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Economic Analysis Regarding the Particularities of a Bulk Terminal in the Port of Constanta

Viorela STINGA[1]*, Ana OLTEANU[2]

Abstract

The maritime transport is a complex economic activity that evolves in the same way as the economy, contributing to its development, being a factor with a significant impact on economic cooperation on a global scale. Freight is the primary concept in the shipping economy. Considering the interdependence between freight, ship and port, we can say that they influence each other, but the main factor in maritime transport is the merchandise/freight that takes different forms from raw materials to finished products, being classified according to the utility offered to the sectors that use it. Romania is an important maritime hub, due to the location of the Port of Constanta (location that provides the link between the markets of the non-sea European countries to Central Asia, Transcaucasia and the Far East through its position at the trade routes), so that its advantages should be exploited to the maximum given the high potential of the maritime transport in the national economy. The services that are offered by a terminal should take into account the entire logistics chain in order to optimize the associated costs (loading/unloading costs, storage, freight, cost of land transport), with significant restrictions on port final selection. In order to emphasize the importance of a bulk terminal in the Port of Constanta, within this paper we will analyse the transport activity both global and at Romanian level. We will determine the characteristics of such a terminal and the economic impact that it may have on the profitability and activity of a transport operator.

Keywords: *Maritime transport; terminal; freight; economic impact.*

1. Introduction

Freight is the primary concept in the shipping economy taking various forms from raw materials to finished products and holding a decisive role in the evolution of ports and ships. Considering the interdependence between these three notions that influence each other, we can say that the freight is the "main pawn" that has developed as a raw material in terms of

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volume, variety and rhythm in traffic, or as manufactured products whose complexity, diversity and demand depended on scientific, economic and technical progress. A modern international transport system is based on a road, air, rail, maritime, inland waterways infrastructure covering three different areas: land, inter-regional and coastal transport.

Taking into consideration that the transport cost has an important share in the total and final cost of the goods transported, competition occurs both between different modes of transport and between modes of transport specific to different areas. Although there is a strong competition between different modes of transport, technical progress and evolution cannot be achieved without a collaboration between these, which provides the final consumer with a quality, fast and secure services. The function of the shipping industry is to ensure the movement of many types of goods from one place to another using over 3000 ports interconnected by 9 million sea routes. The importance of maritime transport has been strengthened by job creation, income to national budgets and the fact that this mode of transport is the main mean of achieving exports and imports at the European Union level [10].

Romania is an important maritime hub due to the location of the Port of Constanta, so that the avatars should be exploited to the maximum given the high potential of the maritime transport within the national economy, ensuring the link between production and consumption, through the constant flow of raw materials to the productive industrial sector and the movement of finished goods/products to the markets. Regarding the Romanian maritime transport, the main categories of good that are operated are the one specific to the agricultural, mining and forestry sectors, manufacturing, trade and construction.

Port of Constanta managed to become "one of the main distribution centres for the Central and Eastern Europe" as stated by the N.C. Maritime Ports Administration S.A. Constanta. At Romanian level, the share of Romanian ship-owners in the shipping offer after 1989 has experienced a dramatic decline, this involution being explained by the lack of investments in this sector, the national strategy in the field, the indifference of the authorities, the inconsistency of the legal regulations, as well as the possibility of the Romanian economic operators to operate marines under the foreign flag. Thus, Romania is losing a very important economic sector that could provide important revenue to the state budget, generate jobs, attract foreign exchange and why not, ensure international prestige.

In a logistic network, when considering an port operator it is important to establish its location in relation to the location of the buyer of the port services, due to the fact beside the maritime transport cost, he also

has to pay the transport cost from the discharge point to the factory gate, taking into consideration the restrictions imposed by the transport legislation or the nature of the goods. As emphasize by Monios [7] the efficiency and success of a port as well as of the port operators are based on their location. A port operator should be located where regular freight traffic is ensured by the existence of intense production, but also by the massive consumption in the area of influence. Global changes have a major influence on multimodal ports, thus causing their operators to reconsider how activities are carried out [9].

