The article analyses the existing approaches implemented in the logistics management bodies of NATO member states and the Armed Forces of Ukraine. The essence of the logistics management system of the National Guard of Ukraine is revealed. The analysis of software products used to automate the logistics management system and to support decision-making is carried out. Recommendations to the logistics management bodies on the use of automation tools both in daily activities and in planning the logistics support of military units of the National Guard of Ukraine while performing assigned tasks are provided.

**Keywords:** planning; logistics support; automation; management process; system; tasks; NATO.
Statement of the problem. An analysis of the process of managing the logistics support of military units of the National Guard of Ukraine has shown that the flow of information about the logistics situation during the preparation and execution of assigned tasks is growing significantly. It, in turn, increases the burden on logistics officials to analyse, summarise, make decisions, and plan the logistics support of the military unit. At the same time, the intensity of modern conflicts requires a reduction in the time required to organise all types of logistics support. This problem is exacerbated, on the one hand, by the limited number of forces and means and, on the other hand, by the lack of automated control systems find ways to improve the relevant system by introducing automation tools to increase the efficiency of the system itself.

The accumulated experience in solving logistics problems convincingly demonstrates the need to develop the implementation of automated decision support systems that ensure the efficiency and rationality of the logistics management body.

Thus, in the interests of improving the management system and complex solution of logistics support tasks of the military units of the National Guard of Ukraine, it is advisable to consolidate all sections and units responsible for logistics support into a single automated management system that will ensure rationality in decision-making, as well as rapid reception and transfer of information between all bodies (units). Therefore, there is a need to improve the management system for making informed decisions in the logistics support organisation for the performance of assigned tasks through management automation tools.

Analysis of recent research and publications. Several publications are devoted to the process of improving the work of officials of command and control bodies of military units and formations of military formations of Ukraine [1-7].

Researchers M. Adamchuk, I. Luhovskiy, S. Gorelyshev, and A. Semeniuik analysed using automated fire control systems by fire units in different countries [1]. The authors proposed a way to increase the effectiveness of artillery units' fire damage by combining existing fire control software products into a single information complex and integrating their information. However, such systems are effective when fire units are used while performing their assigned tasks.

The study [2] analyses the experience of the world's leading countries in creating a military logistics system, considers their programmes of development (transformation) of military logistics, and identifies the directions of creation and development of an automated logistics system for the Armed Forces of Ukraine. However, the researchers did not propose any relevant software.

Paper [3] defines the tasks and features of the study of automating management processes in the Armed Forces of Ukraine. Taking into account the experience of developed countries, it gives practical recommendations for creating an automated system of troop management.

Unfortunately, the analysis of studies and publications showed that the authors mainly offer recommendations for improving the work of the command and control bodies of Ukraine's military formations [4-7] but without presenting relevant software resources that can be used to improve decision-making efficiency.

Formation of the article's objectives. The purpose of the article is to analyse the decision-making support software products available in NATO member states and the Armed Forces of Ukraine for their further implementation in the activities of the command and control bodies of military units of the National Guard of Ukraine when they are involved in performing assigned tasks.

Summary of the main material. Today, one of the priority areas of work of the National Guard of Ukraine's governing bodies is to reduce decision-making time through the introduction of automation tools (automated troop management systems) both at the stage of planning the use of troops and during the performance of assigned tasks.

The authors of the article understand the concept of "automation of troop (force) management" as the process of creating and implementing software products on personal computers in the work of military unit headquarters to optimise the work of officials and reduce time indicators at all decision-making stages.

During the full-scale invasion of Ukraine by the Russian Federation, a significant amount of
weapons, military and special equipment (WME) and materiel and supplies (MSP) were received from partner countries to acquire and maintain the necessary level of defensive and offensive capabilities to repel armed aggression, as well as to increase the level of interoperability of military formations with units of NATO and EU member states. The problem of streamlining the receipt of WME and MWME in the country and their organised transfer to the troops can be solved by introducing an information system (IS) for defence resource management, one of the components of which should be logistics management that meets NATO standards, doctrines and recommendations.

The logistics operations support service LOGFAS, implemented in the Armed Forces of Ukraine to bring the Ukrainian army closer to NATO standards, requires attention. The NATO Headquarters Consultation, Command and Control (CCC) Secretariat included Ukraine in the list of countries using LOGFAS software.

The Logistics Functional Area Services (LOGFAS) is an integrated software system that supports NATO's logistics operations. The service allows users to collect, store, process, analyse, display and disseminate information to support logistics operations (Fig. 1) [8]. NATO uses two main types of planning processes. One is operational planning, which covers planning related to specific operations (missions). The other process, defence planning, concerns developing sufficient capabilities to meet future operations.

Logistics planning is part of both operational and defence planning. NATO's logistics capabilities are a key element of NATO's strategic documents. Logistics capabilities should be designed to increase the efficiency of national resources, simplify and expedite logistics flows, and support commanders in the execution of their missions. It requires timely, correct and accurate logistics information. Commanders must receive this information in the shortest possible time and be regularly informed of changes.

Figure 1. Logistics operations support service LOGFAS
Source: developed by the authors
Thus, the NATO LOGFAS system allows working with individual data sets, including data from individual countries. In order to use LOGFAS for Ukraine's needs, it is necessary to prepare a significant amount of data in the system's input format and download it. In addition, some of the algorithms used to create the system are not provided or disclosed as they are classified information.

Also, when planning the logistics support of troops in the performance of assigned tasks, it is essential to foresee the maximum number of factors that can affect the efficiency of this process and understand how logistics will be organised in different situations. This result can be achieved through the use of software products based on the simulation modelling method in management bodies.

An example of the implementation of this method of decision-making is the JCATS simulation system [9] developed by the Simulation Modelling Centre of the National Defence University of Ukraine, which allows the simulation of both combat operations and logistics support activities separately (Fig. 2).

The JCATS (Joint Conflict And Tactical Simulation) simulation system is designed to simulate the actions of units, formations, formations, and associations based on the decisions made by the commander in certain conditions. JCATS does not offer a set of pre-designed static scenarios. The system allows you to adjust the scenarios directly during the modelling process. Scenarios can cover several participating parties (displayed in different colours) corresponding to different groups, associations or countries. In this case, the types of relations between the participating parties are necessarily defined.

All actions must be modelled on the ground, not on a map. Therefore, natural and artificial obstacles affect the ability to detect, shoot and move. Also, the simulation modelling system JTLS-GO (Joint Theater Level Simulation - Global Operations) is now available at the operational level. Unlike the JCATS system, which is designed for the tactical level, JTLS-GO has a wide range of simulation functionality that allows planning and managing the actions of branches and types of troops (forces) and logistics support in combat missions [10].

Conclusions and Prospects for Further Research. Thus, the article analyses the existing recommendations to improve decision-making efficiency by introducing decision support systems. The implementation of decision-making activities using software in the National Guard of Ukraine provides a significant number of advantages, the main of which are:

- optimising decision-making time in preparation for combat operations;
- savings in the use of resources;
- application of scientific methods used in the system's operation;
- consolidating of the command and control body into one single headquarters, which reduces the time for information exchange (data on losses, troop supply, transfer of orders, etc.).

It should be noted that the use of JCATS-type simulation modelling will be useful not only in making decisions on the execution of tasks but also in conducting command and control exercises (training) with the controlling authorities.

The development of software for further research allows for determining the rational composition of battalion tactical groups of the National Guard of Ukraine intended to participate in stabilisation efforts.
References


