DEVELOPMENT OF MILITARY-CIVILIAN LOGISTICS COOPERATION

Tomasz Jałowiec
War Studies University, Poland
E-mail: tjalowiec5@wp.pl

Dariusz Grala
War Studies University, Poland
E-mail: dariusz.grala@op.pl

Piotr Maśloch
War Studies University, Poland
E-mail: pmasloch@wp.pl

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Abstract

Continuous improvement of the military logistics system is one of the key conditions for the proper functioning of the armed forces. The necessity to transform structures, procedures and implement new solutions in the field of logistic security of troops results directly from the changes taking place in the modern world, and in particular from political, military and social transformations. Nowadays, in this process of key importance is the use of external logistic potential for the needs of the armed forces, which for years has been a natural phenomenon in the activities of military units and institutions, both during peace, crisis and war. Logistic military-civilian cooperation brings tangible benefits to both parties, in many cases ensuring maximum effectiveness of the tasks performed.

The aim of the article is to identify and assess the factors shaping contemporary logistic military-civil cooperation and to indicate the directions of its further, effective development. The structure of the article has been subordinated to the purpose of the work, which includes two main parts. The first theoretical, relating to the evolution and essence of logistic military-civil cooperation, and the second presenting the results of empirical research related to the research problem undertaken. The empirical part of the article presents the results of quantitative research carried out using the diagnostic survey method. It should be emphasized that the presented considerations are part of extensive scientific research conducted by a research team from the Faculty of Management and Command of the War Studies University in Warsaw, Poland. Their goal is, above all, to initiate an in-depth, scientific discussion in the civil and military logistics community, aimed at further development of military-civilian logistic cooperation.

Key words: logistics, management, cooperation, military, business

1. INTRODUCTION

One of the necessary conditions for the proper performance of tasks by the armed forces is to have a well-organized, effective logistics system. This system should, among others, characterized by the ability to integrate resources and activities necessary in the process of securing troops in all states of state functioning. In the contemporary conditions of the functioning of military logistics systems, the external potential begins to play a significant role, supporting organic military resources. It is not only economic, but in many cases also operational reasons that speak in favour of undertaking extensive logistic military-civil cooperation. It is indisputable that modern military logistics should make use of the latest achievements of science and technology, which under the current conditions are implemented most quickly in the civilian environment (Pecina & Husak, 2018).

The aim of the article is to identify and assess the possibilities of implementing logistics solutions from the civil sector, which could contribute to the improvement of the logistic efficiency of the armed forces to the maximum extent.

In the research process, logistic efficiency was defined as the relation of the obtained effects to the expenditure incurred, related directly to the logistic resources of the organization. This type of efficiency as a multidimensional concept should be treated as one of the measures of organizational effectiveness, identified in economic sciences with both organizational effectiveness (management science) and economic effectiveness (economy). The assumed goal was achieved using both theoretical and empirical methods, carried out by the method of a diagnostic survey with the use of a questionnaire. The adopted approach made it possible to obtain a cross-sectional character of the considerations, at the same time providing the basis for further, extended research on this extremely complex problem.

2. MILITARY AND CIVIL COOPERATION – SELECTED PROBLEMS

2.1. LITERATURE REVIEW

Development of military-civilian logistics cooperation is closely related to both the development of logistics and the following changes taking place in the logistics systems of the armed forces. As one of the features of logistics (both civil and military) is its interdisciplinary nature. The cooperation between civil and military entities is largely determined by the advancement level of both (military and civil) logistics systems.

Contrary to the beginning of logistics, nowadays solutions proven in civil logistics are implemented into the logistics of the armed forces (Rutner, 2012). Many others indicate that the development of logistics, including military, will be determined by the dynamic development of new technologies, in particular IT, such

as the Internet of Things, robotization, Big Data (Fernández-Villacañas, 2020; Wang, 2020).