This is why, when choosing the services provided by a terminal, it is necessary to take into account the entire logistics chain in order to optimize the associated costs (generated by loading/unloading or warehouse operations) that contributes to the achievement **of the door to door transport.** Along with the port operation capacity in relation to the customer's needs, an important element that needs to be taken into consideration is the port access to all other forms of transport that ensure a multimodal transport needed in order to deliver the goods till the destination door. Thus, due to the fact that Port of Constanta is both a maritime and a river port (whose facilities allow the accommodation of different types of vessels) and having a direct connection with the Danube river (that represents one of its main strengths) via the Danube Black Sea Canal, it has an advantage over the rest of the Black Sea ports, that allows the multimodal transport of goods till the destination.

2. Analysis of the transport sector at European level

At Community level, maritime transport is the main mode of transport that ensures exports and imports at EU level, and there are also fairly high incomes in the national budgets of the Member States and many jobs.

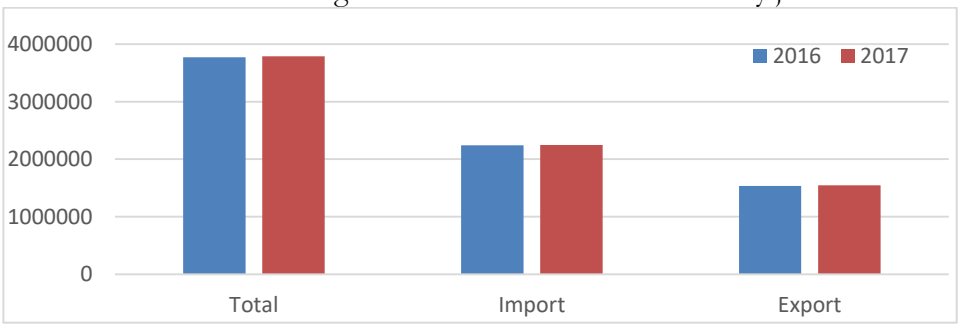


Figure 1. Quantity of goods handled in EU ports - thousands tons
Source: processing by [5]

Given the increase in international trade that has taken place over the last 50 years, European freight shipping has developed, so that in this area companies have invested significant amounts in fleet growth and endowment. It can easily be seen from the following graphs a 1.3% decrease in the number of ships operating in EU ports, but a 4.5% increase in tonnage volume, which can be explained by the increase in the size of vessels used for handling goods.

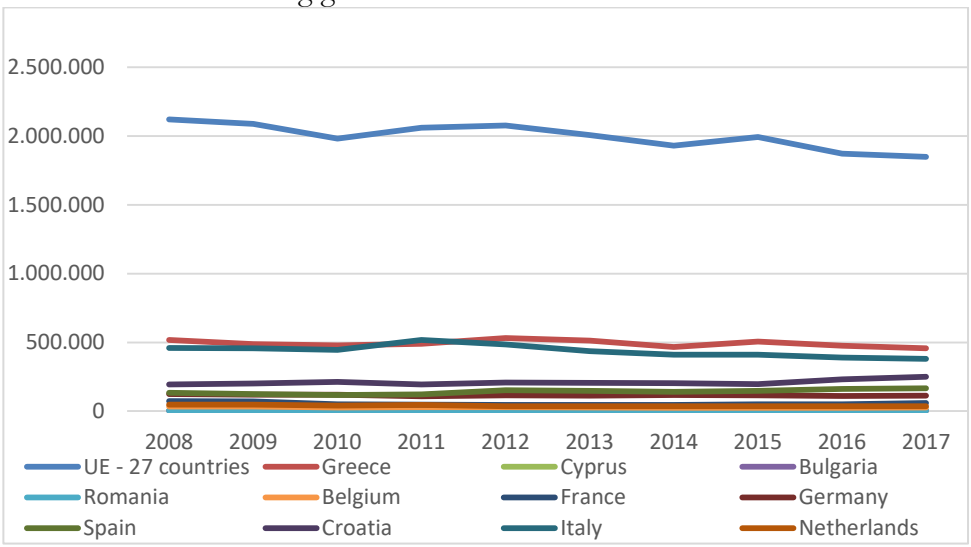


Figure 2. Evolution of the number of ships at the level of EU ports
Source: processing by [5]

