

PORT CHOICE CRITERIA IN THE RO-RO SECTOR: A CASE STUDY ON THE ITALY-GREECE AXIS

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Abstract

European and national policies stress the need of increasing the competitiveness of short-sea shipping (SSS) so as to avoid the negative effects of an all-road transport system. In the paper, a best practice in the short-sea shipping sector is examined, having reference to the ro-ro traffic in the South-East Europe, specifically along the Adriatic Corridor on the Italy-Greece axis. In particular, we examine the ro-ro traffic flows managed by major Greek shipping companies calling the Italian ports of the Adriatic (Ancona, Venice, Trieste). The case study is also of relevance insofar as it concerns a real “alternative” (competitive) short-sea shipping route with respect to land transport routes, not a “necessary” one as often short-sea routes are presented (links with islands, etc.). Specifically, the short-sea shipping route along the Adriatic Corridor faces the competition by land transport both on the Italian and on the Balkan side, even though in the latter case the situation of land transport is still critical (but clear signs of recovery are already under way, especially in the rail sector).

The specific goal is that of analyzing the decision-making process of logistics operators with reference to port choices – as part of the general process concerned with transport service choices - so as to identify the main port choice criteria in the logistics chain and come up with a general choice model of ports which can be used for policy reasons. In this way we explain the relative competitiveness of the ports concerned with the traffic.

First, the results of a quite comprehensive literature review is summarized, since the subject of port choice criteria in the specific sector of the ro-ro traffic (and not only in the general context of transport system analysis, ie freight mode choice) has become a key issue. Among other things, current literature indicates that there is a need to study several case studies because: decision variables in the context of ro-ro (port choice criteria) are still not clearly identified and they vary over time, especially since the 90's; decision variables and criteria of port choice (and their relative weights) vary across different ro-ro markets, ie a unique model does not exist which can be valid in every ro-ro market; finally, different logistics operators perceive different criteria in slightly different ways, ending up with different choices of transport services depending on the structure and organization of the logistics chain. In few words, port choices (and generally speaking, transport choices) in the ro-ro sector do not permit us to build a general ever-valid decision-making process, rather they vary over time, among different markets and different operators involved in the logistics chain.

The paper then analyzes and discusses the overall structure of the Adriatic shipping market concerned with the Greece-Italy commercial (ro-ro) flows, both from a demand and a supply-side perspective. This market presents a clear oligopolistic structure, in that few major Greek shipping companies has the control of it. Afterwards, using a methodology mainly based on primary data – ie in-depth interviews and questionnaires sent to a sample of key actors – the decision-making process of operators (mainly road hauliers and other logistics operators) of the supply chain is analyzed. Finally, by applying a sort of

“qualitative” factors analysis the results from responses are discussed and presented. They show us a characteristic structure of the logistics chain in terms of types of actors involved, in which road hauliers play a determinant role and also intermediaries (ie, brokers) are crucial in put together land (road) and sea transport needs. Furthermore, results show, partly according to the literature and partly in contrast with it, the relevant role of choice factors having reference to the quality of service, to commercial and particularly human relationships among actors in the logistics chain (especially between road hauliers and shipping companies). In fact, one of the distinctive aspects of the decision-making process is that the choice of ports is strictly interconnected with that of the shipping companies, very often not on the basis of long-term (incentive-based) contracts but rather on a sort of “human fidelization”. Generally, personal relationships often explain the main reasons for certain choices, given that the decision-making process of operators very often is an “intuitive” one, which is not based on formal and/or quantitative assessment of several alternatives. Factors related to economic convenience (total and partial costs, etc.) and to infrastructure needs definitely seem to play a minor role. This all clearly give suggestions in terms of policy matters.

Keywords: Port choice criteria; Ro-Ro traffic; Decision-making process; South-East Europe

Topic Area: G05 Regional transport issues in South/East Europe

1. Introduction and methodology

Literature on ro-ro choices (Mangan, et al., 2001, 2002; D’Este, 1992a, 1992b; D’Este and Meyrick 1992; Brooks, 1984, 1985, 1990, 1991, 1995, 2000) highlights, among other things, that:

- decision variables determining port choices in the ro-ro markets are not still clearly defined and they present variability over time, in particular since the '90;
- there is the need to analyze the critical factors for specific contexts, since it is realized that key decision variables for a certain mode of transport can not be valid and applicable for other modes;
- it is necessary to highlight the weights and impacts of specific port choice criteria for each market, logistics chain or transport segment;
- different port choice criteria are evaluated differently depending on the type of decision-makers (forwarders, carriers, shipowner, etc.): transport service choices are different depending on the type of decision-maker.

