innovation project is a model of future innovation, each innovation should

work for the future, the progressive development of a particular enterprise, industry, and the national economy as a whole [1].

Innovations are the result of innovation processes, and their introduction into business practice is defined as an innovation, i.e. from the moment of adoption for dissemination, the innovation acquires a new quality and becomes an innovation.

Thus, innovation is an innovation related to scientific and technological progress (STP) and consisting in the renewal of fixed assets and technologies, improvement of management and economy of the enterprise.

We consider it necessary to analyze the essence of the innovation in more detail (Tab. 1).

Table 1. Definition of the concept of "innovation activity"

Source	Interpretation of the essence
Law of Ukraine "On Investment Activity"	Innovative activity – production and sale of completely new types of equipment and technologies; gradual cross-industry and structural changes; implementation of long-term scientific and technical programs with long investment return periods; promotion of fundamental research, which contributes to qualitative changes in the state of productive forces; development and implementation of new resource-saving technologies to improve the social and environmental situation.
O.H. Spykuliak	Innovative activity is a type of activity that allows you to create fundamentally new products, new services, based on scientific research and lead to something that does not exist.
P.M. Koiuda I.A. Sheiko	The innovative activity of the enterprise is an activity aimed at the development, use and commercialization of scientific and technical and technological results (innovations) of the innovative production process, by expanding the terminology (range), introducing the latest technologies (management or improvement).
S. M. Illiashenko	Innovation is the process of creating, implementing and disseminating an innovation.

Source: based on [6, 11, 15, 16].

In market conditions, innovations cover the entire economy, including productive forces (means of production, training of employees) and production relations (forms and methods of management, division, specialization and cooperation of labor).

Innovative activities also include long-term work on the creation and implementation of innovative projects with the participation of design institutes and research centers on the scale of regions, industries or the country [2].

In everyday practice, the concepts of innovation, innovation, innovation, innovation are usually equated, which is quite understandable. Any inventions, new phenomena, types of services or methods will be recognized only when they are adopted for distribution (commercialization), and in this new capacity they will act as innovations.

Based on the definition of innovation and the challenges faced by innovations as compared to "ordinary" investment projects, the implementation of innovations has the following fundamental features:

- higher degree of uncertainty of project parameters (projected results, development and implementation timeframes, revenue expenditures), which significantly reduces the reliability of the preliminary financial assessment of the project. This requires additional selection criteria based on the collection of a large amount of necessary information in order to avoid additional work that would increase project development costs;
- focus on long-term results, which requires a strict approach to forecasting results and taking into account the time factor;
- the need to engage highly qualified, experienced researchers;
- the possibility of terminating the project without significant losses of material and financial resources. There may be various reasons for terminating the project, such as the inability to further finance the project, identification of miscalculations in the effectiveness or feasibility of the innovation, etc;
- high probability of obtaining higher project results that were not expected but have commercial appeal. This makes it possible to count on rapid diffusion of the project and potentially high profits [3].

Taking into account these fundamental features of the development and implementation of innovations, the innovator company assesses its production (resource), financial and economic capabilities and selects the most attractive innovation project

from its point of view. It analyzes market conditions, diagnoses production capacities and product range, administrative, managerial, scientific and technical personnel of the company.

The innovation option required by the company must meet several key criteria, the most important of which are market potential and expected profit.

Based on such requirements, in the current environment, when computer calculations of project attractiveness are performed, American firms use up to 30 project selection criteria. The choice is made on the basis of a scoring system for evaluating the proposed results, taking into account the weighting coefficients of each of the criteria [4].

When determining the attractiveness of a project, an investor attaches great importance to the following financial and economic factors: the amount of investment, payback period, profitability and efficiency, and net income. These indicators are of particular importance when attracting a strategic investor, a financial institution that is able to finance an innovation.

However, there are cases when financial and economic factors play a secondary role rather than the main one: for example, when implementing environmental innovation programs or programs in cultural and educational activities, which are almost always unprofitable.

Thus, the investment attractiveness of an innovation project depends on both financial and economic factors and extra-economic factors. In all cases, financial policy in innovation is related to capital mobilization and, based on the life cycles of innovations, at the initial stage of innovation it is necessary to provide investors with the necessary capital, since the innovation cycle is unprofitable. After mobilizing capital for innovation, it is necessary to ensure the deployment of scientific developments in order to obtain scientific and technical information. This is followed by the stage of materializing this information, developing a technological

process, creating prototypes, and bringing them to mass production. When an innovation enters the market, it becomes profitable and reaches maturity. At the stage of maturity, the enterprise receives maximum profits and has the opportunity to ensure the accumulation of capital that cannot be used in innovative activities [5].

