



ECONOMIC INITIATIVES THAT SHAPE MILITARY LOGISTICS

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In the context of an enhanced competition and of the need to reach the highest objective represented by obtaining the competitive advantage, the following initiatives appeared gradually into the production sector and were implemented into the military scope, in order to gain superiority over possible opponents and to successfully accomplish the missions: Lean Logistics, Procurement Logistics, Distribution Logistics, Six Sigma Logistics, Green Logistics, Emergency/Humanitarian Logistics, Global Logistics, Reverse Logistics and Digital Logistics.

Two of these captured my attention considering the effects produced in military logistics of our times, which will continue to generate changes into the future.

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Even though logistic activities have been carried out since ancient times and allowed the clever military leaders to obtain success or conducted to a resounding failure as a result of an inappropriate approach, the concept of *logistics* was attested for the first time in England, in 1846, in the military sector, having French origins¹. With time, its usage passed from military into the economic scope.

Transforming the military logistics into what it represents today at the army level of well developed countries or at the level of strategic alliances like NATO, did not take place abruptly. It happened gradually, as technology developed and military leaders wished to gain victories as they observed the decisive impact of logistics on the battlefield, in the context of limited resources.

Thus, developing the most flexible logistics, complemented by destroying the opponent's logistics, cutting his resources and means of transportation, have been permanent concerns for military leaders of all times.

For instance, Alexander the Great (356-323 B.C.) is said to have paid huge attention to supplying his forces during his courageous campaigns, planning them in accordance with the seasons favorable to using crops and natural resources of the territories invaded².

In the same manner, Hannibal (247-183/181 B.C.) taught Romans important lessons which had been identified during the Punic Wars, and Duke of Wellington (1769-1852) invented an efficient supply system making possible the victory of Anglo-Portuguese army in the Peninsular War, despite the numerical disadvantage³.

The different types of logistic systems used during the First and the Second World Wars represented approaches meant to drive materiel to the military personnel at the right place and in the right time, but the end of the Second World War was strongly characterized by the attempts of civilian sectors to re-launch economy, the main objective being "to satisfy the increased demand for goods from the post-war years"⁴.

In the context of an enhanced competition and of the need to reach the highest objective represented by obtaining the competitive advantage, the following initiatives appeared gradually into the production sector and were implemented into the military scope, in order to gain superiority over possible opponents and to successfully accomplish the missions: Lean Logistics, Procurement Logistics, Distribution Logistics, Six Sigma Logistics, Green Logistics, Emergency/Humanitarian Logistics, Global Logistics, Reverse Logistics and Digital Logistics⁵.

Two of these drew my attention considering the effects produced on the military logistics of our times, which will continue to generate changes into the future, completing each other as chain of supply particularities: Lean Logistics and Six Sigma Logistics.

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These concepts cannot be found in the current Romanian military regulations and doctrines, but the principles of logistics, its functional and related areas contain activities and responsibilities which are derived from them.

The first initiative, "Lean Logistics", is an approach which appeared in 1980s, based on the efficiency of thinking adopted by the Japanese automobile manufacturers, as a solution to the limited resources and to the shortages faced by them, being forced somehow to implement a process of production with minimal losses. Practically, producers were in permanent search for perfection as they wished a lean production, minimizing losses and maximizing the added value, so that the final users might not have to pay for the management's lack of efficiency. The chain of supply is exempt from unnecessary activities which are identified and eliminated, obtaining an increased flow of goods⁶.

Some of the initiatives listed above have an important role in obtaining Lean Logistics, as I will show below.

Thus, Procurement Logistics contributes to obtaining efficiency through activities like prospecting the market, defining the requirements, deciding whether to produce goods inside the organization or to buy them, assessing and periodically reassessing the providers, convincing them to ask for lower prices, comparing the offers, identifying the expenses which can be eliminated, launching orders and monitoring delivery of goods/services.

Distribution Logistics contributes to obtaining a Lean Logistics through the management of delivering goods towards consumers and it starts when the orders are launched or effectively manufactured, continuing with warehousing and transportation of the right quantities of goods, in the right places and at the right moment.

Green Logistics refers to all activities connected to minimizing the impact logistics has upon the environment and it is related to the concept of Reverse Logistics.

