

THE RELATIONSHIP BETWEEN PORT LOGISTICS AND GLOBAL LOGISTICS PERFORMANCE

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Abstract: This paper presents the current state of development of the logistics sector in Romania, through a system of reference and reporting generally accepted in the international and regional economy. The key standard of the logistic performance used in the analysis conducted in this paper highlights the place and role of our country in the international supply chain. The authors identify and argue the relationship between shipping, port logistics and the final cost of the products.

Keywords: logistics performance, port logistics, naval transport.

1. European, regional and national economic framework

Global economic reality is manifested by the tendency of relocation of activities by large companies, which are constantly concerned that products made worldwide, usually at great distances, to be brought just in time where required [1-3]. Thus, logistic services get more, trend amplified by the development of information technology [4] and the techniques of communication [5]. Ways of transport, complex handling process (fragmentation or consolidation of consignments, order preparation, packaging operations, etc.) as well as strategic positioning deposits or other storage locations, determines the quality of service and ease of transport upstream and downstream [6]. Romania's integration into the European Union's economic activity, will compel the economic environment to actions aiming increasing efficiency of production processes and thus to increase the volume of freight transport [7].

For this purpose, Romania and the surrounding countries, will finalize the projects already underway and new projects will be initiated to modernize the transport systems for pan-European corridors [8]. Based on European policy objectives for sustainable development, Danube riparian states will trace the increase of inland waterway transport capacity, modernization of port infrastructure and development of port logistics system [9]. To identify the current stage of logistics sector development in Romania in international and regional economic context, performance analysis is required with respect to a reference system widely accepted.

2. Logistics performance

Performance measurement is the process of quantifying the effectiveness and efficiency of actions through a specialized set of indicators [10,11]. The four key competencies that characterize logistics are positioning, integration, agility and measurement. Of these, measurement (organized into a coherent system) must provide to management the necessary and sufficient informations related to financial issues, internal processes of customers, innovation and improvement [12]. To analyze the level of performance in logistics can be used Logistics Performance Index (<http://lpi.worldbank.org>), based on a set of criteria structured as follows (Figure 1):

1) Efficiency of customs operations carried out by border control, including customs (speed, simplicity processes, predictability formalities, etc.);

2) The quality of infrastructure used in logistics operations (ports, inland waterways, railways, roads, information technology, etc.);

3) The quality of logistics services (transport operators, commissioners, etc.);

4) Frequency with which shipments reach their destination at scheduled delivery time;

5) The ease of organizing international shipment of goods at competitive prices;

6) Ability of tracking and tracing of goods and transport.

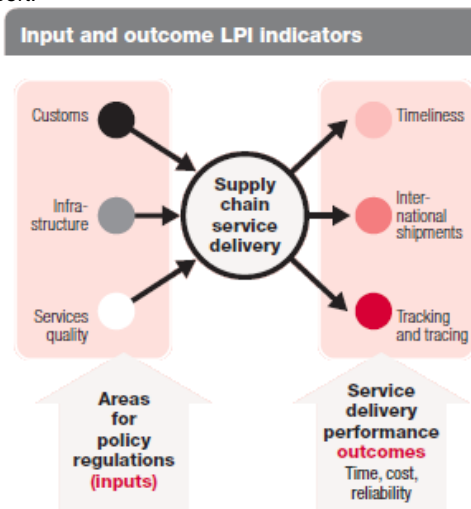


Fig.1 LPI Indicators (Source: Trade Logistics in the Global Economy, 2014)

For Romania, benchmarking can be achieved with respect to key performance criteria in relation to logistics and Logistics Performance Index (LPI), for different periods of analysis (years, range of years, etc).

As examples, the cases of Romania and neighboring countries were selected. The site facilitates the various comparative studies, as reporting to the country with the best performance logistics (Germany - Figure 2) and reporting performance to countries from a specific region (Figure 3).

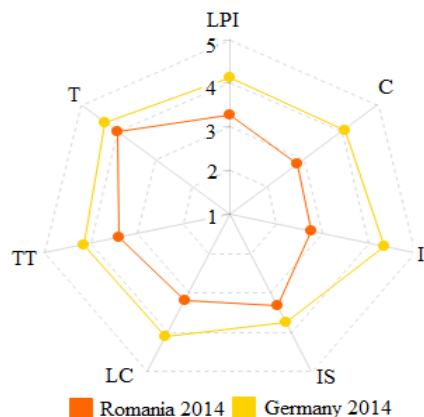


Fig. 2 Comparative analysis of key performance criteria logistics Romania-Germany

T-Timeliness; TT- Tracking & tracing; LC- Logistics competence; IS- International shipments; I- Infrastructure; C- Customs (Source: *International Score card*, <http://lpi.worldbank.org/international>).

