

The Approach of Durres Port as a Logistic Center in Order to Increase Management Quality

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Abstract

Shipping is vital for all countries involved in import-export of goods at the lowest possible cost. Trade, however, is not possible without transport that's why a system to manage efficiently transport, is a prerequisite for the competitiveness of goods. Multimodal transportation is a concept that facilitates international trade by ensuring the smooth flow of cargo and providing better control over their supply chain. Port of Durres is the most important port of the country and a commercial economic gateway of Albania, positioned at the crossroads of land and sea as a strategic multi-modal hub. Objective: of this study is the integration of Port of Durres as a multimodal hub in the global supply chains aiming his transformation as a logistics center. Methodology and results: The methodology used in this paper includes both data directly collected in the field as well as statistical data collected from Durres Port Authority. Throughout the equations we have calculated the relationship that exists between the time used for certain types of cargo and volume of cargo handled in the time unit, and the berth occupancy rate. Conclusion: Based on the results and findings that authors have identified throughout the paper, we have drawn several conclusions which will help Durres Port Authority and the port operators to better exploit port capacities, increase port productivity in order to transform it, into a more competitive port, in transforming this port into a maritime logistic and intermodal transportation hub.

Keywords

Logistics Center, Intermodal Transport, Multimodal Hub, the Management of Global Supply Chain

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1. Overview of the Port of Durres, Its Existence as a Multimodal Hub

Located in the center of the Northern Mediterranean, near Adriatic and Ionian Sea constitutes a significant marine area in Europe. Durres is one of the most ancient cities of Albania, the country that has the main port, the second largest industrial center after Tirana, located on a small peninsula on the coasts of Adriatic Sea.

Port of Durres is an important hub of the international market in Albania. The most advantage is of the combination of some

factors. Its geographical position is the middle position along the coast, as well as proximity to the capital. It is located at the West of Tirana, 36 km away of Adriatic Seashore. Durres also it's the most important hub of transit by ferries. The strategic position of Durres in connection with the European Integrated Transport (Corridor VIII) facilitates the transit of goods and passengers to get out of Europe. Durres is also of interest as an alternative to neighboring countries such as: Kosovo and Macedonia, a principal gateway to the Balkans and southeastern Europe.

Port of Durres processes 77% of imports and 89% of exports to Albania; equal to 78% of all goods moving by sea at the national level. Containerized service has received a recent development in Durres. Keeping so a great weight as much as

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Tirana, Durres port has a major impact on the country's economic growth. The development that has taken in the past 2 decades shows steady growth of 12% per year of total traffic in the port, up to 3.6 million ton in 2014. The relative share of the dry bulk in the total traffic increased strongly from a level around 20% at the end of the nineties to nearly 50% in 2014.

About 90% of European goods trade achieved through sea routes. Short distance transport represents approximately 40% of exchanges in the EU countries. Each year more than 400 million passengers processed on European ports. Maritime industries are an important source of employment and income generation for the European economy.

Global supply chains are complex networks, which consist of many different actors. Developing the logistics as a competitive tool of strategic management, multimodal transport has to gain importance of being a leader in global supply chain. Recently the topic of integration has aroused the interest of researchers in the field of ports, since the *ports are nodes and vital components for many supply chains*. Global transportation systems and logistics with the growing demand to understand the management challenges need to guarantee safety and minimize environmental impact. This conception seems to hide the complexity that characterizes ports. In fact, the ports are *"complex and dynamic entities often different from each other; where different activities are carried out by / or on behalf of actors and organizations"* (Bichou and Gray, 2005). How is the role of ports has changed, they are not simply joints of multimodal systems, ports need to be catalysts chain between shippers and third party services providers. In this context, the port of Durres is facing new challenges which require that this port, but also other Albanian ports to become modern logistics center, able to respond to these challenges.

2. Functions and Configuration Port

The basic function of a seaport is to transfer goods and passengers between ship and shore, and/or between ships. To fulfill this basic function, a port provides various types of facilities and services. The World Bank classifies port assets in four different categories: basic port infrastructure, operational

infrastructure, superstructure and equipment (see Table 1).

Table 1. Categories of port assets.