The issue of the development of military logistics, due to its interdisciplinarity, is the subject of research aimed at identifying development trends and indicating the possibility of optimizing the processes taking place in military logistics systems. In the past few years, there has been an increased interest in the planning and execution of military logistics operations. Military logistics as a branch of science is also responsible for providing comprehensive solutions in procurement, demand forecasting, inventory control, warehousing, and transportation operations in the most effective and efficient manner possible (Zeimpekis, 2015).

The very important area in civil-military logistic cooperation is the provisions of the law and procedures for managing the logistic support of forces, correlated with the changes that have occurred in recent years in the security environment and systems of the armed forces of states, especially in Central and Eastern Europe. There are also trends for the adaptation of business solutions to the needs of military logistics systems (Bury, 2021).

All the above-mentioned elements determine the proper military-civil cooperation in the field of logistics and therefore should be taken into account when planning and organizing the cooperation of military and civilian entities. The all ultimately, military-civilian supply chains can function efficiently, providing troops with timely deliveries at an acceptable cost.

2.2. THE ESSENCE OF LOGISTIC MILITARY-CIVILIAN COOPERATION

The use of civilian potential for the needs of the army is not a discovery of years but has a very long history. Detailed analyses of conflicts and warfare over the years show how important it is to support the efficient functioning of the civil service. Over the years, only the form of this type of "cooperation" has changed, from robbery, plunder or requisition to the form of cooperation adequate to the realities of the free market economy (Slavić et al., 2020). Spectacular New Useful Use of the Departments of the First Intermediary Joseph Joffre, who in September 1914 commandeered 600 Parisians and threw them recommended reinforcements to the front, so that another counter-light in the fight against the German, effective battle on the Marne against German forces (Juźwik, 2011).

Nowadays, both national and allied doctrinal documents relating to the sphere of logistical support for troops in a special way emphasize the significant role of the external potential in the implementation of tasks both within the territory of the country and abroad. Support by external contractors (civilian suppliers) in many cases supplements the military logistic potential in military and non-military operations (Moore & Antil, 2011). The experience of recent years clearly shows that contracting supplies and services is an important source of logistic support (Grubmüller et al., 2021). Currently, the functional elements of the logistics system of the armed forces commonly use the services of external contractors to support the implementation of logistic support tasks for troops. The contracting of supplies and services is of

particular importance in supporting the activities of military contingents carrying out tasks within the framework of operations outside the country (Lis, 2016). Contractors provide a wide range of services, from transportation, construction, and base support to intelligence analysis and private security (Church & Schwartz, 2013).

Contractors provide logistic support and services in many NATO, EU and UN operations both for micro and macro scale. According to doctrines, Contractor Support to Operations (CSO) enables competent commercial entities to provide a part of the support to the military, so that such support meets the Operation Commander's operational support requirements and optimises the most efficient and effective use of the resources. The basis for the delivery of CSO is a contract. Contractor support in EU-led military operations mainly focusses to logistic support functions; but, in general, it can provide an essential part of the support to the military (Brussels 2014).

The contractors have been used many times during UN peacekeeping missions and NATO and EU military operations, also with the participation of Polish military contingents in Iraq, Afghanistan, Kosovo, Bosnia Herzegovina, Chad and the Central African Republic. Contractors realized, among others strategic transport during the transfer of forces to the area of operation and supported its functioning. Ensuring the current needs of the contingents, especially those whose implementation by the national logistic system is incompatible or too time-consuming, required the use of local civilian companies (Grala, 2011).

Regardless of the number of benefits resulting from the use of contractors in supporting military forces, it is necessary to mention the basic limitation of this solution, which is, as a rule, less responsibility for the task's completion, especially in the conditions of enemy intervention (Lis, 2016). Soldiers render military service under what has been termed “the unlimited liability contract” The “unlimited liability contract” is not a formally written contract, but rather an implied and collective understanding that lies at the heart of all military service, regardless of nationality. Fundamental to this “implied contract” is the notion that the mission is paramount. Liability is accepted as unlimited-the soldier accepts that he or she may lose his or her life in carrying out the mission (Mileham, 2010).