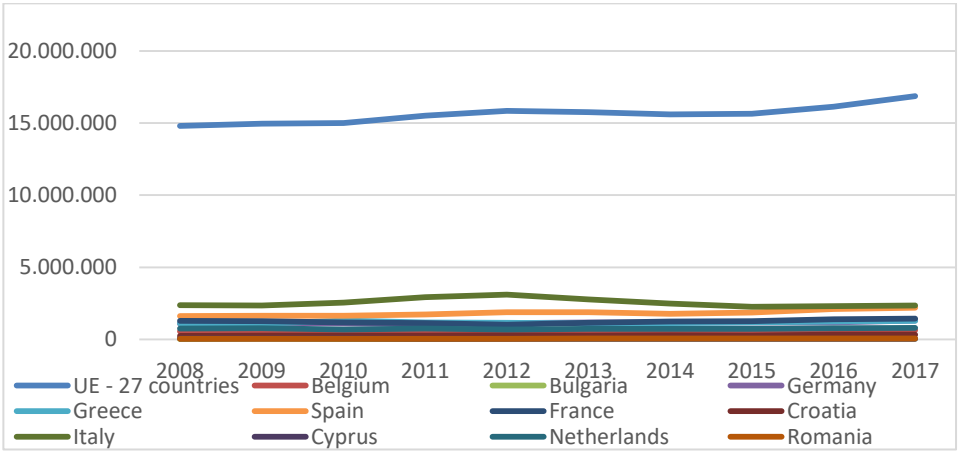


Figure 3. Evolution of gross tonnage in EU countries - 1000 tons
Source: processing by [5]

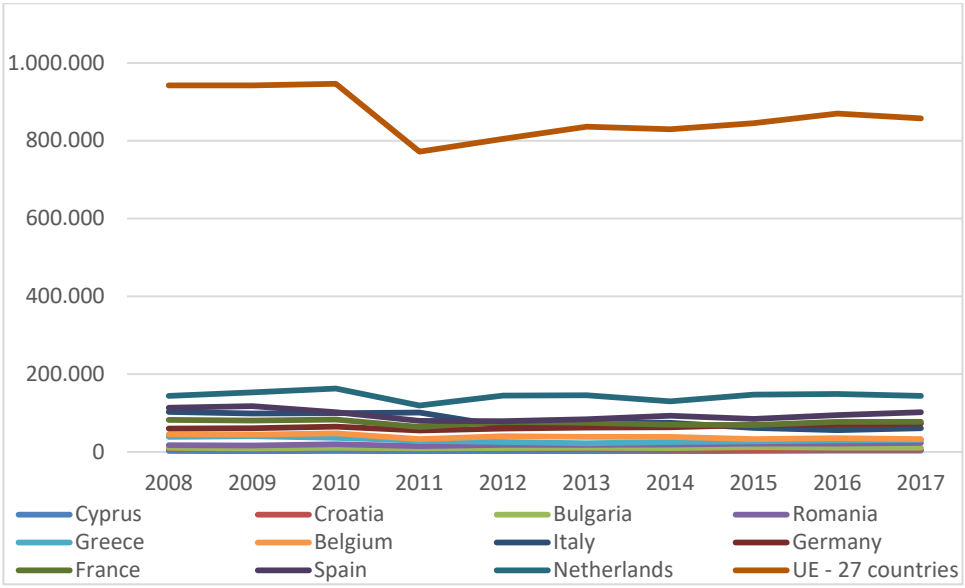


Figure 4. Quantity of solid bulk cargo handled in EU ports - 1000 tons
Source: processing by [5]

As indicated in the figures above (figure 2, 3 and 4), the total amount of cargo handled in EU sea ports increased by 1.4% in 2017 compared to the previous year, with the Netherlands having a major contribution, followed by the UK and Italy. Romania's contribution to these results was only 1.2%, with a 4% increase over 2016, which far exceeded the European average [3,4].

