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## The Analysis of the Port Management Models along Danube River

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**Abstract:** The main goal of the current paper is to analysis different business strategies applied by the inland cargo ports in the Danube Region, how efficiently they are implemented, related to the port management models employed all along the river. The study was conduct during Daphne Project implementation. In order to ensure a balanced development of the Danube port sector and enable it to become a key element in the EU transport network, a clear analysis needs to be performed first with regard to the status-quo. This activity will deal with this topic by first assessing the current practices in the Danube region on the port management and operation models applied and providing for a SWOT analysis thereof. In order to present the port management models of European ports, the key definitions of port operation should be presented as follows. Port development is seen as a catalyst to stimulate economic activity and create employment. Finally, Daphne Project aims to provide a comprehensive package of the issues to be approached jointly in order to help compensate the unbalanced development level between the Upper Danube ports and the other river sections.

**Keywords:** inland navigation; business strategies; port operations; Danube Region

**JEL Classification:** E660; M100

### 1. Introduction

Port development is seen as a catalyst to stimulate economic activity and create employment. In Europe, port developments relate mainly to building new terminals and upgrading the super- & infra-structure within existing ports rather than developing new greenfield sites.

In the context of the port management models of Danube cargo ports, the key definitions of port operation should be understood as follows according to the Commission Regulation (EU) 2017/1084 of 14 June 2017 as regards the aid for port and airport infrastructure.

This thesis will encompass four major issues important for the assessment of current status and development plans for port infrastructure. Due to the huge number of Danube ports and infrastructure parameters needed for infrastructure analysis the study team agreed to provide high-quality analysis of 19 selected ports along the Danube and its tributaries, including the most important “gate” for the Danube ports – the seaport of Constanta.

Following ports are selected for detailed analysis in this paper:

- Austria: Enns and Vienna;

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- Slovakia: Bratislava and Komarno;
- Hungary: Budapest and Komarom;
- Croatia: Vukovar and Slavonski Brod;
- Serbia: Belgrade and Novi Sad;
- Bulgaria: Lom, Ruse and Vidin;
- Romania: Drobeta Turnu Severin, Giurgiu, Galati, Braila, Tulcea and Constanta.

Rules for port management and the local legislation are performed in compliance with the national strategies for future development. Ports are perceived as part of the national transport system and part of the European transport system.

Inland waterways and maritime transport network consist of two equally important elements: links and nodes. For an efficient and reliable functioning of the transport network both elements must be equally developed and harmonized. For the purposes of transforming the Danube area ports into efficient and reliable logistics nodes, infrastructure gaps need to be dealt with in a coordinated manner, which needs to be embedded in the resulting common strategy and action plan for port development in the Danube area.

The identification of key actors and competent authorities in relation to the management and operation of ports should consider the applicable international enactments - EU legislation as well as the specificities of the legal frame of each country.

Regulation (EU) 2017/352 was issued in 2017 after several years of preparation and consultation with various stakeholders of the European port industry. This regulation has a binding force only on maritime ports, the inland ports are not covered by the legislation. However, rules similar to those laid down in this legal act, might have relevance in the IWW sector. As part of this activity, we would like to assess the scale and scope of applicability of these rules for Danube ports in the participating countries.

## 2. Theoretical Framework

In order to better understand the particularities and specialties of different port management and operation models, in the Danube region countries, it is of high importance to analyse in detail how the operation and management structure is set up in the different inland cargo ports.

Commonly in the EU context, the role of the port (competent) authority is attributed to the Ministry of Transport, where this function is most often performed by an autonomous unit at the Ministry, like, for example, Maritime Administration and others. The managing body of the port is the so - called port authority and is usually a public or private body which, under national law, has the objective of developing, administering and managing port infrastructure and, where applicable, coordinating, implementing, organizing or controlling the activities of operators.

**Public and Private Roles in Port Management:** There are five main port management models based upon the respective responsibility of the public and private sectors. They include the public service port, the tool port, the landlord port, the corporatized port and the private service port. Each of these models concerns ports that have different characteristics concerning the ownership of infrastructure, equipment, terminal operation and who provides port services such as pilotage and towage. While service and tool

ports mostly exist to promote public interests, landlord ports attempt to balance public and private interests. At the other end of the spectrum, private service ports are maximizing the interests of their shareholders.