The same cannot be expected of civilian contractors. No implied “unlimited liability” understanding applies to civilian contractors who are not expected-and importantly, have no expectation- that they may like their military counterparts be expected to sacrifice their lives and well-being for the ultimate success of the mission. Civilian contractors do not accept “un” limited liability: they will carry out their duties, but only up to a certain point. Their liability is limited by their overarching need to preserve their own lives in preference to sacrificing them for the success of the mission. This is a significant paradigmal difference from that of soldiers. In order to mitigate the exposure of civilian contractors to unacceptable levels of risk (as the liability accepted by civilian contractors is not “unlimited”) commercial logistic support should best be “tailored” according to the nature and intensity of the operation. Generally, in Humanitarian Assistance and Disaster Relief (HADR) and Peacekeeping (PK) operations, the use of commercial contractors may be highly appropriate, efficient, and cost-effective. Alternatively, the use of any commercial contractor elements in a conventional conflict situation may be highly inappropriate (Ti, 2018).

The noticeable increase in the importance of logistic military-civil cooperation over the last several years is mainly due to the fact that for some time now a number of NATO (North Atlantic Treaty Organization) countries have been reducing the size of their armed forces while increasing the scope of their functions (Galić et al., 2021). The troops are faced with new tasks, for which they are often not properly equipped and prepared. In addition, budget constraints mean that the priority is to adopt solutions that guarantee the effectiveness of logistical support for activities while reducing their costs (Minárik, 2020). One of these solutions turns out to be the support of military potential by external contractors, which is a significant supplement and strengthening of military logistic capabilities.

A detailed analysis of military operations, during which some logistic tasks were carried out with the use of external potential, shows that this form of task implementation allows the armed forces to maintain their own, scarce logistic resources, which can be used to carry out other tasks or extend the period of self-sufficiency of the troops. The main factors determining the scale and scope of the use of external contractors in the field of logistical support for troops include (Jałowiec, 2020):

- operational conditions enabling / indicating the necessity to use external potential;
- real needs to supplement the national or allied potential and logistic resources of the armed forces;
- remoteness from organic sources of supply or logistic resources;
- ensuring the correlation of the time of delivery / service provision with the real needs of troops;
- local market opportunities in terms of timeliness, quality and security of supplies / services provided.

Selected areas in the field of the military logistics system particularly susceptible to the implementation of tasks in the military-civil formula are presented in Table 1.

Table 1. Selected areas of the military logistics system susceptible to the implementation of tasks in the military-civil formula

Field	Task range
servicing and operation	– weapons and military equipment; – specialist systems and devices for the protection of facilities
acquisition of military equipment	– passenger and heavy goods vehicles (including war time and crisis situations); – sanitary cars; – reloading equipment; – machines, aggregates and specialist devices

Field	Task range
utilization	– combat measures (non-prospective); – rocket propulsion materials; – rubber products; – chemicals, disinfectants; – medical waste, overdue medicinal products – and medical devices, veterinary agents and waste, and poisons; – other waste, including kitchen waste
transport	– road; – air; – railway; – marine.
stockpiling and maintenance	– food; – uniforms; – fuels; – medicinal products and medical devices
securing the living needs of troops	– order-based feeding; – laundry and repair services
maintenance of military real estate	– maintenance, renovation, repair, construction inspections and expert opinions; – servicing and exploitation of energy, water and sewage, gas, ventilation and air-conditioning systems; – communal services
training	– drivers of lorries and specialized vehicles; – special equipment operators; – service and technical personnel; – aviation technology specialists
supporting military contingents	– comprehensive nutrition of troops; – delivery of fuel products; – laundry and repair services; – supply of materials for common use; – organization of camps, accommodation and social services; – servicing of modern equipment

Source: own.