Basic infrastructure:	Access channel, breakwater, locks, forts, road and rail links
Operational infrastructure:	Internal channels and returns, retaining walls, forts, jetties, navigational equipment, buoys, beacons, anchors, port.
Superstructure:	Asphalted surface, lighting, office and workshop repair. Tugboat for handling and shipping line, cleaning
Equipment:	equipment, equipment for ship-shore handling, cargo handling equipment.

Source: World Bank (2007, p 95)

After reviewing the relevant literature, as appropriate and useful to measure the operating performance, from a practical standpoint are considered indicators that assess: the performance of the port; ship; operations and trucks. When taken into consideration an increase in performance is port or operators, ship owners of the goods have different interests, and often conflicting, and so has the Port Authority. This is also one of the reasons why various performance indicators are divided into financial performance, port, ship and cargo processing.

The owner ship's wants the port to have multiple mooring facilities for accessing secured him berth free ever come to his ship. He also wants immediate availability related to port facilities and port staff to ensure that his ship load process with high productivity, so his ship to stay in port less.

Port operator wants all piers under his management, rent or concession to be occupied and that "ideally" be a ship waiting to berth free. This will ensure that its operations resources are fully utilized at any time.

The owner of the goods wants to exports/imports his voyages frequent shipping to/from as many ports as possible, the rate of freight much lower and immediate access of its goods imported, just to be discharged from the ship. He also wants excellent links between the port and internal lines (hinterland) to adjust its logistical requirements in the most appropriate.

Port Authority dock in the port wants to be in full use, a profit economically and be more efficient as possible. Also, the Port Authority should avoid ships wait for aprons, as should avoid creating congestion and additional payments from ship owners and goods.

Table 2. Interests of Stakeholders Port.

Interests of Stakeholders Port			
Ship owner	Port Operator	The owner of the goods	Port Authority
Aprons free achieving ship	Aprons occupied shipping	Cruises Frequently	Data and information correctly Port infrastructure planning, technology and appropriate services
High performance processing of goods	Exclusive supply service	Access without barriers for world markets	Economic use resources port
Lower port fees and processing goods	Fee satisfactory	Performing fast customs procedures the port for its goods	Diversions compression
Brief residence time of the ship		Low freight tariff	

3. Performance Indicators Port

The study results show that the motivation for the first promotes innovation by optimizing operations. Below are four technical performance indicator of the port, expressing to what extent the use of port facilities technically and economically.

Table 3. Summary of Performance Indicators.

Performance indicators		
Performance Port	Carrier Performance	Performance of Operations
Workload in port and forts	Time of ships at port	Performance gross and net processing load
Using berth	Time Shuttle forts	The performance of crude processing load to shift team
Suffocation berth	The working hours of ship	The performance of the processing load to shift net team
Port Traffic	The result of the ship working time / Ship time in port	
	The result of the ship working time / Ship time on the quay	
	Non-work time	
	The outcome of the ship to the quay time / time of ships at port	
	Result tonnage processed / Ship time in port / moored docking / work time	

These performance indicators are: traffic (volume of work) port and quay, the use of the quay, the occupation of quay, port traffic.

Table 4. Durres Port output (tons/year) for the period 2000 – 2013.

Year	load
2000	2279897
2001	2538827
2002	2565116
2003	2686979
2004	2544243
2005	2174347
2006	2345433
2007	1991100
2008	2654387
2009	3521265
2010	3406283
2011	3526114
2012	3673857
2013	3663628

The information presented by the chart shows an increase in the volume of work and aprons port means that the port is recognized by the market required shipping and maritime trade. "Use of quay" indicator is calculated with the following equation:

$$use\ of\ quay(\%) = \frac{TVST}{TBTA} \times 100$$

where: TVST -total time of service to ship moored at the quay (day / month / year)

TBTA -total time of availability of berths (day / month / year)

Based on the statistics of Port Authority Durres PAD, the coefficient of utilization of berths values fluctuate 60-80%, depending on the density of shipping traffic.