Reverse Logistics ensures producers with the customers' feedback and makes them able to offer their clients the possibility to return unsatisfactory products, which are then rethought, rebuilt, generating thus important economies of material resources and significant steps towards an improved offer.

Means of transportation are used for another concept, the Emergency/Humanitarian Logistics, providing speed in operating the chain of supply, so that logistics is capable to support the needs which appear in emergency or humanitarian crisis situations.

Global Logistics, the most courageous logistics approach, takes time and the interconnection of several means of transportation makes it possible for a product manufactured in a certain country to reach consumers from other places on earth.

However, all these initiatives could not have determined an instance of Lean Logistics without implementing some logistic information systems, which are attributes of Digital Logistics. The result consists in visibility over the whole organization and over the chain of supply. In other words, Digital Logistics is the key to Lean Logistics, the starting point in this matter.

In comparison with Lean Logistics, which deals with speed increase, costs decrease, identification and elimination of waste, the second initiative, represented by the *Six Sigma Logistics*, is centered on quality, on identification and control variations that can generate additional costs and on risk management.

The Six Sigma economic initiative appeared in 1986 and it belongs to Bill Smith, engineer and scientist from Motorola Company, who was interested in how much a manufacturing process can deviate from perfection⁷.

The "Six Sigma" name corresponds to the five phases that a product/process needs to complete in order to reach its final shape and it refers to defining, measuring, analyzing, improving, controlling variations, completed at the end with the implementation stage.

Because of the fact that the two initiatives complement each other and contribute synergistically to obtaining organizational efficiency, they are currently treated as a whole, generating the *Lean Six Sigma Logistics* concept, a superior step towards perfection.

I somehow find these descriptions familiar, although the military logistics presents them differently, the final objective, both in economic and military logistics, being to efficiently use resources and maximize results.

From military logistics point of view, the lean concept was implemented at both NATO and national



level, but there is still room for improvement, the latter being a permanent objective of Romanian logisticians, the key to obtaining interoperability with the armies of other member states, and also of the allied logisticians, who find themselves in the situation to coordinate and complete the logistic effort of the member states.

In a military organization, the production activity is reduced, being still present in the military units specialized in maintenance or representative activities, but in order to be able to provide national security, the army purchases a varied range of products, general and infrastructure related services. This activity needs implementation of measures which are specific to Procurement Logistics, Distribution Logistics, Green Logistics and Global Logistics, to obtain liveness and to adapt to the national and NATO requirements.

The wide process of transformation and reorganization that the Romanian Army has started after 1989 and especially the changes that preceded and followed the accession to NATO determined the rethinking and the realignment of the Romanian military logistics to the new missions' requirements and to the dynamics of modern conflicts.

Taking into consideration the entire range of the main characteristics that define the economic initiatives presented above, the Romanian military logistics has undergone the following changes:

- structural reorganization, by maintaining, transforming or establishing logistic units that are suitable for the new context;

- reduction in the expenses with warehousing, by eliminating the surplus, out of date and low speed stocks, by decommissioning and capitalizing the old, out of date equipment, that has very high maintenance costs and requires efforts to procure or to produce spare parts;

- efficient organization of transportation, using modern, properly operated and loaded means of transportation;

- procurement of well justified quantities of goods, that respond to the need to accomplish the specific missions and which are in line with the real consumption;

- argumentation and compliance with provisions of norms and normative acts in force, in order to avoid costs of transportation, warehousing and damages determined by physical deterioration of goods;

- stockpiles build-up of only essential products that have to be monitored and timely changed through introduction into the current consumption, in case of interruptions in the supply chain;

- standardization measures that consist of a unique national and alliance approach, which determines identical or similar missions, activities, drills and equipment characteristics at the level of member states;

- modern and interoperable pieces of equipment, that offer efficient resource exploitation. Thus, the selling price of a product is not the only criterion when choosing the best offer. Additional costs like the ones generated by research, development, testing, exploitation and discharge are being taken into consideration, as well as the period of time in which equipment brings benefits and also the obligations the provider/producer has to ensure spare parts and maintenance on the entire life cycle. In brief, it is all about a multidimensional differentiation of a piece of equipment in comparison with another one available on the market;