The scope of this material does not allow for a full description of the role and importance of military-civil cooperation in the logistics of troops. The considerations presented above, in accordance with the assumed goal, were only intended to signal this extremely important and complex problem. Nevertheless, it should be unequivocally emphasized once again that without external support, a number of logistics tasks in the army would be significantly difficult, and sometimes even

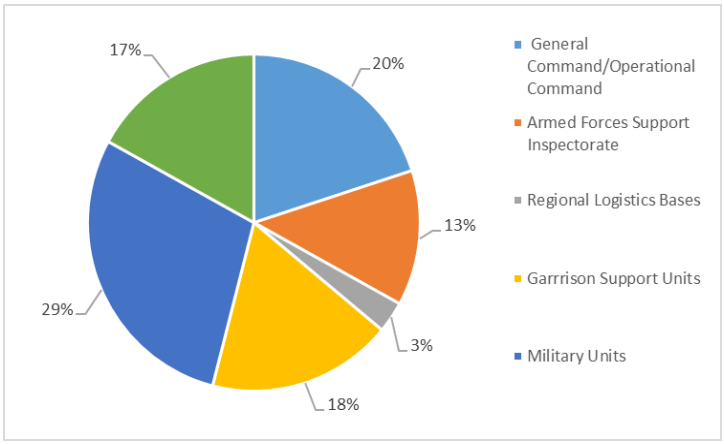
impossible to implement. Moreover, in the light of the complexity of the area under consideration, it is important that the solutions currently functioning in this field in the armed forces require improvement, which may be helped by the research results presented in the next part of the article.

3. PERFECTION OF LOGISTIC MILITARY-CIVILIAN COOPERATION - EMPIRICAL RESEARCH

In order to identify and assess the key factors determining the effective improvement of the effectiveness of the military logistics system through the implementation of logistic solutions from the civil sector, it is worth quoting the results of research carried out at the War Studies University in Warsaw. The basis of scientific inquiries in this area was the method of a diagnostic survey conducted with the use of the questionnaire technique. The developed research tool in the form of a questionnaire comprised 4 questions.

The research covered 126 officers representing all levels of the logistics system of the armed forces and entities cooperating with it. Non-random, deliberate selection of the research sample was aimed at guaranteeing the conditions for obtaining the widest and fullest possible information relating to the studied phenomenon. Among the respondents, the most numerous group - 37 people (29%) were officers representing military units of the Land Forces (31 people), the Air Force (5 people), and the Navy (1 person). Taking into account the contemporary dimension of the territorial logistic security system in the Polish Armed Forces, it is worth emphasizing that 18% of the respondents served in military economic branches. What is also extremely important from the perspective of the conducted research is the fact that 13% of the respondents represented the Armed Forces Support Inspectorate, an institution directly responsible for organizing and managing the logistic support system of the armed forces, including the logistical support of military units used or staying outside the country. In addition, the study covered officers directly or indirectly related to the military logistics system, representing, inter alia, the General Command of the Armed Forces, the Operational Command, War Studies University, Military Research Institutes, the Academy of Land Forces and Regional Logistics Bases. A detailed distribution of the studied sample in terms of the represented institution is presented in Fig. 1.

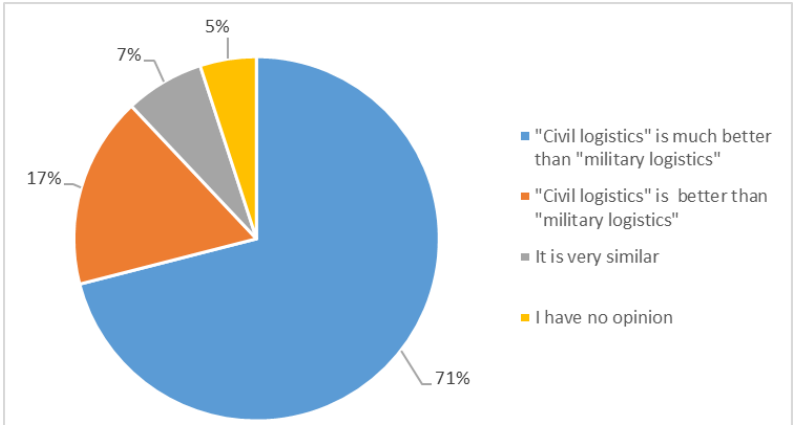
Figure 1. Structure of the research sample in terms of the represented institution



Source: own.