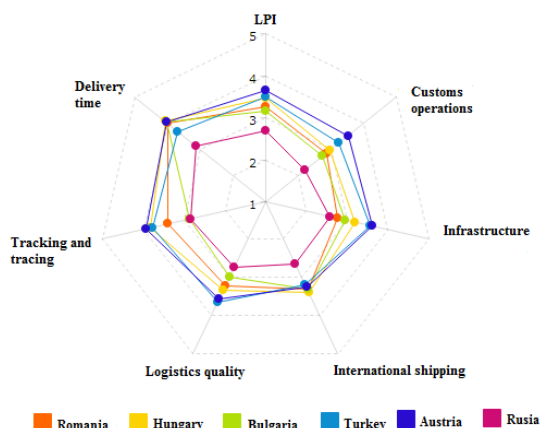


Fig. 3 Comparative analysis of key logistics performance Romania – neighbor countries for 2014 (Source: *International Score card*, <http://lpi.worldbank.org/international>).

World Bank study of logistics sector for the period 2007-2014, place Romania on 51 out of 160 countries investigated (in 2014 Romania ranked 40). Comparative analysis of the performance of Romania and countries of Central and West Europe, shows that our country has weaker scores on some of the performance criteria, and highlights opportunities for progress in this area.

From this perspective, Romania plays an important role in managing the logistical activities, ensuring the normal course of international exchange of goods between Central and Western Europe and regions of Asia, Africa and throughout the world.

Along with the national network of road and rail transport, naval transport (sea or inland waterways) and ports play a significant role in international trade of goods. In this context, port logistics plays a well-defined part of global supply chain, given that 80-90% of the volume of goods is carried out through naval transport. We could say that's without shipping (global maritime trade of goods through shipping) probably half the human population would starve and the other half would suffer from the cold.

3. Naval transport-port-logistics - final cost of products relationship

Along the way, from producer to consumer, total cost of a product will include: costs of production, transport and distribution of the product, the profits that each participant adds to its own costs and a number of taxes. When shipping a product via sea, overall cost structure of the supply chain from manufacturer to the consumer is represented in Figure 4.

Charging port services practices vary considerably, in which case we can not define a detailed and generally valid structure for transport costs. Practice shows that the costs of port services have a significant share in shipping costs and hence in the total cost of transport. The increase of port cost is directly or indirectly related to the handling of goods and are the most significant for general cargo.

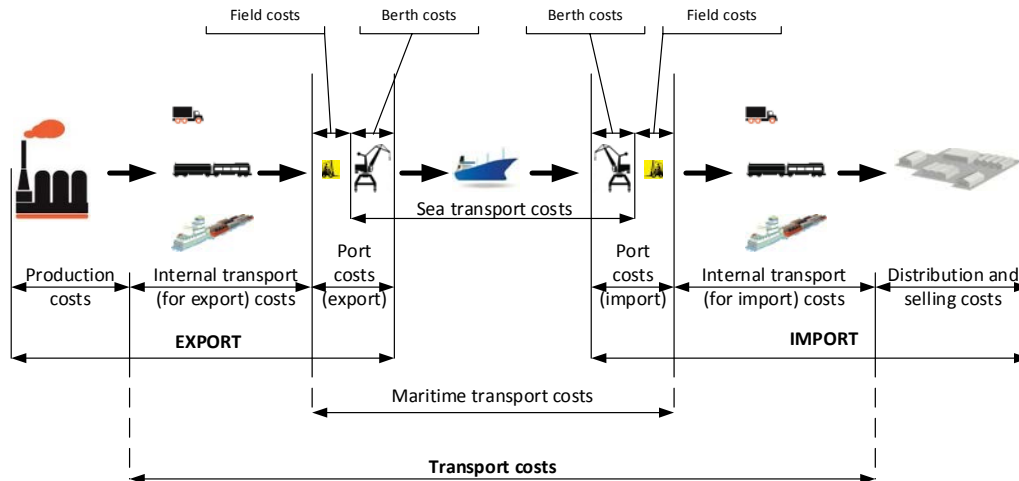


Figure 4 The cost structure by considering the naval transport

Reasons for poor port performance are time lost due to interruptions in operation, poor utilisation of provided equipment, weak stacking and handling practices, insufficient training activity and / or its poor organization. The main consequences of a low port performance will be a speed reduction in operating the vessel and an increased residence time of the vessel at berth. This will increase the cost per tonne of handled cargo, since operating costs are distributed over a smaller amount of cargo handled per unit time. A higher handling cost will be generated by the other partners involved in port activity: shipowner (for the higher cost of operating the vessel), cargo shippers and receivers (for higher costs associated to dockside handling, transportation or storage). Another consequence of lower operating speed is additional stationing of the ship in port; as a result, increase of voyage costs will be recovered by shipowners through higher freight. Finally, poor port performance will be reflected in higher cost of naval transport and products, and all the consequences will be supported by consumers (Figure 5). In these circumstances, consumers can redirect to other products, in which case producers will be forced to reduce their profits or, most frequently, to shift towards more efficient routes (ports).