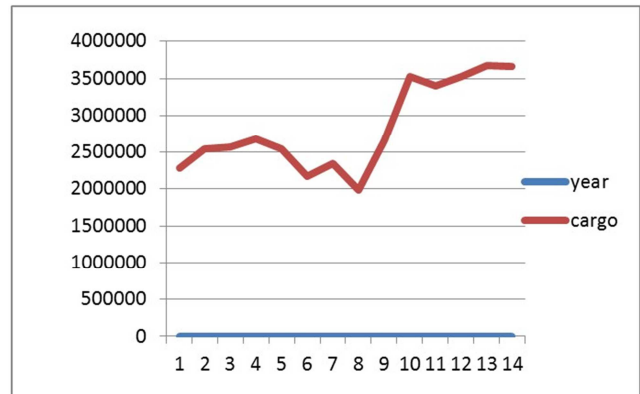


Figure 1. Volumes of cargo (in tons).

Performance indicator of the "occupation of quay" shows the total time that dock has been occupied by ships moored. Total figures for "occupying berths" are always higher than the figures the use of the port for ships stay a while even before the completion of service. For example, ships that were previously come after practice deals begin operations. Performance indicator of the occupation of the quay is the rate of berth occupancy time divided by the total time availability of berths appear to draw the following:

$$occupation\ of\ quay(\%) = \frac{VBOT}{TBTA} \times 100$$

where: VBOT - time occupation of quay ship per year (in hours)

TBTA - total time of availability of berths per year (in hours)

The indicator of the performance of the berth occupancy has two aspects that require further reflection. One aspect is the occupation of the berth "for each ship"; about tonnage processed, shows how many used the time productively berth occupancy by Stevedoring. The other aspect is the occupation of the quay in time, this indicates, in connection with other indicators such as the processing load, how effectively they are using resources that are dock port.

The term "traffic port" means number of ships coming and leaving the port. In general, the more merchant ships touch port, the higher the volume of business at the port. Port traffic figures compared with the past growth trend identify. However, they show even more when considered in conjunction with the size of the ships. This is a clear indication

that the average size of ships touch port has increased.

The term “performance” of a vessel while in port is affected by a number of factors. Why is it important to measure the performance of the ship? There are several reasons. The first reason is economic because the ship is generally more expensive links all transport logistic cargo and / or passengers, respectively occupies cost throughout the transport chain. Building a boat is a fairly large investment which spent

millions of dollars; and also operated a ship to its owner is very costly.

The term "ship in port time" means the period from the time when the ship reaches the pilot station port or roadstead until the ship leaves the port. Hence, this term is important as it gives information on how long it is kept a boat at the reception, which essentially relates to the competitive position of the port of Durres against other regional ports.

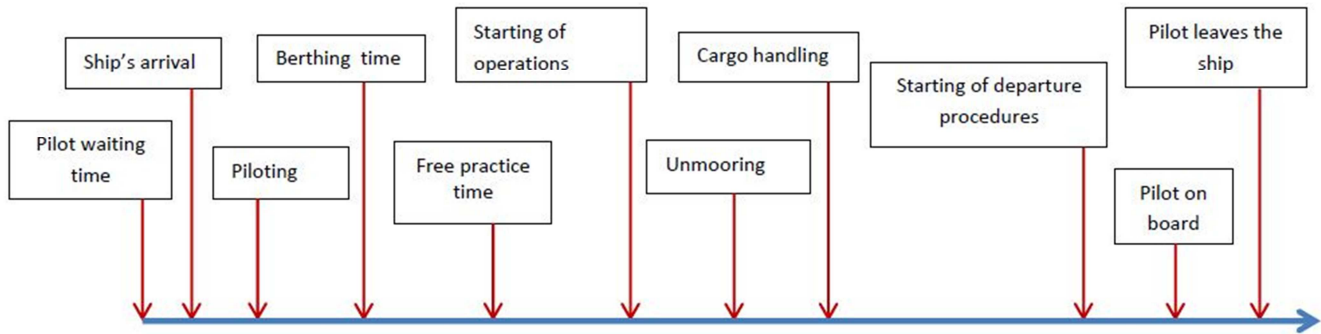


Figure 2. Sequences time the ship in port.

When it comes to the issue of cargo handling performance of a port, the discussion generally focus on operations ship-shore and shore-ship and the relevant performance levels of productivity. However, competition in the port depends not only on how effectively the vessels served, must also include that as efficiently organized, managed and carried the materials transport of goods by road. Queue and reception of trucks on or near a port is an economic and technical problem. One of the problems is that ports only consider ship owners as partners of their contractual (through a contract with Stevedoring or deal with terminal or through tariffs or customs port) but not the owners of trucks that are much less in focus them. Home of trucks is an economic problem as the owner of the truck may include previous delays in the price of transport.