The first question related to the opinion of the respondents on the level of implementation of logistic tasks in the civilian sphere against the background of the military environment. The dominant conviction (71% of responses) that "civil logistics" is much better than "military logistics". 17% of respondents were in favor of "military logistics", and 7% believed that "it is very similar". The obtained results may indicate that, in the opinion of the respondents, it is possible to search for the best models for the development of logistic support for troops in solutions used successfully in the civilian sphere. A detailed distribution of the answers obtained is presented in Fig. 2.

Figure 2. Assessment of the level of implementation of logistic tasks in the civilian sphere against the background of the military environment



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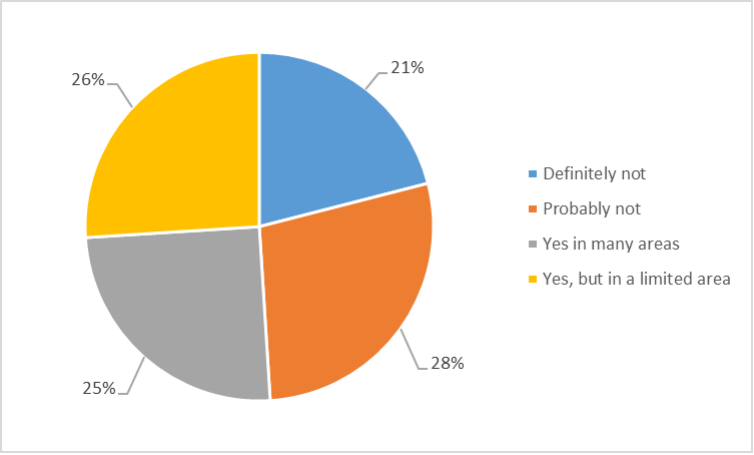
The next question was aimed at obtaining the respondents' position on whether the currently functioning procedures for the implementation of tasks in the military logistics system create conditions for the implementation of innovative solutions improving the efficiency of logistic support for military subunits and divisions. The received responses were almost evenly distributed, around 25% (from 21% - "definitely not" to 28% - "probably not"). The configuration of the obtained results may indicate a significant variation in the military environment in relation to the studied area. A detailed distribution of the answers obtained is presented in Fig. 3.

Figure 3. Assessment of currently functioning procedures for the implementation of tasks in the military logistics system in terms of the implementation of innovative solutions improving the efficiency of logistic support of troops



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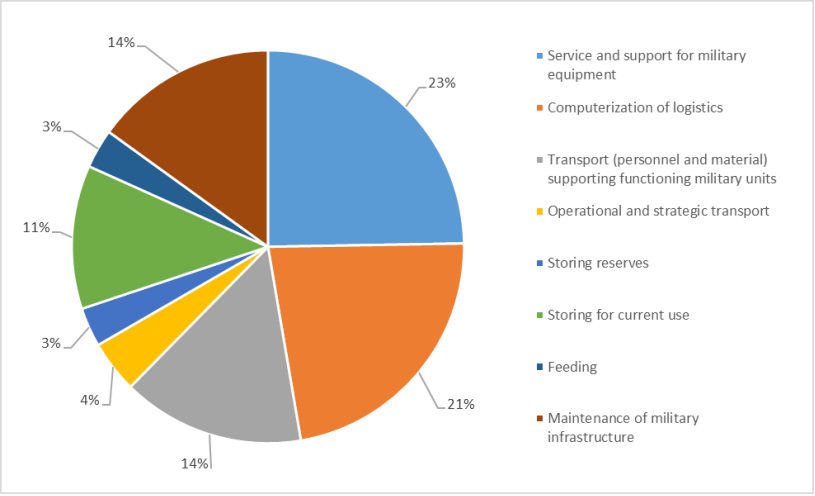
In the next question, the respondents were asked to indicate a maximum of three functional areas of the military logistics system, and in which they see the need and opportunities for wider use of innovations currently successfully used in the civilian sector. The greatest number of responses (23%) was given to the answers "service and support for military equipment" and "computerization of logistics" - 21%. Only 2% of the respondents were in favor of "storing reserves", and only 3% of them expressed the belief that this is the area of "personal condition nutrition". The answers obtained may, in a way, constitute a hint for decision-makers managing individual areas of logistic security for troops. A detailed distribution of the obtained responses is presented in Fig. 4.