As can also be seen from the following figure, the global economic crisis has had a significant impact on European freight traffic, with significant falls following the economic downturn at the aggregate level, but the gap has gradually recovered. In the same situation were the Romanian ports, but since 2007 the volumes of handled goods gradually increased by about 4% per year. As regarding the total volume of goods operated, the most important ports in the European Union are those in Rotterdam, Amsterdam and Hamburg, while Constanta harbour occupies the sixth position, being the only Black Sea port in the top 10 European ports.

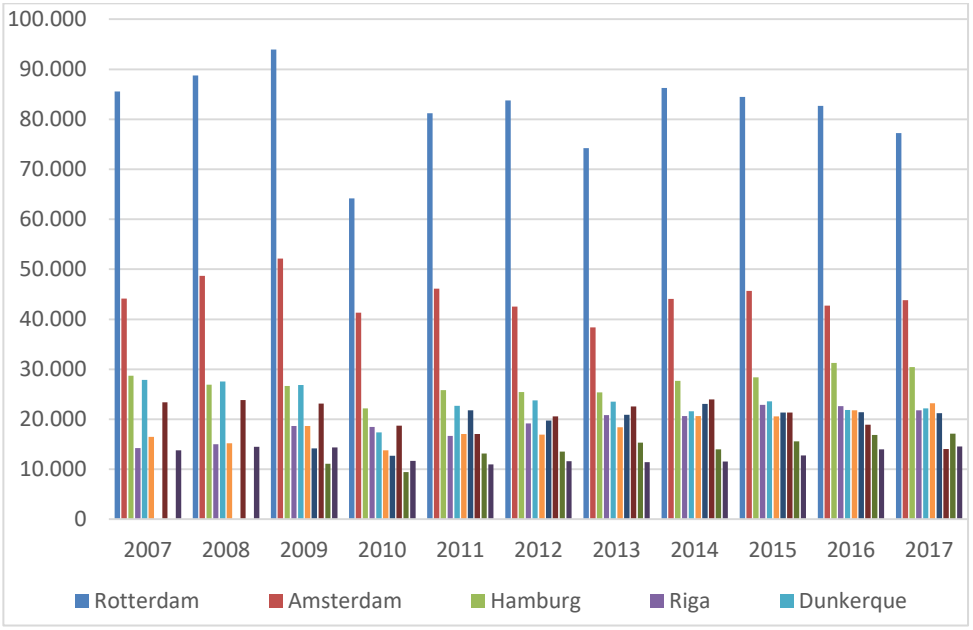


Figure 5. Top 10 ports by dry bulk goods - 1000 tons
Source: processing by [5]

3. Analysis of the transport sector in Romania

In Romania in 2017 goods of over 52 million tons were handled, accounting for only 1.38% of the total quantity of freight handled in the maritime and river EU ports, registering an average increase of 2.3% compared to the European average of 0.1%.