- implementation of an integrated logistic system which consists in the management of material resource, equipment life cycle, movement and transportation, infrastructure, Host Nation Support (HNS), NATO Security Investment Program (NSIP), deployment and redeployment processes of military forces in different areas of the world, and finally, of the collective sustainment⁸, that allow the military to train and act together. Thus, the efforts of military universities and academies are rewarded, these educational institutions having a double approach in training military leaders and logistic specialists: the first one, from the perspective of knowledge and skills needed by an officer (the ability to apply regulations, to administer public goods, to elaborate specific documents, to train and guide peers, etc.) and the second one from the essential perspective of the managerial qualities, that, together with the ability to speak foreign languages and to have solid physical training at NATO standards, complete the portrait of the Romanian military logistician, who is able to act in an international environment at any time;

- establishment of modular, deployable logistic structures, based on contribution with a wide range of commonly used resources, which are present at the third line of logistic support, like the Romanian

Joint Logistic Support Group (ROU JLSG), which acts on the national territory, the National Support Element, which is present in a theatre of operations, and the NATO Joint Logistic Support Group (JLSG) which coordinates logistic support at multinational level. In a theatre of operations there are lots of actors (soldiers and military structures from maximum 30 NATO member states, from NATO partner states, contractors, host nation representatives, governmental and non-governmental organizations, etc.). Therefore, measures to reduce logistic footprint were implemented, which means that in a multinational major operation as few as possible structures and means should participate, to make activities more efficient. As a result, each contributing nation assigns missions to predetermined forces and capabilities to avoid duplication at the Joint Task Force level. In the same manner, if troops from a contributing nation have shortages of some common types of products, that are available to troops from some other contributing nations, JLSG intervenes to direct them to the highest need, temporarily, until the problem is solved. Moreover, through JLSG, some products and services can be procured on the local market, or memoranda and agreements can be signed with the Host Nation to the benefit of all troops, generating thus economies of scale. These structures can utilize instruments to unite the effort for logistic support and, at the same time, to ensure access to each contributor to the implemented equipping programs. Remarkable in this respect is the Smart Defence project, which represents "a pragmatic approach to support the effort of member states to provide the capabilities the Alliance needs and to eliminate shortages in an efficient cost perspective manner"⁹. Another initiative, the Pooling and Sharing one, complements Smart Defence and is conducted by the European Defence Agency (EDA);

- initiation of the procedures to refurbish and stimulate national defence industry, so that it might be able to sustain the military effort at peace and mostly, at exceptional situations;

- release of the burden the military structures had in case of those activities that in the past were executed with their own forces and means. It is about transferring them to contractors (food, security, laundry services, etc.), but only if this measure produces economies of human, materiel or

financial resources or reduces the effort of military structures which carry out specific missions in exercises or military operations on a national or foreign territory;

- establishment of multinational solutions available like those referring to mutual logistic support: HNS, CSO (Contractor Support to Operations), agreements and arrangements of cooperation. Other examples of logistic multinational solutions are represented by the fact that a nation which provides logistic support to a multinational force can have two types of involvement: Logistic Lead Nation, defining a nation which assumes to provide the whole logistic support for an operation on the base of agreements, and Logistic Role Specialized Nation, the case in which a nation provides only a part or a functional area of the logistic support;

- cost estimation and monitoring for all activities specific to military structures and their inclusion in a catalogue;

- build-up and implementation of logistic informational systems to provide visibility on all kinds of resources, in order to avoid under or over-sized stockpiles. The national efforts made to implement such programs at the entire army level are remarkable. For instance, the MENTEC program was developed to ensure real-time knowledge of the technical state of equipment. Furthermore, INTEND, one of its modules, was created to record soldiers' options for uniforms and to establish the quantities to be procured. Besides these respectable national initiatives, the LOGFAS system, which was developed and implemented at NATO level, contains a set of programs that offers each contributing nation the possibility to introduce its own force profile, making visibility upon resources available for a mission at a certain moment. This system also monitors transportation and generates logistic reports of certain templates. Moreover, the LOGFAS system contributes to obtaining a complete and timely effective logistic picture, that helps a lot during multinational exercises and operations and even during national activities of this kind, although at this level there is still room for improvement in terms of users' training, development of the needed information infrastructure or reduction of bureaucracy.