4. Performance of Operations

Performance Processing Container Terminal Container in Durres, currently, only the cranes with a spreader for container operations, can work only one shift at a time. Therefore, for the containers to be loaded / unloaded on the ship is only possible after throat nozzle. Generally, the container operations may impact the following parameters:

Container cycle crane As long as the port of Durres can't have equipment available to set up more than one container per cycle crane, this option is not available, however, a change in this parameter, namely weight per cycle crane, It is an important tool for processing operations of general cargo or bulk.

Cycle time leader Stevedoring crane can't ask his staff to speed

up the crane expressed in minutes per cycle. By reducing cycle crane period of 4 to 3 minutes per cycle produces an increase in productivity from 76 to 101 containers per shift, an additional 25 container per shift.

The performance of cargo handling bulk consignments in bulk can be processed in facilities specialized appropriate, but these loads can be processed in the traditional way with the cranes port, as carried out in the port of Durres, particularly when volumes of cargo are not so great.

Weight unit in tons per cycle crane for bulk cargo processing unit weight in tons crane cycle is determined by: the material processed; grub size; crane capacity. Different materials have different density, and therefore is different weight unit set up by crane for any material as expressed in the formula below. Of course, important they are the size of grub and crane lifting capacity. The equation that estimates of the volume of bulk cargo for crane cycle is:

$$T_p = v * d * g_f * g_{number} = \frac{v * d * g_f}{T}$$

v --- volume in m³

d --- density extent / m³

g_f -- the pace of filling for grub

g --- number of grub

T --- the time in hours or shift. *The period of time for each cycle crane* essential for productivity in processing load speed crane - expressed in cycle/min. Of course the speed will be reduced towards the end of discharge, as materials should be removed by machinery up toward the mouth of the barn.

Average performance for the discharge of bulk materials is only about 50 ÷ 70% of capacity rhythmic device.

Processing of cargo "break-bulk" and the total is relatively easy to plan as the "break-bulk" cargo is unified, where a unit is just like another, for example pallets or melamine plate connections of chipboards. Planning parameters are the same as for containers, except that, notwithstanding crane, engaging various equipment such as: trucks and trailers forklift trucks. However, processing of cargo "break-bulk" often offers the possibility of building more than one unit load (pallets, iron about, packs and paper material) for crane cycle, if available stevedoring is the right tool and number the necessary equipment to move goods under the crane hook.

5. Identified Weaknesses in the Operation of the Port of Durres

Although it is apparent that operations are improving day by day, the port of Durres is still facing a number of deficiencies and limitations that impede operations. Individual issues that affect performance in operations such as the speed of the cranes, etc. are treated in many studies. Instead, consider the most appropriate approach to address the systematic structures and procedures that are considered in need of further improvements in operations at Port of Durres, which are: *internal port competition, the need for equipment, rates or without norms, coordination of information, statistics, tendering and contracting, marketing, rights and duties, the withdrawal of most modern ships.*

The need for more domestic competition in port operations performed nowadays by Durres Port Authority and three Stevedoring company: "Liburnians", "Egnatia" and ASC. At the same time, the port of Durres competes with other ports in the country such as the port of Shengjin, Vlora and Saranda is less. Practically the port of Durres in relation to other ports enjoys almost a monopoly position, as a competition from other ports is almost inconsiderably.

The separation of the port terminals that are specialized in their processing activities is encouraging the approaches to increase productivity and quality of service. In a market economy, the purpose is to profit and not a monopoly behavior, it's the driving force for business. If there is such a monopoly, the Government, through the Port Authority, needs to issue legal provisions regulating the relevant market segment, providing these exclusive operators to cover their investment and operating costs, and a reasonable profit. The users on the other hand, i.e. the Albanian economy as a whole, must be protected from unfair practices that a monopolist can exercise. Two instruments seem available that can be used to regulate:

- PDA-- we must reserve the right to set fees for these specialized services or, at a minimum, the ceiling rates, and
- PDA-- should require a minimum productivity, i.e. the level of quality of service that the operator, that enjoys exclusivity, must hold in concession

