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INCREASING THE ROLE OF MILITARY LOGISTICS IN THE CONTEXT OF GROWING GEOPOLITICAL INSTABILITY BASED ON STRATEGIC MANAGEMENT

The object of research is the process of strategic management of military logistics to ensure national combat capability in the face of growing geopolitical instability.

The study presents provisions on the global role of military logistics – it is the basis of any defense operation, because it includes planning and organizing the movement and maintenance of military forces.

The key driving forces of military logistics are revealed: growing geopolitical instability, technological progress in the defense sector, which contributes to new profitable opportunities, opportunities for using the Logistics 4.0 concept. The volume of the global military logistics market in 2024 is analyzed, which is estimated at 419.46 billion USD and the forecast for 2025–2032, according to which it will reach 600.91 billion USD.

It is revealed that the development of military logistics is hindered by budget constraints and poorly developed infrastructure, which are key challenges.

The content of the concept of “strategic management of military logistics” as a process of planning and coordinating resources, personnel and materials necessary for conducting military operations at all levels, aimed at achieving long-term goals, is substantiated.

A methodological approach has been developed regarding the model of strategic management of military logistics as a complex structure adapted to the specific needs of military operations, integrating logistics processes with the overall strategy and tactics of military operations. It includes four main components (information base formation, strategy development, implementation and evaluation and control) and defines key strategic directions for the development of military logistics.

It is revealed that the development of military logistics is hindered by budget constraints and poorly developed infrastructure, which are key challenges. Modern innovative solutions in military logistics are identified: autonomous vehicles and drones, artificial intelligence (AI) and machine learning, blockchain for secure supply chains, 3D, Internet of Things (IoT), renewable energy solutions, advanced training and simulation. The results of the study are to justify the need to use the achievements of military logistics to ensure and maintain the combat capability of the country with the lowest possible total costs in the context of the growing threat of military conflicts.

Keywords: military logistics, efficiency, National combat capability, geopolitical instability, strategic management, innovation, digitalization.

Received: 25.04.2025

Received in revised form: 03.07.2025

Accepted: 23.07.2025

Published: 30.08.2025

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How to cite

Karbovska, L., Kalina, I., Voroshnov, S., Mazur, Y., Zhelezniak, K., Kozlova, A. (2025). Increasing the role of military logistics in the context of growing geopolitical instability based on strategic management. *Technology Audit and Production Reserves*, 4 (4 (84)), 24–29. <https://doi.org/10.15587/2706-5448.2025.336198>

1. Introduction

Military logistics is the process of planning, implementing, and controlling the efficient and effective transportation, distribution, and maintenance of military forces and equipment. It includes a wide range of responsibilities, such as receiving and distributing supplies, transporting troops, constructing and maintaining facilities, providing medical care, and overseeing the instruction, assignment, and discharge of personnel [1].

The problems of military logistics are currently attracting the attention of many scholars and practitioners, with interest growing especially since the beginning of the full-scale invasion of Ukraine by the Russian Federation. The main stages and characteristics of military scientific research are considered in [2], which presents such scientific

theories as systems theory, network theory, and organizational theory, and an analysis is made, from which a conclusion is drawn about the possibilities of applying the above-mentioned theories to military logistics. The essence of the concept of “military logistics” is revealed as a process of designing, managing and constantly optimizing a military logistics network through military logistics management [3] and as a set of processes that support military organizations in their development towards a combat-ready, sustainable military force [4]. The factors that should be taken into account when planning and conducting military operations are identified: destination; distance; demand; duration; variety; dispersion (dispersion) and considered in isolation, since they are interdependent [3]. Mega- and microtrends in logistics are studied and their consequences for military logistics are determined.