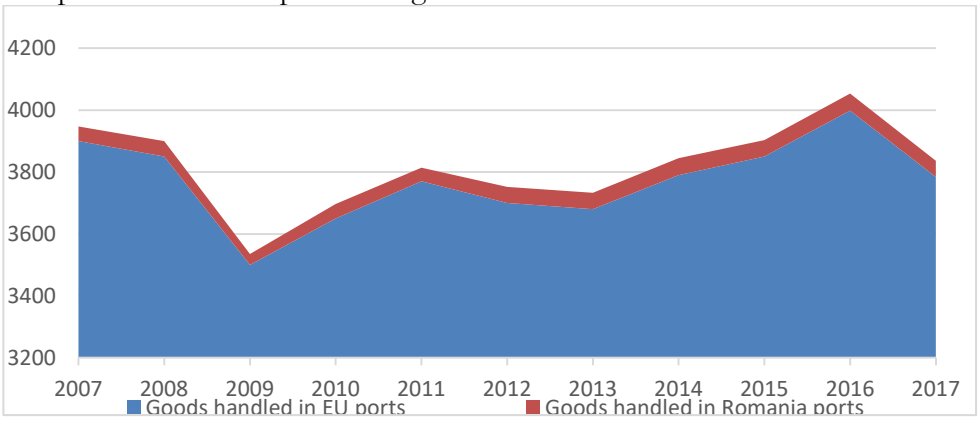


Figure 6. Quantities of goods handled in EU and Romanian ports
Source: processing by [5] and [1]

Thus Constanta Port managed to become "one of the main distribution centres of Central and Eastern Europe" (N.C. Maritime Ports Administration S.A. Constanta), the main categories of goods that are operated using maritime transport are the bulk ones.

Since 2009, Romania has experienced an explosive increase in cereal traffic, exceeding 9 million tons, but in the petroleum, cork and wood sector, the changes were insignificant, and significant decreases were recorded for ferrous ores, metal products, crude oil, iron waste, solid mineral fuels. With regard to the volume of cargo operated in Romanian ports, it can be seen that the main position is occupied by the Port of Constant port (over 82% of the total cargo loaded/unloaded) followed by Galati Port, Midia Port and Mangalia Port.

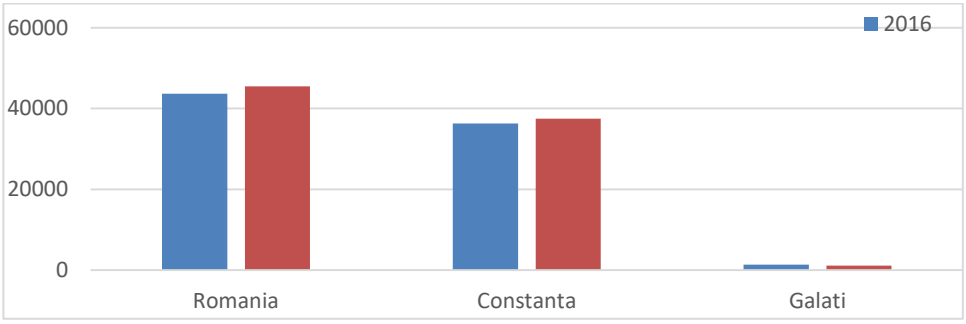


Figure 7. Quantity of goods handled in Romanian ports – thousand tons
Source: processing by [5]

The leading position of Constanta Port is due to its localization, but also due to the fact that it is a multipurpose port with large water depths that provide links to all transport modes.

As emphasize in the following figure the export and import of goods from and in Romania have increased since 2016 both in Port of Constanta and in Port of Galati, the volume of export goods being slightly higher than that for export.

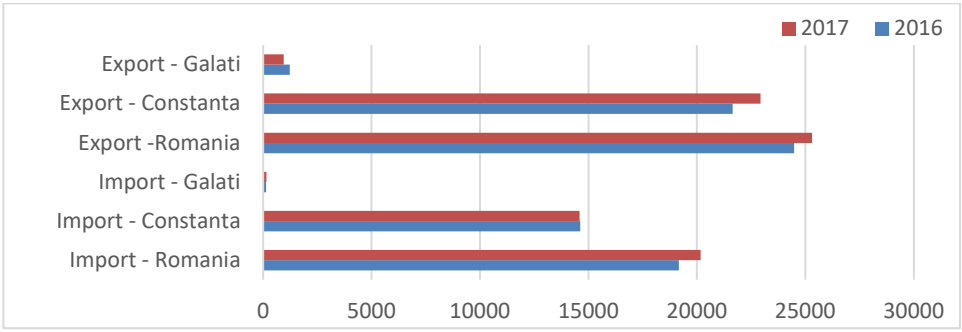


Figure 8. Evolution of import / export in Romanian ports
Source: processing by [5]

Analysing the statistical data regarding the volumes of goods operated in Romanian ports according on the ship's flag, we can notice that the share of the Romanian shipowners in the shipping industry after 1989 has dropped dramatically. This involution in this sector of transport can be explained by the lack of investment, the national strategy regarding the transport industry in general, the indifference of the authorities, the inconsistency of legislative regulations and by the possibility of the Romanian economic operators to register the maritime ships in foreign countries.

