

EVALUATION OF VESSEL SHARING AGREEMENTS EFFECTS ON CONTAINER LINES TRANSPORTATION EFFICIENCY

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Abstract: *Liner shipping industry is characterized by increased market concentration and cooperation. Maritime operators apply various forms of cooperation for maximizing revenues and achieving operational efficiency. The present article analyses the benefits of using Vessel Sharing Agreements in container transportation. Shared services agreements of leading liner operators are studied. The results show that Vessel Sharing Agreement application leads to higher transportation efficiency in terms of costs minimization and service reliability.*

Keywords: CONTAINER TRANSPORTATION, TRANSPORTATION EFFICIENCY, VESSEL SHARING AGREEMENT

1. Introduction

Modern container liner transportation is characterized by high extent of market concentration as an outcome of specific forms of cooperation. These forms of carriers' cooperation exist for the purposes of expansion of services and costs reduction. There are several tools for market cooperation in contemporary liner shipping: slot charter agreement, slot exchange agreement and vessel sharing agreement [3]. The mentioned three types of slot sharing tools enable carriers to use capacities of their partners within alliances. The incentives behind such market actions stem from the benefit of eliminating slots overcapacity or compensating slots shortage on a given service. The process is dynamic and corresponds to the specific needs of each alliance member. Therefore, slot allocation is one of the most important characteristic of liner operators' alliances and each participant must plan the slots needed in advance. The present article studies the current status of alliances in liner shipping and the most widely used tool for cooperation within these market cooperation form – Vessel Sharing Agreement (VSA). The specifics of the VSA are analyzed and the concept of costs sharing is outlined.

2. Alliances in liner shipping – issues and challenges

The process of cooperation in liner shipping has a long history, starting from liner shipping conference to nowadays' alliances, following the EU competition regulations [3]. Due to the dynamics of global trade flows and the customer requirements for a more competitive service, liner operators enter into operational alliances with competitors. This modern form of cooperation complies with current competition rules and aim at improving the transportation services [4].

Back in year 2000, there were only three alliances, comprising ten liner shipping companies. Fifteen year later, there were four large alliances. During the last two decades the average duration of a round voyage increased by more than 80% against the increase of containerships size by almost 450% [4]. After the economic crisis in 2008, the cargo volumes dropped significantly, facing a steady recovery only in 20015. The continuous increase of the vessel size and the strict regulations regarding air pollution from ships have led to longer round voyage duration and prolonged port stay. From a technological point of view the services organization requires more ships in operation – due to increase of vessel's size and prolonged port stay. In order to cope with higher extent of investment, liner operators are forming alliances thus ensuring access to higher capacity, enlarging the scope of services and corresponding to customer demand. This type of cooperation also ensures for reliable schedules and higher frequency of service.

From a contractual point of view, the simplest form of slot sharing is the Slot Charter Agreement whereas each alliance competitor purchases slots of another partner's ships. This ensures

for easy entry to other markets without substantial investment. The Slot Exchange Agreement (SWAP) is a charter agreement concerning hiring of space between two separate liner services each run by a different operator within the alliance. In this way, the alliance partners can achieve higher flexibility, for example increasing frequency of service or inclusion of additional (optional ports) that are not serviced by their line.

In order to increase the capacity of a developed liner service and to achieve better market position, Vessel Sharing Agreement (VSA) is applied. Under such agreement the allotted space to a certain company of each participating vessel is proportionate to the total capacity provided under the VSA (Figure 1)

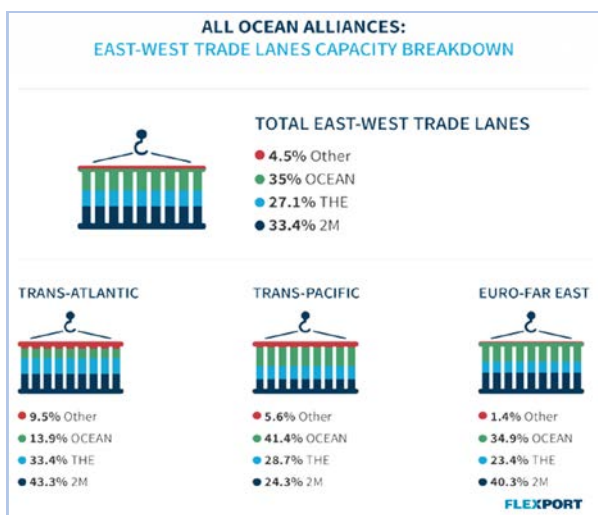
Figure 1 Slot sharing concept [5]



It is worth mentioning that the alliances function only for operational purposes while each participant retains its own market identity. This is particularly valid for the long-distance routes whereas feeder services will remain autonomous and are operated by the individual company outside the alliance. For customers it is a vital option of being given a choice among several operators on one and the same route. For major ports the latter has enhanced port competitiveness and port services diversity.