**Public service ports.** The port authority of public service ports performs the whole range of port related services, in addition of owning all the infrastructure. They are commonly a branch of a government ministry and most of their employees are civil servants. Some ancillary services can be left to private companies. Because of the inefficiencies they are related with, the number of public service ports has declined.

**Tool ports.** Similar in every aspect to a public service port, the tool port differs only by the private handling of its cargo operations, albeit the terminal equipment is still owned by the port authority. In several cases, a tool port is a transitional form between a public service port and a landlord port.

**Landlord ports.** Represents the most common management model where infrastructure, particularly terminals, are leased to private operating companies with the port authority retaining ownership of the land. The most common form of lease is a concession agreement where a private company is granted a long-term lease in exchange of a rent that is commonly a function of the size of the facility as well as the investment required to build, renovate or expand the terminal. The private operator is also responsible to provide terminal equipment so that operating standards are maintained.

**Corporatized ports.** Concerns ports that have almost entirely been privatized, with the exception that ownership remains public and often assumed as a majority shareholder. The port authority essentially behaves as a private enterprise. This management model is unique since it is the only one where ownership and control are separated, which lessens “public good” pressures landlord port authority are facing and “shareholder value” pressures private ports are facing.

**Private service ports.** The outcome of a complete privatization of the port facility with a mandate that the facilities retain their maritime role. The port authority is entirely privatized with almost all the port functions under private control with the public sector retaining a standard regulatory oversight. Still, public entities can be shareholders and thus gear the port towards strategies that are deemed to be of public interest.

The waterborne transport infrastructure consists of the navigable waterways, the port infrastructure, maritime and inland waterways safety areas, locks, banks and slopes consolidation and protection, access fairways to the ports, technological roads and railways in ports or along the fairways. Ports are limited areas of the national territory, built and equipped for serving the ships, for performing the naval transport activities as well as other regulated activities.

Port infrastructure consists of port basins, port areas, hydrotechnical construction for mooring the ships, access fairways, roadstead, platforms, railways, technological roads.

The waterborne transport infrastructure belonging to the public domain may be:

- a) entrusted to public institutions or autonomous agencies for administration purposes;
- b) leased, according to the law, to administrations organized as trading companies or national companies;
- c) under concession, according to the law, to other Romanian or foreign private legal entities.

### Ancillary Activities

Ancillary activities related to waterborne transport activities include:

1. safety services in ports and on inland waterways, such as pilotage upon port entrance and exit manoeuvres, among berths of the same port and on waterways, mooring and unmooring operations, towage manoeuvres of seagoing vessels in ports;
2. activities related to ship operation such as: ship loading / unloading, storage, stowage, making fast, sorting, marking, palletizing, packing, containerization, bagging and other cargo-related operations, domestic and international expeditions, brokerage, cleaning cargo holds, bunkering, cleaning and degassing of ship tanks.

In order to have a better identification of the port users and related processes the services related to waterborne activities could be divided into:

Ship related services: pilotage, towage, mooring/unmooring, ship's repairs, ship supply, bunkering, cleaning and degassing of ship tanks, etc.

Cargo related services: loading/unloading, cargo handling, storage, sorting, marking, palletizing, packing, containerization, quality and quantity survey, etc.

### 3. Data Analysis

There are some indicators to be taken into consideration such as: river traffic growth, increasing private investments in port superstructure, developing new business among ports users.

Performance indicators: reducing congestion for river and road connection, increasing cargo throughput, reducing ship turnaround time.

The analysis of the waiting time spent by barges or road transporters, as well as the values of river cargo throughput are able to show the importance of this factor.

**Table 1. Swot Analysis**

<b>STRENGTHS</b>	<b>WEAKNESS</b>
Competitiveness of services being provided by private companies; Flexibility in superstructure investments for private operators; Availability of structured marketing at port level coordinated by port administration; Mixed private-public orientation; Agility – high level of market orientation; Stability of commercial relationships with supply chain stakeholders; Fast investment and development decisions; Flexible management, low bureaucracy; High capacity to ensure their own or other funding of important port related projects; Freedom to specialize or diverse services offered by the private company; New machinery and equipment; Profit oriented management – good service at competitive prices;	Lack of infrastructure investments in case of reduced public funds; Reduced competitiveness in case of dynamic increase of land rental rates; Risk in evaluation of needs for capacity development; Preferences to companies close to the business of the port operator, or preference to handle operators cargo first; Lower cargo handling capacity in comparison to the other models. In times of fast market development, they could not meet the entire demand for services; Fluctuation of the personnel; Less popular than state owned companies and ports, presented at national level; Road and railway connection not in good condition;

