

## QUALITY OF SERVICE IN THE TRAFFIC AND TRANSPORT SYSTEM OF THE ARMED FORCES OF BOSNIA AND HERZEGOVINA

**Dr.sci. Mehmed Konaković, dipl. ing. ; JU "Centar za napredne tehnologije u Sarajevu",  
Zmaja od Bosne 28., +38763147434, Internacionalni Univerzitet Travnik u Travniku,  
Saobraćajni fakultet Travnik u Travniku, Aleja Konzula – Meljanac b.b.,+387 30 509 300,  
konakovicsesa@hotmail.com**

*Original scientific paper*

### Summary

*The quality of service in the traffic and transport system of the Armed Forces of Bosnia and Herzegovina" researched the parameters of the quality of the logistics service and its importance for logistical support in the Armed Forces. What makes this paper special is the fact that new terms have been introduced and new phenomena such as "passage transport" have been observed. In addition to the hitherto known phenomena and topics in science that figure in logistics, which are the basic direction of supply (transport, logistics) and the return direction of supply (transport, logistics), a new term incidental logistics (supply, transport) was introduced. At the same time, it was established that there is a possibility of reverse logistics in the traffic and transport system, which is in the same direction as the basic direction of supply. This phenomenon is possible in the system of the Armed Forces due to the arrangement of recipients of support and sources of supply. This paper presents the most important observation about the quality of logistics and transport services in the defense system of Bosnia and Herzegovina..*

**Keywords:** *quality, transport, logistics, transit, direction*

## QUALITY OF SERVICE IN THE TRAFFIC AND TRANSPORT SYSTEM

In order to formulate the strategy and policy of the traffic and transport system to achieve the desired goals of development and mission execution, the management of the traffic and transport system in the Armed Forces of Bosnia and Herzegovina must ensure:

- systematic research of strategic directions of development and production in related production branches of the economy,
- systematic research of the transport market,
- analyzing the dynamics and structure of global flows of needs for transportation services in military regional and global systems,
- analyzing and getting to know competitive forces./1

Only with the mentioned activities, the traffic and transport system of the Armed Forces of Bosnia and Herzegovina can be the basic criterion for evaluating the level of development of the Armed Forces of Bosnia and Herzegovina. This concept ensures long-term development and continuity.

### 1. The importance of the quality of transport logistics in the Armed Forces of Bosnia and Herzegovina

Transport logistics is an activity in the field of logistical support of the Armed Forces of Bosnia and Herzegovina. Transport logistics in the Armed Forces is not recognized as a special type of logistics, but it is an undeniable fact. It enables transportation, that is moving goods, things, personnel and information from one place to another. Without transport logistics in logistical support, there would be no supply of the commands and units of the Armed Forces of Bosnia and Herzegovina. In its physical and visible form, transport logistics in the Armed Forces is the logistical support of the commands and units of the Armed Forces of Bosnia and Herzegovina.

Transport logistics in the Armed Forces is additionally complex because it takes place in a military environment and has an interactive

relationship with systems outside the military organization. Transport logistics organizes production, it takes place at certain locations, at a certain time and under the control of a certain command.

For the Armed Forces, transport logistics is one of the most important types of logistics because without it, other systems of logistics services would not be able to function, that is systems of procurement, preparation, infrastructure, health and medical insurance and protection, nutrition, equipment, maintenance, use and use of material technical means and services. Transport logistics is the main input into all logistics support processes and significantly participates in the value of each logistics product and in the value of each material means of supply.

Regardless of the fact that transport logistics in the Armed Forces of Bosnia and Herzegovina is a budget item and is considered an expense, it increases the value of each delivered asset and service. Transport logistics uses means, equipment and people in the traffic-transportation system to produce transport-logistics products, thus enabling the transportation of goods, people, and information from one place to another. The logistic support function includes the management of the vehicle fleet and equipment used for the transport and transformation of material and technical means where and when needed, with the least costs.