On April 1, 2017 three major alliance were formed, representing 77.2% of the global container capacity and 96% of all East-West trades' container capacity [5]. Prior to the economic crisis in 2008, major liner operators have enlarged their new-buildings lists. This move would have ensured for major market advantage, with even lowers costs per unit and eventually, a leading position in offering competitive prices. After several years the liner shipping market was already characterized by overcapacity leading to imbalance between demand and supply and a slump in liner tariffs. The present status of liner shipping cooperation via alliances is presented in Figure 2.

Figure 2. Largest liner shipping alliances (January, 2017) [5]



As presented in Figure 2, the three major trade routes are not covered by all three largest alliances. It should also be pointed out that internal operational activities distribution might change over the next few years as a response to the market dynamics.

3. Cost benefit analysis of VSA in liner shipping operations

Vessel Sharing Agreement is a form of cooperation between two liner operators aiming at higher efficiency of liner services and cost reduction. The conclusion of the VSA should be performed against the evaluation of the following issues: the scope of liner services coverage, port rotation, frequency of service, number of vessel in service, capacity of the assigned container vessels, the individual allotment of each participant of each vessel, operational details of the ships (service speed, fuel consumption, etc.), planned time of port stay, planned round voyage duration, time reserves of the schedule, planned operational activities for service reliability [2] Each alliance participant enters the agreement with a predefined number of operated/owners container ships. According to the standard clauses each member of the alliance is entitled to use a certain number of container slots of the vessels included in the joint service. The allocation of capacity is performed on proportionate basis according to the capacity of members' own/operated vessels. In this way actual contribution is achieved via balancing between each members' capacity and the alliance's total capacity.

The internal re-allocation of capacity among the members of the VSA is also possible depending on the market status. However, this re-allocation is based on prices agreed in addition. As each participant is arranging for the maintenance and all costs for their vessels, these expenses are not a subject of sharing within the alliance. The fixed costs covered by each VSA member include the following: vessel's time charter hire, vessel's full running costs, bunker costs, all canal and port dues (disbursement accounts), terminal handling charges at ports of loading and discharging as well as at transshipment ports. Port terminal charges for each vessel (additional cargo handling activities, containers lashing, stevedores overtime) are distributed proportionately among the members basis the container capacity they participate with. As liner operators, especially the largest companies, invest in development of container terminals, it is common practice that agreements with only one terminal operator at the visited ports are concluded at agreed prices. The decision for appointment of a certain terminal operator is based on the following: level of terminal handling charges, guaranteed loading/discharging rates of containers, intermodal added-value (connections to and from hinterland).

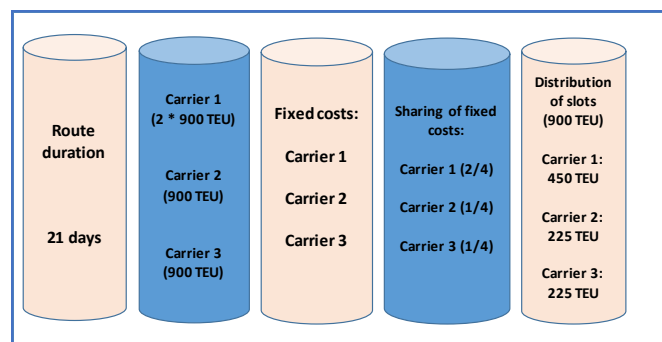
Members of the VSA apply individual pricing policy. The latter means that the formation of liner tariffs, rebates and surcharges is

performed by each member without any obligation to announce same or to place same within certain limits. In this way the members of VSA retain their market position and function independently as concerns booking of cargoes, branding of services, issuing of in-house forms of cargo documents, empty containers management, etc. The standard clauses, pertaining to the usual terms of carriage, are also included in the VSA and these mainly concern incidents, handling of insurance claims, applicable law and arbitration procedures.

According to common practice, a number of standard agreements are issued, in addition to the common Vessel Sharing Agreement. For example, Slot Hire Charter Party, whereas same is to be used for internal re-allocation of slots between two members according to the current requirements (Figure 3). The supplementary agreements provide the details of the business relationships among the members in order to handle effectively any disputes related to the VSA fulfillment.

Liner services operational matters are also handled within the Vessel Sharing Agreement as per the scope and responsibility of each members' participation. The latter concerns differentiation between different sizes of containers, carriage of hazardous goods, schedules adjustment, vessel's maintenance, optional ports of the service. It should be mentioned that collaboration also included matters related to warehousing, inland container yards and container freight stations, lease of empty containers in order achieve costs reduction. One of the most important advantages of Vessel Sharing Agreement is the lack of high volume investment needed to fully operate the ships as well as the scale economies achieved by maximizing capacity utilization - the ratio between shared capacity against the total capacity varies according to the market position of each individual member company. The VSA offers to the members wider geographical scope of coverage of routes, offsets period of economic downturn and respective losses. The latter is achieved via costs savings by decreasing the number of vessel's in operation and at the same time maintaining their market position. Vessel Sharing Agreements have restructured the organization of the liner shipping market which has led to redesigning of liner services and creation of global network offering high quality service. The latter proves the on-going tendency that independent liner operators are seldom present on the market due to the high operational costs involved and unstable markets.