Do not pay concession fee (pay only aquatorial tax) and there is no legislative provision obliging their clients to pay infrastructure dues; Favorable geographical location on European transport corridor VII;	
<b>OPPORTUNITIES</b>	<b>THREATS</b>
Use of public funds in development of infrastructure (including funding through European projects) Involvement of private operators in providing input for future infrastructure development Port operators may establish their own operating rules and market-oriented procedures Development of networking among supply chain actors To attract new cargo flows in connection to commercial sphere of the concessionaire; Most likely this group of operators has the chance to implement innovations in port servicing; To promote river cargo transport more effectively; To use their international partners or mother – companies or trade organization for increasing the cargo flow;	Exposure to less predictability of legal framework regarding the use of the public infrastructure Limited period in renting contracts may not encourage long term investments Administrative procedures of port related institutions Bankruptcy of the private company due to economic crisis or bad management; Unfair competition from the side of the private operator to attract cargo from other ports; Loss of cargo due to extreme conditions limiting cargo handling and navigation (strong wind, fogs, low water levels, extreme temperatures, etc.);

#### 4. Recommendations

Addressing other ports to create a network is a feature of four-generation ports that understand the importance of multiplying efforts to create partnerships that lead to increased co-operation between port communities of ports being on the same trading route. The development of hinterland connections is a continuous challenge for every port. Fast development pace may be guaranteed by good opportunities for funding and easy access to achieving financing for important port projects. Easier access to funding is typical for private service ports, which can take faster decisions and apply more easily for funding. State owned companies have a strict hierarchical organization of investment. This causes delays or refuses for project funding and lowers the motivation of the participants involved. Port investment has not always been correlated all the time among port stakeholders, especially when masterplans are not available or they have not been updated in line with the industry trends. Therefore, cooperation among all stakeholders and developing investments in fields that have a business case behind seem to have a big chance of success.

The extensive features of the corporatized port management model from simple land administration required the focus on this success factor. Specialization in certain sector or, in other words, uniqueness, makes the cargo flow stable and predictable. Some examples for uniqueness are: handling of fuels, handling of heavy cargo, handling of hazardous cargo, container handling. Port operators that offer these services have competitive advantage in attracting clients from wider hinterland.

It is known that except appropriate technical facilities and conditions, manpower is one of the most important assets of ports. Modern machinery has to be operated by qualified specialists, the maintenance of the existing facilities (especially if they are old and are breaking often) is more effective if the port disposes of a specialized department with qualified personnel. Experience and qualification is also of big importance for the good management of ports. The development of a port community including port actors capable to communicate proactively and effectively with each other is a success factor in all ports. In addition, strengthening the city-port connection is another aspect of communication able to contribute

to the development of the port and the city at the same time. One of the extended functions of the corporatized port model is to develop the port by involving the entire port community. Also, the development of communication between port and city has positive effects in the simultaneous development of the city and port. In all cases analyzed by this paper, the economic development of the cities is directly related to port development. None of the cities is a large industrial center, and the port can lead to a significant job development, but to the emergence of new economic development initiatives.

In the contemporary society, access and analysis of information is of crucial importance. Knowing how to work, who your competitor is and what rules have to be complied may bring success to port operators. The wider the circle of communication is, the more useful is the information obtained. It is logical for all types of business to take important decisions for investment on the basis of detailed information. The corporatized port management model has as a characteristic the public ownership of the land, leading to public infrastructure investments. When European and national programs that can develop waterborne transport infrastructure are available, the application of this model is remarkable for the success factor that can attract large investments that are hard to be found in the private sector in ports that do not involve emerging development. We can observe that there is a direct relationship between the development of the transport infrastructure, the port development and the economic development of the hinterland specific to each of the ports. The corporatized port management model is extending the port administration tasks to direct involvement in promoting, applying for and implementation of transport infrastructure development projects in order to improve the hinterland connection and economic development.

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