The quality of logistical support of the Armed Forces of Bosnia and Herzegovina is complex, extremely complex, but at the same time very clearly and rigidly determined through incalculable damages and losses, in cases of errors and non-functionality. The most recent example is military war activity in Ukraine. The complete supply chain is closely defined and conditioned by transport logistics. An important factor in the defense sector is high training, multiple alternative plans, readiness for improvisations, increased responsibility and immediate authority in the organization of logistical support. The unpreparedness and clumsiness of transport logistics in the example of the aggression against Ukraine led these two countries into a long-lasting and exhausting struggle. All the plans of the Russian forces underwent drastic changes. Time and lives were lost. Caused the engagement of the massive Russian administrative and military

apparatus from the military team on the ground to the parliament to find a solution to the resulting crisis. For the Ukrainian side in the conflict, this means a surprising opportunity, which they obviously know how to use, while for the Russian side this is a huge burden and an irreparable loss. The Russian forces, logistically speaking, lost the war.

For the execution of military missions, it is of inestimable importance that the necessary equipment, resources, and people are available at the right time. In every dynamic of military activities, logistic support must maintain a good balance of supplies and transport management and strategic locations of material and technical assets and services.

There are two basic activities in the supply chain that make up logistics, namely:

- function of physical distribution (delivery/issue),
- management of material resources.

The basic component of the supply chain of the Armed Forces of Bosnia and Herzegovina is the traffic and transport system. The traffic and transport system connects different activities separated in space and time. Transport accounts for a third of logistics costs and has the greatest impact on the characteristics of the logistics system. Transport is necessary during the supply of material and technical means until their delivery to the end user. To ensure maximum efficiency, it is necessary to ensure absolute coordination of all participants. The main goal is to optimally meet the needs of commands and units and their capabilities. Logistic support of the Armed Forces of Bosnia and Herzegovina is a process of optimizing the supply of material and technical means and services in order to meet needs in a timely manner.

Put simply, logistic support is user-oriented operational management. The quality of logistics support through a multidimensional feature (contains: procurement, preparation, infrastructure, equipment, maintenance, location, time and control) creates additional value, which is why it is a complex and multidimensional concept. It determines the

quality of the entire supply chain. Having a certain asset or service available at the right time is the main goal of the supply chain with a more favorable relationship between inventory, transport management and strategic locations of material and technical assets and services.

## **2. Components of the logistic support system of the Armed Forces of Bosnia and Herzegovina**

The logistic support system of the Armed Forces consists of three closely related components, namely:

- logistic services,
- information systems and
- logistic infrastructure.

Logistics services support the movement of material and technical, material and other resources from production, procurement, storage, inventory control, operations undertaken by external service providers and delivery to commands and units. Logistics services include all accompanying activities related to return flows, including the removal of waste material.

Logistics activities, many of which are two-way, include:

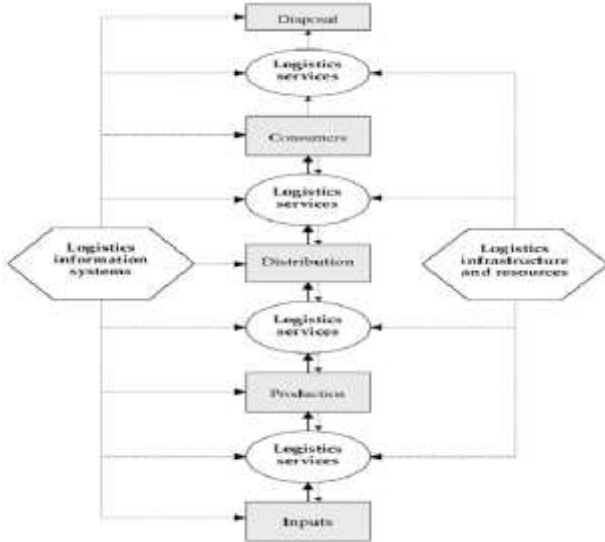
- physical activities (transportation, storage),
- non-physical activities (supply chain design, contractor selection, negotiations...)