The concept of “military logistics 4.0” is revealed as a component of Logistics 4.0 [5], which is part of Industry 4.0 [6]. The concepts of Industry 4.0 and Logistics 4.0 are characterized by the widespread use of digital technologies in production and logistics. Changes in the civilian technological environment have an impact on the capabilities of military logistics services. The combination of digitalization with robotics, as well as autonomization, will primarily contribute to increasing efficiency in the field of civilian logistics, and will also change outdated supply chains and processes. Given the current instability in European security, the military is looking for effective ways to grow and counter new threats. NATO’s logistics policy is formulated in a number of key policy documents of the bloc. This is firstly, strategic-level logistics policy, in the form of North Atlantic Council memoranda and Military Committee documents; secondly, such documents as: common logistics doctrine, component logistics doctrine, logistics tactics, methods and procedures and logistics directives. In May 2024, a key policy document was adopted – the Logistics Action Plan, agreed by the allies. It allows to determine the best ways to implement collective decisions and ensure that NATO maintains its strategic advantage in logistics, setting requirements for logistical support that are increasing in complexity and scale [7].

The problem of strategic management of military logistics is of considerable interest in academic circles, since logistics is the process of managing material and associated flows. The work [8] determined that logistics should be considered in terms of strategic management, tactics and operational art, and not on a situational basis. Instead, it should play a central role in military affairs and operational planning. Strategic methods of strengthening the resilience of the supply chain are considered, with an emphasis on the need for innovative and adaptive solutions in military logistics [9]; the development of logistical support in the armed forces [10, 11], state support in conflict and full-scale war [12].

The publications also focus on the global role of military logistics and logistical support in increasing the security and defense capability of states. Thus, the source [13] emphasizes that military logistics is “potential energy” for war, campaigns and combat operations. It is a central component of existing and potential national power.

Given the significant number of achievements in the field of military logistics and logistical support of the armed forces, a number of problems still remain beyond the attention of scientists. They concern the strategic coordination of resources and logistics management, strategic management of the security of the defense supply chain, the use of data to optimize logistics operations, the problem of innovation and efficiency in the context of cooperation between military organizations.

Given the above, *the aim of research* is to assess the role of military logistics in the context of growing geopolitical instability and develop a methodological approach to the model of strategic management of military logistics to achieve the goals of ensuring and maintaining national combat capability.

2. Materials and Methods

The object of research is the process of strategic management of military logistics to ensure national combat capability in the conditions of growing geopolitical instability.

The methodological basis of research is a systematic approach to the components and elements of strategic management of military logistics in the conditions of growing geopolitical instability based on the use of both general scientific methods: system analysis; comparative analysis; induction and deduction; and special – tabular and graphical. The study used political documents, doctrines and memoranda of NATO on all functional areas of logistics; results of research by scientists and military practitioners, regulatory and legal acts regulating military logistics in Ukraine, reports of the global market research company Market Research Future (MRFR) and statistical data of the global data and business analytics platform Statista.

3. Results and Discussion

Military logistics is the strategic and operational management of various activities that systematically, completely and continuously meet the needs of the armed forces. Military logistics covers a wide range of tools and processes aimed at ensuring the effective functioning of the armed forces. The global role of military logistics is as follows:

1. *Military logistics is the basis of any defense operation.* This includes the planning and execution of movements and maintenance of military forces. Effective logistics ensures that troops are well equipped, supplied and ready for action at any time. In complex military operations, logistics plays a crucial role in the success or failure of missions [9].

2. *Strategic advantage.* Countries with developed military logistics capabilities have a significant strategic advantage. Effective logistics ensures the rapid deployment and support of forces, which is crucial for both offensive and defensive operations. This strategic advantage can deter potential aggressors and provide a vital advantage in conflict situations.

3. *Economic impact.* Military logistics also has a significant economic impact. The defense industry is a significant employer and a driver of technological innovation. Investments in military logistics often lead to breakthroughs that benefit other sectors, such as transportation, healthcare, and manufacturing. Thus, the economic benefits extend beyond military activities, contributing to overall national growth.

4. *Positive changes as an investment or business point* – increased defense budgets. A number of countries are increasing their defense budgets to respond to threats. Such increased funding creates profitable opportunities for enterprises involved in military logistics. Companies specializing in transportation, supply chain management, and technology are experiencing increasing demand for their services and products.

5. *Technological innovation.* The transformation of military logistics is being driven by technological advances. Innovations such as autonomous vehicles, artificial intelligence, and blockchain are streamlining logistics operations, reducing costs, and increasing efficiency. Companies that invest in these technologies are well positioned to capitalize on the growing demand for advanced military logistics solutions.