Figure 3. Slot allocation concept basis cost sharing in VSA (adapted from [1])

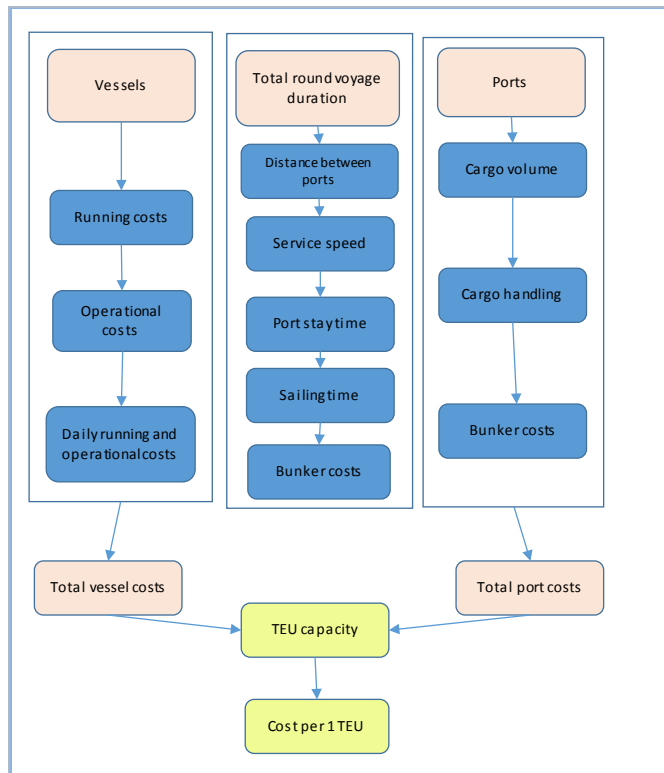


One of the basic clauses of the Vessel Sharing Agreement concerns the re-allocation (internal sale and purchase) of surplus capacity among the members. It is necessary that the price of such transactions is determined in addition. The estimation of the slot costs for every route/service is based on the following considerations:

- fixed and voyage costs of the container vessels (according to vessel's size and ownership, vessel's fixed costs are the basis of calculation of the daily running costs);
- the designated round voyages distance in nautical miles;
- sailing time of the ship (basis service speed and nautical distances);

- time for entering and leaving the ports, navigation through canals;
- port stay time (depending on the volume of cargo to be handled and available port infrastructure);
- total voyage time including the sailing time, time for canals navigation, entering and leaving the ports, port stay time.

Figure 4. The Conceptual model of slot costs estimation (adapted from [2])



- bunker consumption basis fuel and diesel oil consumption (where applicable) during sailing, maneuvering, canal passing and during port stay;
- disbursements accounts, estimated for each port and generally depend on the local fees for towage, pilotage, port dues, light dues, vessel's gross or net tonnage, agency fees.

The total costs for participation in the VSA are the sum of vessel's running costs and voyage costs, with detailed elements as per above. After the summary of vessel's total costs it is divided by the available slot capacity to obtain the slot price for each type of voyage. It should be noted, however, that the available slot capacity can vary depending on the limitations at ports, type of container and individual weight of containers. Due to the latter the slot price is recalculated against the actual costs incurred after the implementation of the planned voyages.

The slot re-allocation procedure is of vital importance being the main transaction among the VSA members. The procedure entails sale of surplus slots against their purchase by another member that temporarily has lack of capacity. The calculation of the slot costs is based solely on the operational costs. As for the other, secondary costs, that are also characteristic for the business (terminal handling charges, transshipment costs onto feeder container vessels, rail and road costs, etc.) as well as the non-direct costs (maintenance of containers, lease of containers, storage of containers, handling of empty containers, etc.) all these are directly included in the formation of the liner tariffs that are determined by each VSA member individually.

4. Conclusion

Modern container liner shipping industry is characterized by high volume of investment that requires various forms of collaboration between liner operators. The recent development of the market collaboration has shown that alliances formation is the most viable form of market concentration. The application of Vessel Sharing Agreements among the members of the alliances whereas members enter into joint operation of liner services via slot exchanges. The latter is based on cost estimation against contributed capacities. The existence and implementation of such agreements aims at achieving higher operational efficiency and higher economies of scale.

The present article has analyzed the current status of market cooperation in contemporary liner shipping, presenting the recent changes in market concentration for this industry. The architecture of the most widely used tool for costs sharing is outlined and the conceptual model for costs allocation is presented. The results show that costs sharing via Vessel Sharing Agreements is an efficient method for obtaining market stability without major investments, strengthening of liner operators market position and ensuring of better customer service.

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