Innovative activity means the activities of the team aimed at ensuring that scientific and technical ideas, inventions (innovations) are brought to a result suitable for practical application and sale on the market in order to meet the needs of society for competitive goods and services. Article 3 of the Law of Ukraine "On Investment Activity" defines innovation activity as "one of the forms of investment activity" carried out with the aim of introducing the achievements of scientific and technological progress into production and the social sphere. This activity includes [6, 7]:

- production and dissemination of fundamentally new types of equipment and technology;
- progressive cross-sectoral structural shifts;
- optimization of the innovation project;
- implementation of long-term scientific and technical programs with long payback periods;
- funding of fundamental research to implement qualitative changes in the state of productive forces;
- development and implementation of new resource-saving technologies designed to improve the social and environmental situation.

The following types of innovation activities are distinguished:

- conducting research and development aimed at creating intellectual property, scientific and technical products;
- development, mastering, production and distribution of fundamentally new types of equipment and technology
- development and implementation of new resource-saving technologies designed

to improve the social and environmental situation;

- technical re-equipment, reconstruction, expansion, construction of new enterprises carried out for the first time as industrial development of new products or introduction of new technologies.

The core of innovation activity at an enterprise is the development (commercialization) of new types of products or methods of their production, delivery and sale. When determining the areas of innovation activity, the company's management decides whether to focus on product or technological innovations. At the same time, it is important who is the "initiator" of the innovation: a consumer, a supplier or a competitor.

Innovative activity in its entirety is complex, systemic and covers such activities as the search for ideas, licenses, patents, personnel, organization of research, engineering and technical activities that combine invention, rationalization, design, creation of engineering and technical facilities, information and marketing activities. All this creates progressive conditions for innovative development and intensification of innovation processes. In other words, innovation activity is considered as a set of works performed by certain organizational structures from the inception of an idea, its development and commercialization in a competitive environment [8].

It should be noted that innovation activity is influenced by a number of factors that can be divided into the following groups:

- technical and economic;
- organizational and managerial;
- legal;
- social and psychological.

At the same time, the impact of these factors can be both stimulating and restraining [9].

The implementation of innovation management in general includes:

- development of plans and programs of innovation activities;



- supervision of the development of new products and technologies, their implementation;
- consideration of programs for the development of new products and technologies;
- ensuring a unified innovation policy and coordination;
- providing financial and material resources for innovation programs;
- approval of temporary task forces for comprehensive solution of innovation problems from idea to mass production [9].

At the present stage of economic development, innovations are becoming the main means of maintaining competitiveness and are becoming an integral part of business activity. Management of innovations is carried out in parallel with the management of existing traditional production. However, the methods of innovation management differ from the methods of traditional production management, since innovation processes are aimed at creating previously non-existent products, qualitative renewal of productive forces and production relations [10].

It should be borne in mind that time is constantly depreciating existing products and technologies, so to avoid a technological lag, innovations should be predicted and implemented on a continuous basis, not just when critical circumstances arise. Product, technological and organizational innovations are interrelated, so they should be implemented in a comprehensive manner. Thus, the main principles of innovation management are:

- principle of continuous forecasting of the innovation situation;
- principle of dynamic prevention of technological lag;
- the principle of systematic introduction of innovations in interrelated areas of business activity;
- principle of combining investments with innovations;
- the principle of combining financial and engineering analysis of the effectiveness of innovations.

If the money for innovations is taken from the budget, any innovations with minimal profit are beneficial to the enterprise [11]. In the case of self-financing, the money for the implementation of research and development is taken from the working capital of the enterprise, so the innovation manager must look for convincing arguments, justify the need for innovation and appropriate capital investments in the future development of the enterprise to maintain its worthy place in the market of goods and services [12].

The period from the inception of an idea, its development to the implementation of an innovation is called the innovation life cycle. Taking into account the sequence of activities of the innovation life cycle, all these activities are considered as an innovation process.

The main product of the market of innovations is a scientific and technical result of intellectual activity, which is subject to copyright, registered in accordance with the current international law and current legislation of Ukraine [13].

Market development and competition not only stimulate, but also force commercial organizations to participate in the formation of the market for innovations in the following areas:

- development of personal scientific, scientific, technical and experimental base for conducting research and development;
- conducting research on a cooperative basis with other organizations;
- placing orders for research or experimental work with another organization;
- acquisition of licenses for the right to produce goods or services;
- purchase of a finished product, technology, know-how and other intellectual property;
- acquisition of intangible assets through the issue of shares, bonds, foreign capital and organization of joint production.

The main condition for the formation of the innovation market is the volume of investments in both scientific and technological activities. Given that the

innovation process takes 3-5 years, long-term and medium-term investments play a key role in financing innovations throughout their life cycle.