6. *Public-private partnerships.* Governments are increasingly seeking partnerships with private sector companies to enhance their logistics capabilities. This allows for the sharing of expertise and resources, resulting in more efficient and effective logistics operations. For businesses, these partnerships represent a significant opportunity to contribute to national security while achieving significant financial benefits [14].

Contrary to the commonly held belief that “strategy leads logistics”, [15] argues that, in fact, the opposite is often the case – “logistics often trumps strategy, and it is the success or failure of logistics at the lower levels of warfare that has the greatest impact”. Defense logistics can exist without a national military strategy, campaign plans, or tactical maneuver, but it cannot effectively perform these functions without drawing on the capabilities of the existing logistics system. They argue that the Russian Federation’s greatest failure in the war with Ukraine occurred at its strategic level, from the failure of previous operations to the flawed assumptions that underpinned its initial operational steps. The authors fully acknowledge that if strategy addresses the political roots of the invasion, then strategy creates the conditions for the failure of Russian logistics. In Ukraine, logistics does have a significant impact and advantage over strategy. This resulting logistics is itself the product of a complex interaction between a variety of organizational strategic, command, doctrinal, cultural, and historical factors, many of which originate at strategic levels, further reinforcing the bidirectional nature of strategy – logistics dynamics [15].

The role of logistics for the Armed Forces of Ukraine is enormous. It was founded on a volunteer movement that emerged in 2014 with the beginning of the Russian military operations in Donbas during the so-called anti-terrorist operation, and its origins date back to the Orange Revolution of 2004 and the Revolution of Dignity.

Analyzing the unsuccessful actions of the Russian armed forces in Ukraine, logistics is considered the main factor in these failures [16]. The influence of such factors as: poor equipment, terrible communication, confusion in management and command, shortcomings in the functioning of Russian air defense, as well as weak morale has also been identified.

When politicians make decisions on increasing the number and capabilities of the armed forces, logistics is a key factor in this process. Therefore, in conditions of growing geopolitical instability, military logistics is an important factor in ensuring national military power.

However, there are a number of factors that accelerate or inhibit its development. Thus, increasing geopolitical instability is a key driver of the growth of military logistics. Interstate conflicts require armed groups to strengthen their capabilities based on advanced technologies in weapons, artillery and vehicles. And this stimulates the demand for military equipment, which has a positive impact on the military logistics market. In addition, the growth of military logistics is driven by the emergence of new or expansion of existing military bases to strengthen border security and modernize facilities [17].

The growing number of military deployments and peacekeeping missions requires adequate logistical support. According to the UN, in December 2021, there were 12 active UN peacekeeping operations, in which 87,566 personnel participated. This accelerated operational pace, combined with the complexity of modern combat operations, increases the demand for advanced military logistics solutions that ensure timely and effective supply chain management. The demand for military logistics is also being driven by the growing need to deploy troops to participate in humanitarian missions, such as disaster relief and emergency medical care.

Global military spending is currently growing for the ninth consecutive year. According to a report by the Stockholm International Peace Research Institute (SIPRI), global military spending in 2020 reached 1,980 billion USD, a 2.6% increase over 2019, and in 2023 it will reach 2,443 billion USD, a 6.8% increase over 2022. The reasons for the growth were the full-scale Russian invasion of Ukraine in 2022, the war in Gaza, and rising tensions in the South China Sea. North America is by far the world's leading region in terms of military spending. Rapid growth was also recorded in Europe, Asia, Oceania and the Middle East, although growth was noted in all five geographical regions [18].

According to data published by the Stockholm International Peace Research Institute (SIPRI), the following countries had the highest military spending in 2023 (Fig. 1).

Technological innovation. Another important factor in the development of military logistics is the growing technological progress in the defense sector, which contributes to new profitable opportunities. The introduction of technologies such as artificial intelligence, the Internet of Things, and blockchain into military logistics increases its efficiency. Technological improvement and the combination of various related technologies and artificial intelligence create space for market growth. The US Department of Defense in its budget for fiscal year 2022 received 5.5 billion USD for initiatives related to artificial intelligence, a significant part of which is allocated to improving logistics and supply chain management [1].