This is why Romania lost an important economic sector that could provide important revenue to the state budget, create jobs, attract flow rate and provide international prestige. In the following figures can easily be seen the collapse of the shipping sector in Romania after the global economic crisis, that has dramatically affected the world traffic of goods global due to the significant decline in economic activity at a general level.

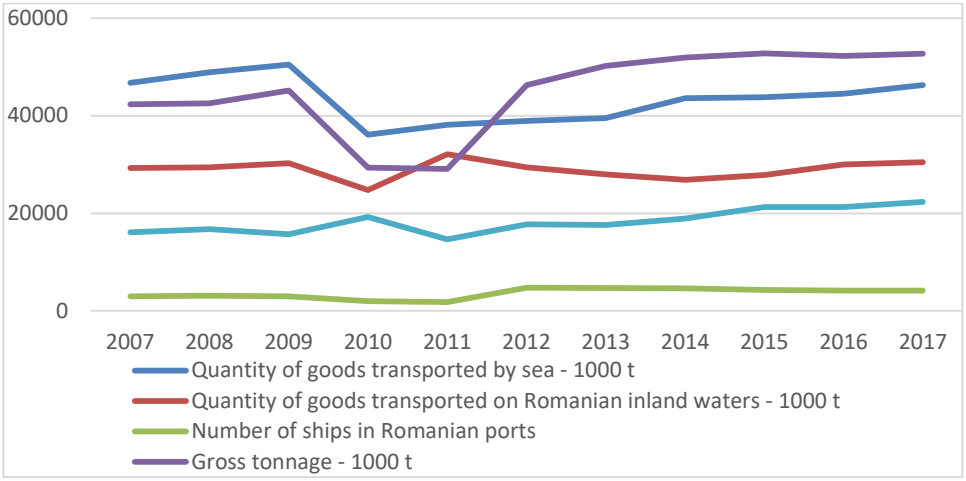


Figure 9. Situation of maritime transport in Romania
Source: processing by [5]

4. The particularities of a bulk terminal

In order to deal with a global demand that is steadily increasing of bulk goods every supply chain was forced to expand. Taking into consideration that the activities handled with a terminal are the ones that determine the efficiency of a logistics chain, the services that are offered by a terminal should try to optimize the associated costs (loading/unloading costs, storage, freight, cost of land transport), with significant restrictions on port final selection.

Worldwide bulk terminals are used and seen as "a buffer between an incoming flow and an outgoing flow of bulk solids materials" [6]. When analysing the characteristics of a bulk terminal its dimensions like lane length, lane width, quay length or storage area are the most important. The capacity of such a terminal depends mainly on the "quay length available to ship traffic and cargo handling capacity and the total installed loading/unloading capacity per terminal relates to its annual throughput" [11].

Taking into consideration the type of a dry terminal, the bulk freight is either exported from or imported into the terminal area, this is why is very important for a terminal to have connections with different modes of transport. Port of Constanta is a multimodal one, having direct connections with rail, road, river and maritime transport.

As can be seen in the figure below, in the last 10 years the quantity of dry bulk goods, especially grains, handled in the Port of Constanta has increase.