Figure 4. Identification of functional areas of the military logistics system that can be used more widely with innovations currently successfully used in the civilian sector



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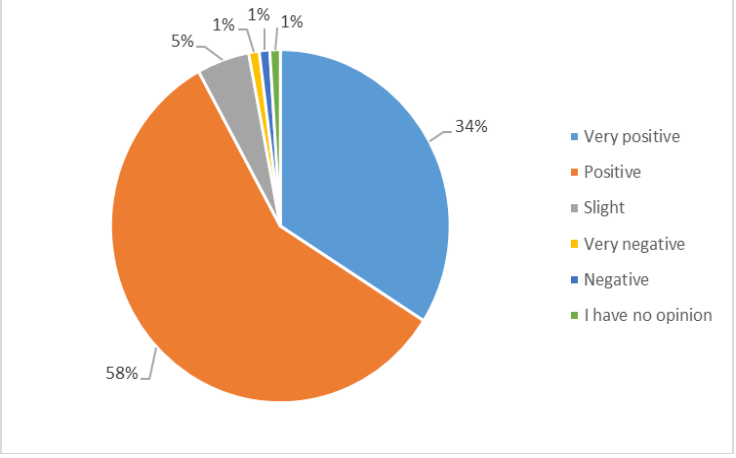
The last question of the survey questionnaire concerned the impact that, according to the surveyed officers, may have innovative solutions derived from the civilian environment on the functioning of the military logistics system. In this case, there was great unanimity, as 92% of them indicated that it may be "very positive" or "positive. Only 5% supported a slight influence, and 1% each received "Very negative", "negative" and "I have no opinion". A detailed distribution of the answers obtained is presented in Fig. 5.

Figure 5. Assessment of the impact of innovative solutions derived from the civilian environment on the functioning of the military logistics system



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In an attempt to generalize the obtained results of empirical research, it should be emphasized that, in the opinion of the authors' team, the collected material is only a contribution to further extended scientific investigations of this extremely important phenomenon today. The research carried out and the results obtained encourage a broader focus on the issue of the use of "civil" logistic solutions in the process of improving the functioning of the logistics system of the armed forces. As shown by the experiences of other armies in the process of improving the logistic security of troops, one should not limit oneself to any sources of innovation, which is also confirmed by the obtained research results.

4. CONCLUSION

The results obtained in the research process entitle to draw the following general conclusions.

1. Innovative solutions are implemented into the military logistics system, but their single scale and scope do not fully allow for a qualitative “leap” guaranteeing the expected level of task performance at each functional level.
2. Logistic solutions from the civilian sector can be largely implemented in the military sphere, but nevertheless, it requires their comprehensive assessment in terms of the specificity, needs and capabilities of military security and security entities.
3. The greatest obstacle in the effective implementation of innovative solutions to the practice of the functioning of the elements of military logistics systems seems to be the maladjustment of the binding normative documents and, consequently, the mechanisms and procedures for the implementation of tasks to the dynamic changes taking place inside the armed forces and their environment.

One of the currently significant problems that remains to be solved in the future is the development of formal, transparent procedures and assumptions, which provide the basis for the widespread implementation of innovative solutions for the logistics of troops. This seems to be extremely important in the light of the growing logistical needs of troops during the implementation of training and operational tasks by their elements. The problems indicated in the article are subject to certain research limitations - during terrorist and war threats, the basic research limitation is the inability to obtain complete information on the said cooperation, which in turn is a result of the need to keep certain activities and logistic operations secret.

However, the presented research limitations should be treated as a basis for further discussion on the development of research in this field. Continuing research on civil and military logistics, we should strive towards the development and promotion of green energy. From the perspective of science, it should also be noted that there is still a lack of research in the specialized literature that would comprehensively cover the phenomenon of implementing innovations into the multi-faceted logistics system of the armed forces.

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