As the experience of modern warfare has shown, the use of unmanned aerial vehicles (UAVs) for military logistics now opens up great opportunities. This is confirmed by Operation Spiderweb, a covert drone attack on five Russian air bases on June 1, 2025, which destroyed dozens of strategic bombers hundreds of kilometers from the Ukrainian border. Another important driver is the growing possibilities for using the concept of Logistics 4.0, which is an integral part of Industry 4.0 [6]. The bases of Logistics 4.0 are processes and objects that control and organize themselves. For example, GPS signals can be used for localization, barcodes, RFID and sensors for identification, and there is also electronic data exchange, which can be implemented, for example, using cloud solutions. The product of these developments are "smart" or "intelligent" systems that can increase awareness of the environment and provide information in real time, which leads to the implementation of advanced methods of military logistics [19]. Defense Logistics 4.0 uses advanced digital technologies to improve the efficiency and responsiveness of military supply chains through automation and data-driven decision-making. The military logistics sector therefore has room for growth. The market size in 2024 was estimated at 419.46 billion USD and is projected to reach 600.91 billion USD by 2032, growing at a CAGR of 5.07% from 2026 to 2032 [1] (Fig. 2).

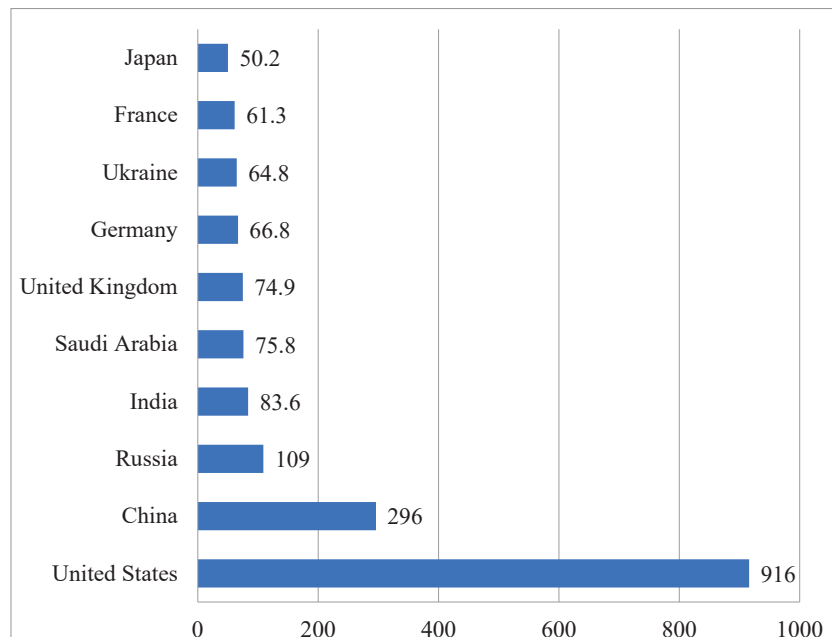


Fig. 1. Military spending of the world in 2023, billion USD (based on data [18])

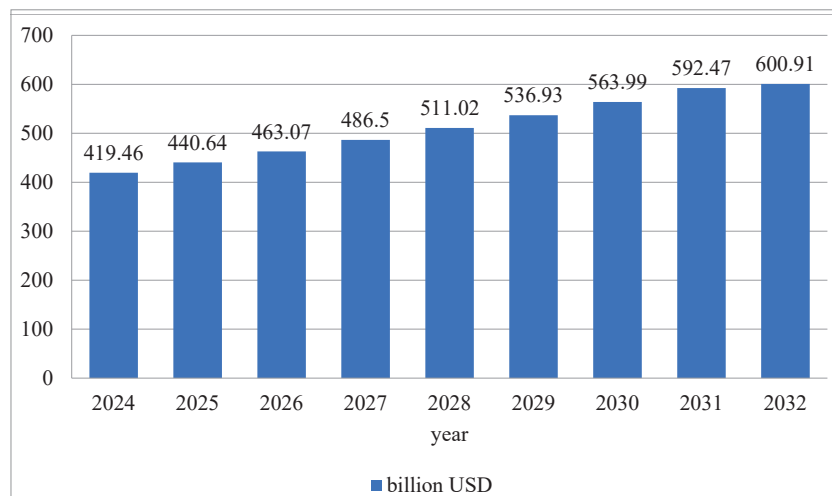


Fig. 2. Dynamics of the global military logistics market volume in 2024 and forecast for 2025–2032 (based on data [18])