Information systems of logistics support of the Armed Forces of Bosnia and Herzegovina ensure all necessary data and information in every step of the activity and in the interaction between logistics services and the destination point. It contains modeling of the decision-making process, management and control of the decision-making process, activities of monitoring, analyzing and registering information.

Logistics infrastructure consists of human, material and financial resources, as well as infrastructure (warehouses, transport and communication).

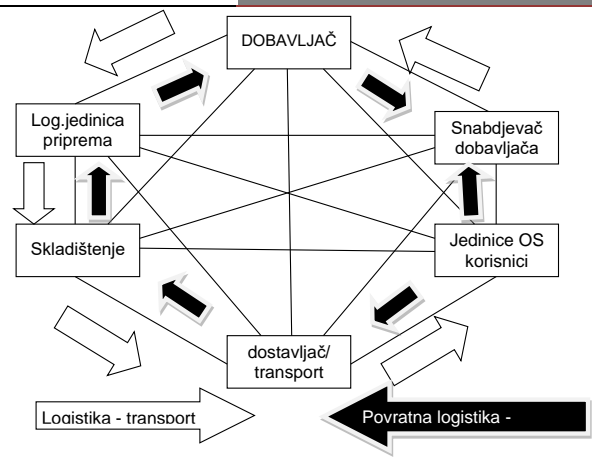
### 3. Management and control of the supply chain of the Armed Forces of Bosnia and Herzegovina

Management and control of the supply chain is the concept of realization and execution of the tasks of the commands and units of the Armed Forces. The efficiency of management and control of the supply chain must promote and guarantee the satisfaction of the needs of a successful response to modern defense and security threats. Management and control of the supply chain seeks to combine collective productive competences and potentials so as to initiate innovative solutions for each crisis situation focused on improving the capabilities of the supply system.



Shema 11: Logistics system (Source: BTRE, 2001.)

In the logistics support system of the Armed Forces of Bosnia and Herzegovina, the concept of return and transit logistics functions. In this concept, it is applied for the purpose of improving efficiency and promoting customer service and restoring mood potentials.



Shema 2: The supply chain of the Armed Forces of Bosnia and Herzegovina (following the example of: Krumwiede et al., 2002.)

Reverse logistics was quickly accepted with certain changes compared to commercial systems, because in the logistics support system, the combination of the delivery direction of supply and reverse logistics in the defense system resulted in a form of incidental logistics, and its direction is alternating.

Return and transit logistics in the defense system of Bosnia and Herzegovina occupies an increasingly important place, because with good and directed planning, more than 40% of logistics tasks are completed, and the amount of useless kilometers and hours is constantly decreasing. Scheme 2 shows the structure of the logistics system of the Armed Forces of Bosnia and Herzegovina, which includes classic logistics, reverse logistics and information flows. The flows shown with a black line represent the direction of reverse logistics, the direction of which is opposite to the flow of classic logistics. Reverse logistics in the defense system has one specificity compared to the original scheme, and it is reflected in the fact that reverse logistics in the defense system has the possibility to be performed in the same direction as classic logistics. Incidental logistics and its direction is not particularly highlighted on scheme 2, because it has an alternating direction.

Information flows in the defense system of Bosnia and Herzegovina take place through special channels. Information flows connect all subjects within the system. Each subject has open channels of communication with all others directly in order to achieve maximum efficiency. In the defense system, information is structured through communication channels in such a way that access to information is limited by a hierarchical structure.

Logistics support in the defense system of Bosnia and Herzegovina is continuously developing. This system requires professional knowledge in the field of logistics management and requires special facilities. That is why in the defense system care is taken to ensure the establishment of various types and levels of education and training in planning and strategic documents. At the same time, efforts are being made to ensure the adoption and introduction of modern technologies in transport, facilities, equipment, etc.