Implemented at national and alliance level, all these measures have shaped military logistics



and still tend to generate changes into the future so as to make it as lean as possible. However, these initiatives would not have had the mentioned results if it had not been for the cooperation among different actors along the chain of supply and for the lean approach of the productive and non-productive areas in the military organization. It is about producing and buying in accordance with the real needs, about recruiting human resources wisely and efficiently using all resources at hand.

In the context characterized by the fact that being fully operative represents a permanent mission of the military organization, logistics has to take measures to support forces while the available financial resources are limited. That is why actions like reducing costs of all kinds, maintaining nevertheless some "safety stocks" to cover unforeseen situations that can lead to temporary disruptions in the chain of supply, reducing the amount of time in which pieces of equipment are in repair or the contracts are being awarded, etc. make from Lean Six Sigma Logistics an initiative of strategic importance.

As the army represents an organization that does not bring profit in general, the resistance to implement these economic initiatives could be a real problem, but it can be mitigated through military leaders' openness to novelty, hierarchical (top-down) measures, clear and concise regulations, which are meant to align daily activities and the current or future operations to the present requirements and challenges to come.

Analyzing the principles at the basis of a functional logistic integrated system and especially those like efficiency, flexibility, visibility, mobility, coordination, cooperation and the continuity of providing logistic support¹⁰, the result is that military logistics needs to continue the transformation process in order to attain the levels of ambition which will allow the Romanian Army to keep the pace with what NATO membership demands and those of the situation it might be required to act on its own.

In conclusion, the mentioned economic initiatives have generated and still continue to generate positive major effects upon military logistics. Digitalization, equipping programs, cost catalogs, the transition from the individual costs factors (procurement prices, warehousing costs, transportation costs, maintenance costs, etc.) to

the total logistic cost, the minimizing of logistic footprint represent eloquent evidence that the military logistics has evolved under the impact of economic trends. This continuous evolution, the initiatives and their results are perfectible and have the objective to ensure the efficiency and flexibility badly needed by the military organization.

The unquestionable importance of lean logistics, from the economic point of view, in general, and from the military point of view, in particular, is proven in real crises situations, like the most recent pandemic, determined by the Corona Virus. Economies of well-developed countries began to suffer, the possibilities to manufacture essential products and to make them reach the final consumers were seriously damaged by objective disruptions in the supply chain. Solutions put in place were meant to provide a quick and efficient response. Manufacturing the necessary products locally, improvising some raw materials, uniting efforts of civilian and military organizations were only a few measures that reduced the chain of supply, but the insufficient stocks put big pressure on those fighting with the disease.

The fact that the army intervened with specific logistic support like modular and deployable campaign hospitals proves once again the importance of having this kind of solutions at hand and should make all logisticians aware of the need for a lean logistic approach in any military operation.

Finally, the recent accession of Northern Macedonia to NATO produced a new enlargement of the Alliance, an increase of operational and logistic power which might be useless without lean solutions.

NOTES:

1 <https://en.wikipedia.org/wiki/Logistics>, accessed on 19.03.2020.

2 Donald W. Engels, *Alexander the Great and the Logistics of the Macedonian Army*, University of California Press, Ltd. London, England, 1978, pp. 11-25.

3 https://en.wikipedia.org/wiki/Logistics#Military_logistics, accessed on 19.03.2020.

4 Carmen Bălan, *Logistica*, IIIrd Edition, Uranus Publishing House, Bucharest, 2006, p. 12.

5 https://en.wikipedia.org/wiki/Logistics#Logistics_activities_and_fields, accessed on 19.03.2020.

6 <https://www.adaptalift.com.au/blog/2012-02-01-what-is-lean-logistics-understanding-the-concept>, accessed on 19.03.2020.



7 Keebom Kang, Uday Apte, *Lean Six Sigma Implementation for Military Logistics to Improve Readiness*, Naval Postgraduate School, Monterey, California, 2007, p. 13.

8 *Doctrina logisticii întrunite a Armatei României*, Bucharest, 2018, pp. 33-55.

9 *Ibidem*, p. 69.

10 *Ibidem*, pp. 24-25.

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