Modern military logistics in organizations faces internal and external problems. The key challenges are as follows:

1. *Budgetary constraints:* they have a significant impact on the military logistics market. After all, a number of countries have insufficient defense resources, which limits their ability to invest in innovative logistics systems and technologies. This hinders the modernization and efficiency of military logistics operations, jeopardizing the overall readiness and capabilities of the armed forces. As countries prioritize costs, logistics does not receive adequate funding, which leads to outdated systems and processes.

2. *Military logistics* is highly dependent on strong infrastructure, so shortcomings in this area create significant problems, especially in poorer countries. Poor transportation networks, outdated equipment, and insufficient technological support hinder the effective functioning of logistics systems. These gaps cause delays in the deployment of personnel and materials, which negatively affects mission readiness and operational effectiveness [14]. Consequently, the huge costs of establishing military bases and the risks associated with the complexity of the supply chain hinder the development of military logistics. Internally, military logistics organizations typically rely on concept development, which consistently follows strategy development. Strategic military logistics management is the process of planning and coordinating the resources, personnel, and materials required for military operations at all levels, aimed at achieving long-term goals. It includes four main components, namely: strategy formulation, strategy implementation, and strategy evaluation and control (Fig. 3).

Strategic management encompasses the processes of transportation, supply chain management, inventory control, and maintenance that are aimed at providing the armed forces with the necessary support to achieve their objectives. The strategic military logistics management model is presented in Fig. 4.

Today, military organizations are increasingly focusing on new capabilities created by advanced technologies as a way to transform logistics. As military forces increasingly rely on complex supply chains and distribution networks, the need for intelligent logistics solutions is growing (Fig. 5).

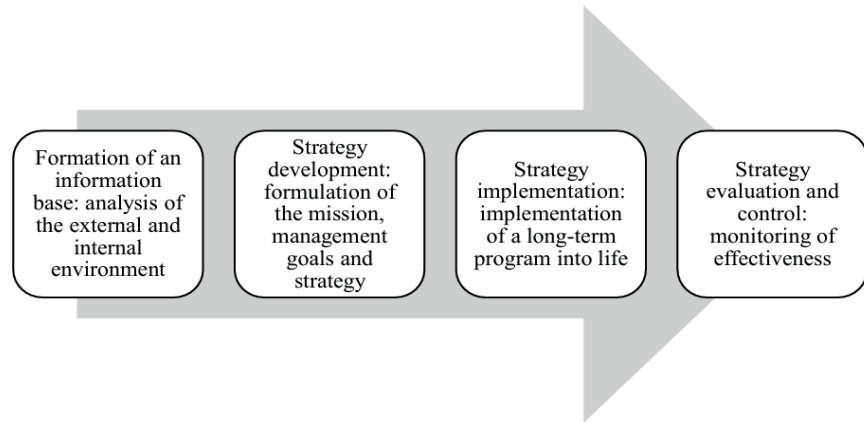


Fig. 3. Components of strategic military logistics management (based on data from [20])