#### 4. *Quality of transport logistics*

The quality of transport logistics is a very complex and multidimensional concept that needs to be investigated from different points of view. From the point of view of the Armed Forces of Bosnia and Herzegovina, the quality of transport logistics is determined by the efficiency of task execution. Here are the following facts:

- The quality of material and technical means, equipment and services is a basic prerequisite for the successful execution of the tasks of the commands and units of the Armed Forces of Bosnia and Herzegovina.
- The quality of logistics services in the Armed Forces of Bosnia and Herzegovina clearly lags behind the quality of material and technical means and equipment, although it is of key importance for military commands and units.
- Logistics is a sector with huge opportunities, realistic prospects for improving and improving the overall quality of services.
- Material and technical means and equipment are very similar in terms of their design and quality. Because of this, the quality of the logistics service becomes a key factor in the success of the commands and units of the Armed Forces of Bosnia and Herzegovina. In terms of equipping and supplying, the Armed Forces are fully committed to the conditions of compatibility and interoperability, which means that the choice between several offers of

material and technical means and equipment is mainly based on the quality of the delivery or delivery services.

In view of this, it is possible to talk about the requirements of the commands and units depending on their purpose and specialty, the quality of logistics processes, environmental protection, social responsibility and others. The quality of logistics service can be grouped into three groups:

**The aspect of management and control**, which refers to the quality of the logistics service in the function of ensuring the logistics support of the commands and units of the Armed Forces of Bosnia and Herzegovina. The quality of logistics service in the defense system of Bosnia and Herzegovina is inextricably linked to the success of military units. Therefore, the quality of the logistics service is at a high level if the military unit that uses these services successfully performs the assigned part of the tasks. This does not mean that the quality of the logistics service is bad if a military unit is unsuccessful in performing its assigned tasks, because the success of a military unit's tasks also depends on other factors. The Ministry of Defense of Bosnia and Herzegovina, on the basis of the Constitution, Law and international agreements, prescribes the Logistics Policy of the Ministry of Defense and the Armed Forces of Bosnia and Herzegovina, the policy of logistics services, programs and work plans. The aforementioned documents define the key obligations of all defense and security structures, define the framework qualitative logistic requirements, and the methods and responsibilities of implementation. Competent commands within their scope during the service realization process evaluate and evaluate the obtained level of service quality in relation to the expected one.

Commands and units of the Armed Forces of Bosnia and Herzegovina that are responsible for logistical support use a strategy of listening and learning in relation to existing and potential military units, users of their logistics services. The Logistics Command of the Armed Forces of Bosnia and Herzegovina is tasked with continuously performing comparative analyzes of planned and extraordinary, expected and realized quality of logistics services, evaluating the extent to which plans, requirements and expectations have been fulfilled. In this way, the degree of satisfaction of the needs of the supported units is determined, which is the best measure of the quality

of logistics services.

From the point of view of transport logistics, the quality of service is observed and evaluated according to the following parameters:

- Reliability,
- frequency,
- completeness,
- documentation,
- delivery time and accuracy,
- flexibility,
- information,
- security.

**Functionality aspect**, which examines the quality of logistics processes and the functioning of the logistics system of the Armed Forces of Bosnia and Herzegovina. The quality of the logistics service results from the quality of the logistics processes and the quality of the functioning of the logistics system, because the logistics service is the result of several related activities and processes in the logistics chain.

Competent structures design, organize, control and manage logistics processes through the development of plans and analysis of implementation, all in accordance with current regulations. The quality of the logistics service is a direct consequence of the applied strategy, technology and organization of logistics processes.

**The aspect of social responsibility**, which refers to the quality of life, safety and environmental protection. From the aspect of social responsibility, the Armed Forces of Bosnia and Herzegovina, through logistical support, set the quality of the logistics service that should satisfy three key functions:

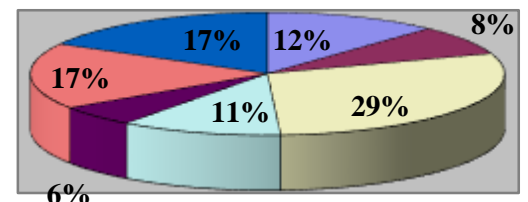
- environmental protection,
- protection of life and health of people and
- protection of service users.