The need for more coordination and information needs for lines closer coordination and information (access "on-line") is of great importance in almost all industries modern, particularly in the transportation industry and logistics. The owners of goods and carriers and other actors in the chain of logistics materials should be given access to "on-line" to the information they need. Merchants that order the materials electronically around the world, want to know the situation and where-what happens to their goods in every minute of the day. Owners of ships want to know where their ships are, when they arrive and when departing a port. Port operators must allocate their resources in every minute in order to avoid delays in shipping and freight. Agents sailors want to have and submit in time the relevant documentation in order to ensure a free passage for ships charges, including carrying out customs procedures. Brigade firefighter port needs to know when dangerous goods are stored and processed in the harbor. Terminal operators Container want to know the location of every box in the square in order to avoid chaos. Sector Operations and Harbor Master wants to know the ETA (Estimated Time of Arrival - Time Estimated Arrival) and ETD (Estimated Time of Departure - Estimated Time of Departure) shipping in order to organize their staff.

Port authorities should play a vital role in this field and encourage the use of modern information tools, such as the Internet, EDI, e-mail, etc. Given the fact that the goods of foreign trade should be channeled from a port for unloading, storage and then be sent to the owners of their legitimate, APD has about relevant information to ship the goods and thus an electronic platform offers to their users on-line access to these data also, relevant information on the goods on ship without being rewritten again several times not spend time and resources.

As a condition for increasing the efficiency in shipping and access, Durres Port Logistics Center is to improve the standards of Intelligent Transport Systems ITS include some combination of communication and electronic control through technology developed information applied in the fields of transport including: infrastructure, vehicles and users, as well as traffic management and mobility, to improve system performance, security in transport, efficiency, productivity, level of service, environmental impacts, energy consumption and mobility. They contribute significantly to a system cleaner, safer and more efficient transportation. The main focus in this

issue are administrative problems, as well as the transport chain management.

Identification of ITS will produce an added value for the development of the "Marine Highways" in Adriatic Sea and increase the efficiency in transport to facilitate the transportation of goods, the sectors of logistics and create a single market for services ITS as defined in the Transport White Paper. Another issue is the use of satellite navigation in shipping, such as travel planning, fleet management, monitoring of goods, information services, etc. Improving the quality of logistic services in shipping will do "marine highways" the best alternative to relieve traffic. Technological innovations offer excellent opportunities to integrate different types of transport, make them safer and making the transport system in accordance with sustainable development.

Concerning the management and control of maritime traffic, has developed the concept of Operational Services Marine MOS, which integrates several maritime services operational, management of shipping traffic - VTM, Search and Rescue - SAR; willingness liability pollution from fuels - OPRC to increase the efficiency of shipping. Shipping Traffic Services VTS and AIS Automatic Identification Systems, are parts of the Management of Maritime Traffic Control. The focus is not only to allow easy communication between the ship to shore, but also the exchange of information and data beyond.

In the port of Durres exists in the context of intelligent transport systems:

- Control Integrated Shipping ISC
- Management System Transportation of goods
- Traffic management to shipping and Information Systems VTMS
- Visual Identification System (people monitoring, vehicle, Goods)
- Without H-Government and Internet communications (satellite system telephone network, Wi-Fi network), etc.

Continued growth of maritime traffic increases the risks of maritime safety. Because of the constant warnings related to travelers, illegal drug trafficking, terrorism and other criminal acts, the issue of security is a key priority for ports and ships, along with security and the prevention of marine pollution.

6. Conclusions

This paper gives a summary of the overall situation in the port of Durres and the ability of it to be really an important logistic center. At the sometime the paper analyses some of the limitations that the port has and the way they should be addressed in the future.

First, the port of Durres is the main port in Albania, and its own strategic position, is hardly a competitive from other ports of country. The privatization of services have increased the port performance indicators, but these indicators are still below the levels of other ports of Mediterranean Region. Port Authority should monitor and asks the operators and concessionaires' performance, enhancing port or harbor, which would impact directly on increasing the port's outputs and reduce operational costs.

Second, the port of Durres has adopted modern systems and information technology. Ensuring effectiveness of these systems should be complemented with training of personnel and operators. Increasing the level of security is a constant demand and necessary to attract as much cargo from the port.

Thirdly, the growth of value-added services is a necessity to meet the requirements of the supply chain. The introduction of value-added services in the port of Durres, will create more opportunities to transform the port into a dynamic logistics center.

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