Innovative activity is aimed at the practical use of scientific, scientific and technical results and intellectual potential in order to obtain new or radically improved products, production technologies and meet the effective demand of consumers for high-quality goods and services, and improve social services.

The innovation process can be viewed from different perspectives and with varying degrees of detail:

- parallel and sequential implementation of scientific and technical innovation, production activities and marketing;

- in the form of temporary stages of the innovation life cycle from the emergence of an idea to its development and implementation;

- as the process of financing and investing in development for the introduction and distribution of a new type of product or service.

Thus, the innovation process consists in obtaining commercialization of inventions, new technologies, types of products and services, solutions of organizational, technical, economic, social and other results of innovation activity [14].

The innovation process is carried out in four stages (Tab. 2).

Table 2. Stages of the innovation process

Stages of the innovation process	I. Basic research in academic institutes, higher education institutions, and specialized laboratories. Budgetary funding on a non-refundable basis.
	II. Research of a prescriptive nature. They are conducted in all scientific organizations and are funded both from the budget and at the expense of customers.
	III. Research and development and experimental developments are carried out. They are carried out in subdivisions of research institutes, specialized laboratories, and subdivisions of large industrial enterprises. They are financed both from the state budget and at the expense of customers, as well as at their own expense.
	IV. The commercialization process is carried out, starting with the introduction into production, market entry and sale of the product.

Source: based on [14].

Late implementation of innovations leads to a "futuroshock" effect, i.e. a situation where circumstances prompt drastic changes in a short period of time with high resource costs and extreme stress. This can result not only in loss of profit, but also in the destruction of an enterprise or organization [15].

The gradual exhaustion of the potential of any idea and innovation based on it is objective and is caused by obsolescence. Therefore, it is necessary to reserve funds for innovations in advance from current profits, look for other sources of financing innovations and constantly worry about the

birth of new ideas for the development of the enterprise. Despite the fact that identifying the limit of technology potential is a complex process, depending on the efficiency of investment in a particular industry, there comes a time when the return on innovation is equal to the average return on investment.

The period of decline in the effectiveness of innovations varies widely and depends on the type of innovation and its potential. The best innovations are those that are foreseen already in the enterprise project and provide fundamental changes in the technological process or launching knowledge-intensive products with a high level of competitive ability.

The given evidence convinces of the need for constant updating of products and production in order to avoid the threat of loss of competitiveness of the enterprise and the already mentioned effect of future shock. Any enterprise that wants to survive in market conditions must have a recovery mechanism and innovative management procedures at its disposal [16].

It should be taken into account that innovations are always associated with risk, but their rejection is even more risks. Very often, the need to update products or technology arises precisely when the company's financial results look good and a false impression is made that the company can continue to exist in its traditional form for a long time. The task of the innovative manager is to overcome this contradiction, to convince the management and the entire team of the need for changes, if there is an opportunity to ensure their significant growth in the future due to a temporary decrease in income. The diminishing return on investment in the existing traditional technology is initially perceived as insignificant, but if competitors make a breakthrough in a new technology, consumers can very quickly give preference to the competitors' new products [17].

The dynamics of production renewal is that each technology slowly gathers pace at first, accelerates the movement. And then it

gradually loses its potential, as more advanced technologies appear. Therefore, it is necessary to part with familiar products and technologies precisely when they, as it seems from a purely financial point of view, bring the greatest profit.

Simultaneously with the diagnosis of the limit of effectiveness, the idea of a new technological breakthrough should be born. The speed of technological gaps depends on the specifics of the industry. For example, Japanese companies spend 4-5 months on the production of a new model of color television from the realization of the need for it to the moment of its realization in large quantities. To accelerate the process of innovation, operational cooperation of different firms, each of which specializes in the development and production of a part of the final new product, can be used.

Innovations are any technical, organizational, economic and managerial changes different from the existing practice in this organization. They may be known and used in other organizations, but for those organizations in which they have not yet been mastered, their implementation is a new matter and can lead to considerable difficulties. Organizations have different receptivity to innovations, their innovative potential significantly depends on the parameters of organizational management structures, professional and qualification composition, industrial and production personnel, external conditions of economic activity and other factors.

**Conclusions.** Thus, having considered the essence and object of innovation activity, we can draw the following conclusions. Innovations are the result of innovation processes, and their introduction into business practice is defined as an innovation, i.e. from the moment of adoption for dissemination, the innovation acquires a new quality and becomes an innovation. Thus, innovation is an innovation related to scientific and technological progress (STP) and consisting in the renewal of fixed assets

and technologies, improvement of management and economy of the enterprise.

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Scientific publication

## **INTELLECTUALIZATION OF LOGISTICS AND SUPPLY CHAIN MANAGEMENT**

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