Working conditions and the safety of logistics activities are the main factor influencing the choice of logistics strategy and technology.

Certain logistics processes, such as transport, loading, unloading, transshipment and storage are accompanied by significant risks, so that when designing and organizing these processes, the mentioned risks are reduced to the smallest possible measure, that is, they are sought to be eliminated. Table 1 shows the components of logistics costs based on estimates by the American Air Transport Association (Chang, 1998.).<sup>/16</sup>

No	Logistics operation (part)	participation percentage
1	Packaging	11,9%
2	Movement	7,80%
3	Transportation	29,40%
4	Management	11,00%
5	Orders	5,50%
6	Supplies	17,40%
7	Storage	17,00%

**Tablica 1:** Table 1: Components of logistics costs (Source: Author, based on <sup>A</sup> and collected data and research)



**Histogram 1:** Relationship between components of the logistics system. (Source: Author, based on table 1 and collected data and research)

The traffic and transport system appears in various forms and is treated in all forms of grouping and organization of the Armed Forces of Bosnia and Herzegovina. The traffic and transport system is irreplaceable regardless of the achievements in the field of modern technologies and especially in the field of information technologies. Regardless of the benefits provided by modern information development, we can still move some materials and products from one location to another exclusively using public transportation systems.

Transport accounts for one third of logistics costs. Transport most significantly affects the

<sup>/16</sup> - 7. Naučno-stručni skup sa međunarodnim učešćem "KVALITET 2011", Neum, B&H, 01. - 04 juni 2011 (Prof. dr. Mirsad Kulović Prof. dr. Ibrahim Jusufrić Mr. Ružica

characteristics and performance of the logistics system. The traffic and transport system crucially determines the structure, size, deployment and other important elements of the logistic support system of the Armed Forces of Bosnia and Herzegovina.

## 5. Conclusion

Transportation is necessary in every logistic process. Exceptionally good coordination and precise planning of the use of resources ensures maximum efficiency.

The traffic, transport and logistics systems of the Armed Forces of Bosnia and Herzegovina are highly interdependent. Transport is necessary for the execution of logistics operations, and on the other hand, logistics systems can help improve the organization and development of transport. Therefore, the efficiency of the transport process, that is the quality of transport logistics, is of key importance in the delivery and supply chain.

In the same way, the interdependence of the traffic-transportation and logistics system of the Armed Forces of Bosnia and Herzegovina with the systems of the State of Bosnia and Herzegovina is obvious. All systems are explained earlier. An important observation is that they are directed towards each other in a positive way and with positive consequences.

The mutually inseparable activity and conditioning of the traffic and transport system of the Armed Forces of Bosnia and Herzegovina, the application of intelligent transport systems and the level of development of the defense capabilities of Bosnia and Herzegovina are undoubtedly shown.

Information and telecommunication technologies are an important direction of development. In this sense, the traffic and transport system must take a serious step in the adoption and development of appropriate projects in the domain of IT technologies. In this established and established logistics system, hierarchically, subordinate and superior, planning and executive structures are

developed.

## BIBLIOGRAPHY

### BOOKS

- [1] A. Deljanin: Modeling the rapid transformation of peacetime means of transport for the needs of the country's defense, Doctoral Dissertation, Faculty of Transport and Communications, Sarajevo, 2004.
- [2] A. Deljanin: University textbook, "Evaluation methods in planning and designing traffic infrastructure" published by the Faculty of Traffic and Communications, University of Sarajevo, 2017.
- [3] WHITE PAPER / Plan for a unified transport area - Towards a competitive transport system with efficient use of resources, European Parliament, Brussels, 28/03/2011.y,
- [4] H. Eklez: Logistics in national defense, Military - publishing house, Beograd, 1968.god.
- [5] I. Jusufrić, M. Kulović: Logistics in transport and forwarding, International University Travnik, Faculty of Transport, script, 2010.
- [6] I. Bošnjak: Intelligent transport systems - ITS 1, Faculty of Transport Sciences, University of Zagreb, 2006.
- [7] I. Bošnjak, D. Badnjak: Basics of Traffic Engineering, Faculty of Traffic Sciences, University of Zagreb, 2005.
- [8] J. Dujović: Management in the defense and security system, Faculty of Political Sciences, Sarajevo, 2000, god.