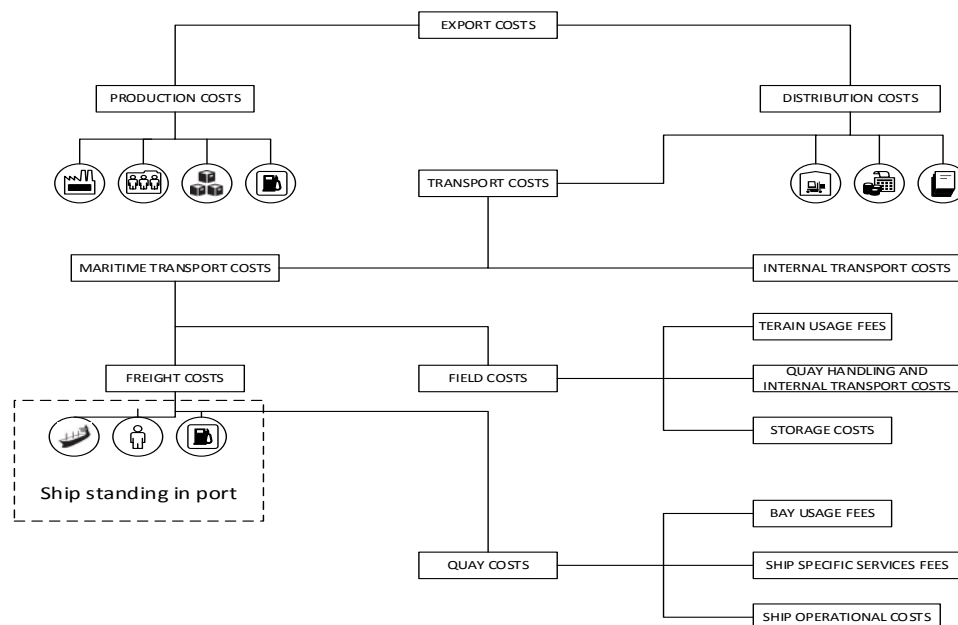


Figure 5 The structure of port costs

If the operating speed of the ship is so low that the port can not handle the entire amount of cargo that need to be transferred, port congestion occurs with dramatic consequences on port activity and increases substantially and unreasonably total voyage costs, forcing shipowners to increase freight rates when operating on that port. For ports that are frequently congested, navigation unions require a congestion surcharge for liners and impose a particular demurrage for charters (caused by exceeded lay days). In either case, additional charges will be passed on to a higher freight which will result in increasing the price of all goods passing through the port, producers and their buyers are finally those affected. Consequences of port congestion do not stop there. Shipowners typically use for busiest or poor performance ports old ships, whose costs are lower but with inappropriate operation of modern cargo-handling technologies. This is leading to much lower operating speed due to the use of less efficient technologies. It is also possible that many shipowners to move towards other routes, which will cause the port to lose one of its essential roles, that of distribution center. In this case, it will become a satellite port where will be operated mainly smaller feeder ships. Goods will probably need more time for storage, field costs will increase and congestion that can occur in warehouses will require construction of new storage facilities. A larger storage time also increases the risk of damage of goods and, consequently, insurance policies demanded by insurance companies will increase. As a general consequence of all, this port will be considered to have poor services and it will be avoided as much as possible. Although poor performance and port congestion is due mostly to poor organization of cargo-handling activities and inefficient use of available resources, the ports tend to eliminate the congestions by investing in additional berths or new facilities. This will result in a temporary reduction in congestion without thereby eliminate the real causes of poor performance. The costs of such a large investments will be covered by increased port fees and charges, negatively influencing once more transport and products costs.

As shown in the foregoing effects of port performance on shipping costs, increasing these costs can be a major obstacle and an important barrier to international trade and freight traffic through the port. Even if economic reasons compel the manufacturer to maintain and not lose some markets, foreign trade earnings will be reduced dramatically due to reduced profits. This effect will be felt particularly for low-value products such as raw materials, agricultural products, heavy goods and low volume metallurgical products etc., which form the majority of exports from developing countries.

As long as costs in port activity have a significant role in transportation costs, improve of performance port is a very important key to reducing the cost of transport, so necessary to stimulate foreign trade.

The consequences of increasing port performance in this context are clear enough and they are mainly reflected in:

- 1) reducing the cost per tonne of cargo handled;
- 2) reducing the cost of shipping;
- 3) reduce the total costs of the distribution of goods;
- 4) reducing the cost of goods imported by sea;
- 5) increase in profit from export activities made by sea;
- 6) increase in profits for the port and its customers.

There are also other consequences less measurable but equally beneficial to the whole activity. Thus, a higher efficiency of port cargo handling enhances its reputation for the offered services quality and it will attract shipowners to port. This will encourage new investments and create new jobs, stimulating the local and national economy and industry. Shipowners will begin to direct to port modern ships whose characteristics will increase the operating speed by using advanced operation technologies. Harbor will expand the range of services offered to users and develop existing services, activities such as banking, freight, insurance, supply vessels, repair and many others will be implemented in port. Significant effects will be felt also by local authorities adjacent to port, which will thrive due to increase of port activity.

Primordial consideration and basis of economic growth of the port consist of providing proper performance, especially to activities of vessels operation and handling of goods, as a port's main functions.

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