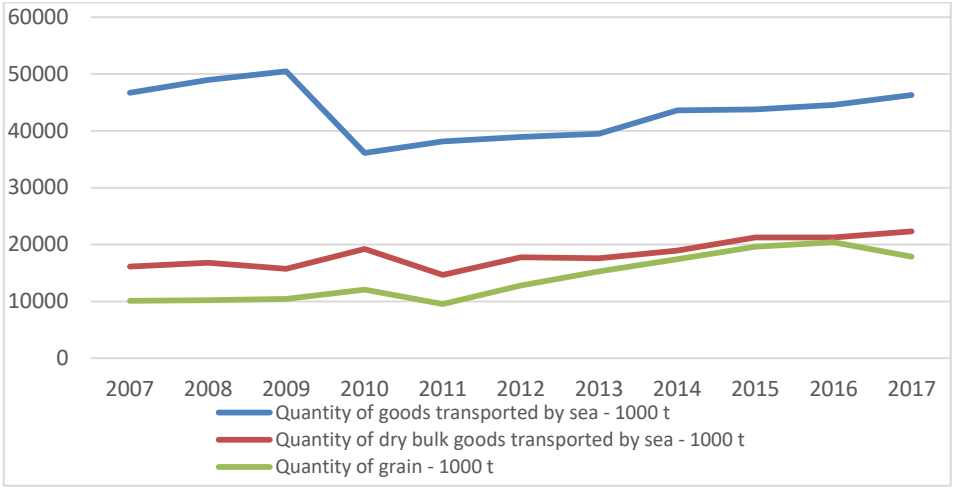


Figure 10. Evolution of quantity of dry bulk/grain handled in Port of Constanta
Source: processing by [5] and [8]

The bulk terminals from the Port of Constanta operate this type of goods coming from Romania, but also from other countries such as Serbia, Hungary or Bulgaria. Constanta Port is an important European port, considered one of the most significant European bulk centres, where different types of freight are operated in specially designed terminals. Another advantage of the port is given by the strategic location of the terminals to the maritime-river basin that allows the operation of all types of vessels (river or maritime) by direct loading or unloading operations on barges.

The most important port operators are [2]:

- NORTH STAR SHIPPING SRL that operates on 7 berths, with draught between 9 and 12 meters and a length of over 1500 meters.
- CHIMPEX SA that operates on 3 berths, with draught between 9 and 10 meters and a length of over 700 meters.
- SC COMVEX SA that operates on 9 berths, with draught between 3 and 18 meters, a length of over 2,100 meters and a storage capacity of 4 million tons.
- SOCEP S.A that operates on 1 berth, with draught of 9 meters and a length of over 200 meters.

- TTS OPERATOR SRL that operates on 2 berths, with draught between 4 and 12 meters and a length of over 400 meters.
- UNITED SHIPPING AGENCY SRL that operates on 1 berth, with draught of 6, a length of over 200 meters and a storage capacity of 220,000 tons.
- SILOTRANS SRL that operates on 2 berths, with draught between 9 and 12 meters, a length of over 400 meters and a storage capacity of 100,000 tons.

A terminal designed for bulk cargoes must have certain features, including:

- the location as far as possible from the city due to handling dust;
- the depth of water for allowing very large vessels to access, which implies important infrastructure investments;
- very large deposits which will ensure the storage of a large amount of goods;
- special warehousing equipment that ensures the continuous handling of goods in order to maximize productivity;
- highly qualified human resource.

The efficient use of the handling facilities for bulk cargo within a terminal is of utmost importance, because their number and performance influence both the operations carried out and the organization of the terminal [9]. The performance of the transshipment equipment contributes to the optimization of the logistics process, as it allows continuous flow without unnecessary delays within the multimodal transport system.

6. Conclusions

Considering the evolution of grain traffic through the port of Constanta, which exceeds a quarter of total freight traffic, it is easy to explain the willingness of operators to expand the activity, by creating new terminals for handling this type of cargo. It is expected that the investments for the construction of these new grain terminals will increase the traffic of this type of goods by several million tons annually.

If the operators of the bulk terminals want to fulfil their tasks, they must constantly adapt to the ever increasing competition, the technological progress and also to the characteristics of the loaded/unloaded goods.

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