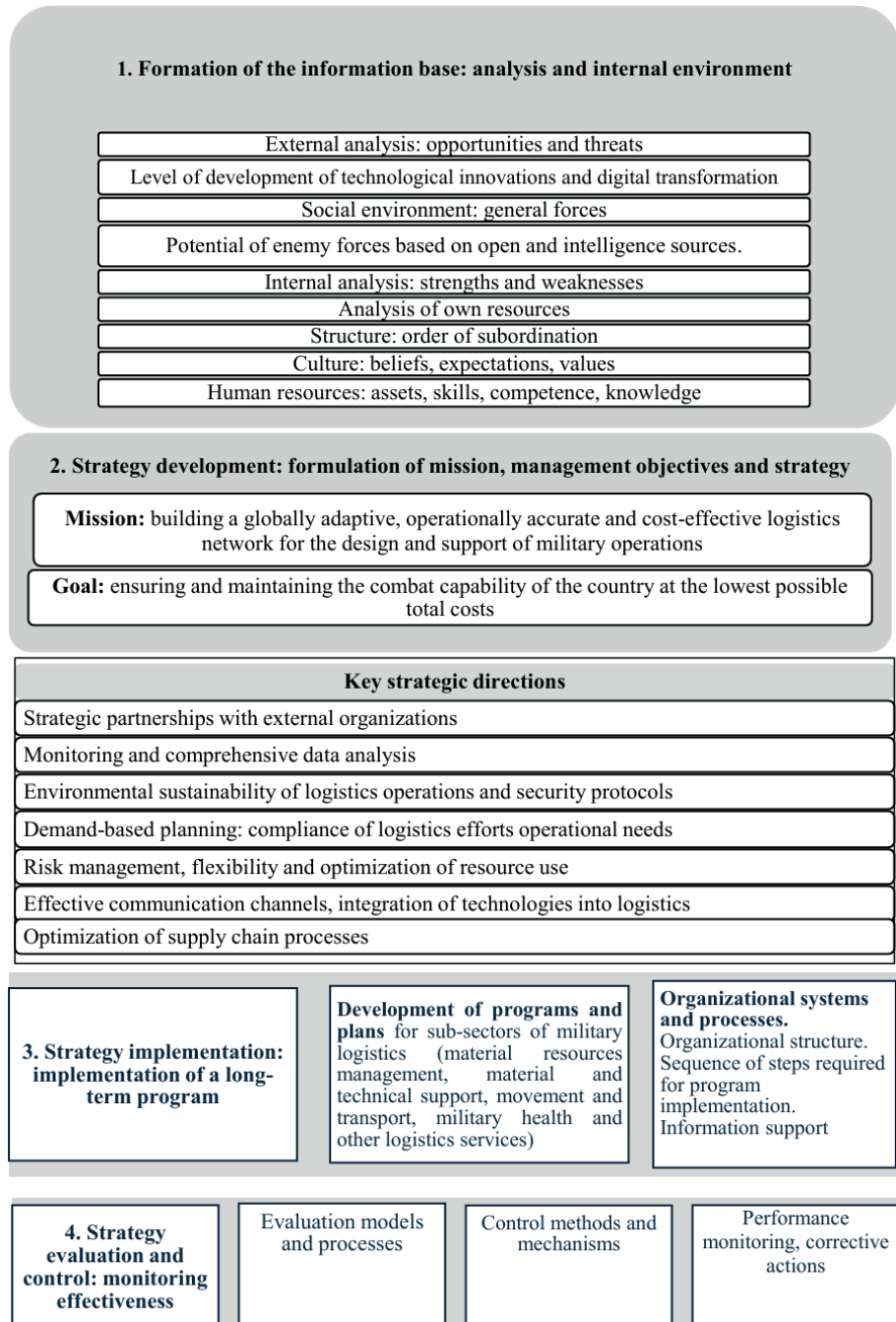


Fig. 4. Strategic military logistics management model

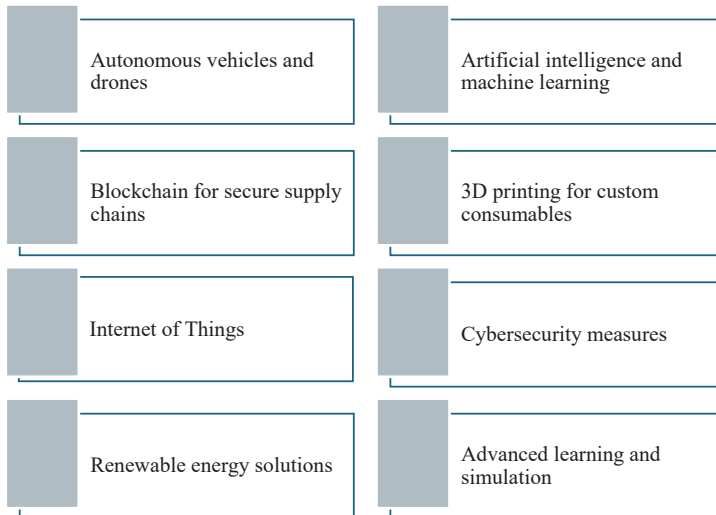


Fig. 5. Modern innovative solutions in military logistics (compiled based on data [14])

1. *Autonomous vehicles and UAVs* are revolutionizing military logistics. These technologies are used to transport supplies, conduct reconnaissance, and even evacuate wounded soldiers. Autonomous systems reduce the risk to human life and increase the efficiency of logistics operations. For example, autonomous convoys can transport cargo through dangerous areas without the risk of involving human drivers.