### SCRIPTS, PROCEEDINGS AND CONFERENCES

- [1] A. Deljanin: Reviewed lecture script "Development of Traffic and Communications in the World and Bosnia and Herzegovina", Faculty of Traffic and Communications, University of Sarajevo,

2013.  
 [2] Colonel (RNLAF) Freek van der Vaart, UPATE on coordinating the shared use of Multinational Strategic Lift, SNLC M&TG, Brussels 2-3 Feb '10,

#### **PUBLIKACIJE / ČASPOPISI**

[1] A. Deljanin F. Kiso, A. Kosovac: Development of the transport system of Bosnia and Herzegovina, Zagreb, Faculty of Transport Sciences, 2009.,  
 [2] "7. Scientific and professional meeting with international participation, KVALITET 2011", Neum, B&H, 01. - 04 juni 2011. (Prof. dr. M. Kulović, Prof. dr. I. Jusufrić, Mr. R. Popović, Saobraćajni fakultet, IUT, Bosna i Hercegovina) – Neum 2011.,

#### **LEGISLATION**

[1] Decision on the Law on Standardization of BiH, ("Official Gazette of BiH", number 29/00),  
 [2] Instructions on the implementation of the vehicle type homologation procedure, ("Official Gazette of BiH", number 89/10),  
 [3] Decision on the lowest technical requirements, ("Official Gazette of BiH", number 89/10),  
 [4] Rulebook on vehicle certification and requirements that organizations for vehicle certification must fulfill (Official Gazette of Bosnia and Herzegovina, number 41/08),  
 [5] Rulebook on vehicle technical inspections, ("Official Gazette of Bosnia and Herzegovina", number 13/07),  
 [6] Rulebook on the conditions and procedure for issuing licenses for international road transport ("Official Gazette of Bosnia and Herzegovina", number 44/05),  
 [7] Rulebook on the method of transportation of dangerous goods in the Ministry of Defense and the Armed Forces of Bosnia and Herzegovina,

2013,  
 [8] Rulebook on road traffic safety in the Ministry of Defense and the Armed Forces of Bosnia and Herzegovina, 2009,  
 [9] Law on Defense of Bosnia and Herzegovina, ("Official Gazette of Bosnia and Herzegovina", no. 88/05),  
 [10] Law on the Basics of Road Traffic Safety in Bosnia and Herzegovina, ("Official Gazette of Bosnia and Herzegovina", number 6/2006, 75/2006 - amended, 44/2007, ..),

#### **ON- LINE LITERATURE:**

[1] Army Logistician. Find Articles.com. 23 Apr, 2009.  
 [2] <https://www.morh.hr/> (kontinuirano prati)  
 [3] <https://www.mod.gov.rs/> (kontinuirano prati)  
 [4] <https://www.gov.me/mod> (kontinuirano prati)  
 [5] <http://os.mod.gov.ba/default.a> (kontinuirano prati)  
 [6] [www/modbh@ba](http://www.modbh.ba), (kontinuirano prati)

#### **OTHER SOURCES**

[1] AC/305(EAPC)D(2012)0006, Definition of Collective Logistics, 2012.g.,  
 [2] ALP-10, Guidance for Integrate Logistic Support, 2012. g.,  
 [3] Director, Colonel (RNLAF) Freek van der Vaart, UPATE on coordinating the shared use of Multinational Strategic Lift, SNLC M&TG, Brussels 2-3 Feb '10