2. *Artificial intelligence (AI) and machine learning* are integrated into military logistics to optimize operations. AI algorithms can predict equipment failures, optimize supply chains, and improve decision-making processes. Machine learning models analyze huge amounts of data to identify patterns and trends, which allows for more accurate forecasts and planning.

3. *Blockchain for secure supply chains*. Blockchain technology is used to create secure and transparent supply chains. By providing an immutable record of transactions, blockchain ensures the integrity and traceability of supplies. This is especially important during military operations, where the security of logistics data is paramount.

4. *3D printing* is becoming a revolutionary solution in military logistics. This technology allows parts and consumables to be produced on demand, reducing the need for large inventories and longer supply chains. In remote or hostile environments, 3D printing can quickly provide critical components, ensuring the operational activities of troops.

5. *The Internet of Things (IoT)* is used to create interconnected systems that improve logistics operations. IoT devices provide real-time data on the location and status of inventory, allowing for more efficient inventory management and reducing the risk of shortages. Smart sensors monitor equipment and alert maintenance teams to potential problems before they become critical.

6. *Cybersecurity measures*. As military logistics becomes increasingly digital, cybersecurity is paramount. Innovative cybersecurity measures are being implemented to protect logistics systems from cyberattacks. This includes advanced encryption, secure communication protocols, and constant network monitoring.

7. *Renewable energy solutions*. Sustainable and renewable energy solutions are being integrated into military logistics to reduce dependence on traditional fuel sources. Solar panels, wind turbines, and other renewable energy technologies are being deployed to power logistics operations in remote or autonomous locations. This not only reduces the environmental impact, but also increases the resilience and sustainability of military operations.

8. *Advanced training and simulation*. Advanced training and simulation technologies are being used to train logistics personnel for real-world scenarios. Virtual reality (VR) and augmented reality (AR) provide an immersive learning experience, allowing personnel to practice complex logistics operations in a controlled environment. These technologies increase readiness and ensure that logistics teams are well prepared for any situation [14].

The practical significance of the research results lies in the development of a methodological approach to the model of strategic management of military logistics as a comprehensive structure adapted to the specific needs of military operations, which integrates logistics processes with the overall strategy and tactics of military operations. The proposed model (Fig. 5), unlike traditional ones, is based on a systemic approach and identifies key strategic directions for the development of military logistics to ensure the combat capability of countries in conditions of increasing geopolitical instability. For the Armed Forces of Ukraine, effective military logistics is a condition and factor for achieving strategic success in the war with the Russian Federation based on resilience, operational readiness, and the ability to respond to both possible and unforeseen threats.

The limitations of research include the lack of statistical data on the state of military logistics in Ukraine. The use of the research results also has its limitations: lack of resources, management problems, inefficiency of processes, bureaucratic obstacles, corruption, weak state support, lack of strategic vision.

Prospects for further research include the identification and analysis of the impact of digital innovative technologies on military logistics.

4. Conclusions

The research results justify the need to use the achievements of military logistics to ensure and maintain the country's combat capability with the lowest possible total costs in conditions of increasing threat of military conflicts. Military logistics is undergoing a profound transformation, driven by technological innovations and strategic investments.

These achievements increase the efficiency, safety and sustainability of logistics operations, ensuring better preparation of the armed forces to meet the challenges of the modern battlefield. With the increase in defense budgets and the prosperity of public-private partnerships, the future of military logistics looks promising, offering significant opportunities for business and investors.

Conflict of interest

The authors declare that they have no conflict of interest in relation to this research, including financial, personal, authorship or other nature, which could affect the research and its results presented in this article.

Financing

The research was conducted without financial support.

Data availability

The manuscript has no associated data.

Use of artificial intelligence

The authors confirm that they did not use artificial intelligence technologies in creating the presented work.

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