In short, shipping-port choices in the ro-ro sector can not be understood within a unique and generalized decision-making model, rather they vary over time, among markets and depending on the kind of decision unit. It stems from this the need to analyze a large number of case studies so as to verify the main “regularities” and compare the results.

Our case study concerns the market of ro-ro traffic along the Adriatic Corridor on the Italy-Greece axis, with particular reference to the (Italian) North Adriatic ports.

The main goals are:

- to identify the port choice criteria – ie, the competitiveness factors – adopted by operators of the logistics chain and to evaluate them (relative importance);
- to model the decision-making process with specific regard to port-shipping choices.

The methodological approach employed is the following:

- using the results of the literature review (secondary data) and the information from a number of interviews (about 20) with operators of the traffic in order to:
 - o build and design the decision-making process of the logistics chain of interest;

- build a structured questionnaire format to be used to achieve the above mentioned goals
- conducting about 50-60 interviews to key actors of the logistics chain by means of the questionnaire format (primary data);
- elaborating and discussing the responses to questionnaires/interviews so as to come up with modelling the decision-making process.

The first methodological step has been that of studying – by using secondary and primary data – the structure and configuration of the logistics chain of interest. In other words, we aim at identifying the various decision-makers involved and their interdependencies. The traffic of concern is operated mainly by Greek operators, specifically road hauliers, intermediaries and shipowners. Main operators are:

- manufacturers;
- road hauliers;
- drivers;
- brokers;
- shipping companies.

The road haulier can be a big one (called “padroncino”), in this case he is an operator who owns a number of road vehicles and manages the relationship with the manufacturer, often operating as forwarder as well. According to the literature, the manufacturer tend to leave every shipping decision to the transport operator. Thanks to the dimension of the firm, the road haulier has a direct relationship with the shipping company, in particular for assuring the availability of onboard space for his vehicles (ie, with reference to the traffic volumes he operates).

Another type of operator is the “small” road haulier, that is, a road haulier owning only one or two road vehicles. Since there is a disproportion of market power between he and the shipping company, the haulier relies on an intermediary - the broker: the latter has the goal of organizing the diffused traffic by finding/assuring the necessary onboard space on behalf of the small road hauliers. It is the broker who then has a direct relationship with the shipowner. Often, brokers are big operators having relationships with more than one shipping company and the relationship with them are crucial for the shipping company. The broker receives a fee both from the shipping company (for each vehicle embarked) and from the small road haulier and he detains a strong market power with respect to the shipping company. Quite often disagreements emerge between brokers and shipping companies: if the shipping line does not guarantee the broker for an “adequate” number of vehicle onboard ship, the broker can threat the shipping line to divert all its traffic away.

In the case of “padroncini” (ie, big road hauliers), they approach the shipping line as the brokers do.

As for the port-shipping choices it should be noted that while brokers assure the onboard space for road vehicles on behalf of the hauliers, it is then the driver who express a (strong) preference in order to the shipping company to be chosen (maritime service choice) and therefore the port to sail (port service choice). This is a very important insight of the decision-making process we examine, ie, it is the road haulier who decides the shipping line he wants to use. The choice of the shipping company is done directly – in the case of the “padroncino” – or indirectly – in the case of the small haulier (through the broker). In other words, there exists a strong partnership relationship between the haulier and the shipping company (fidelization). The reasons for such a partnership agreement are basically three:

- the haulier is aware that if he continuously (over time) chooses the same shipping company, ie he assures the shipping line with a stable flow of traffic, he will always

get a place onboard for his vehicle. In other words, he will not run the risk to be “refused” (thus loosing remunerative journeys), particularly when finding a place onboard is crucial (for instance, during peak days);

- the haulier is aware that thanks to the partnership agreement he will always get a comfortable cabin. From our analyses we see that this criterion is of absolute importance in the shipping-port choices, and this is also demonstrated by the importance attached to the availability of services and other funny activities onboard. To be put in a cabin together with other “colleagues” is almost always judged to be unacceptable by many drivers;
- the partnership relationship allows the haulier to pay the freight rate at the end of each month. The haulier, thanks to the relationship with the broker – if he is a small haulier – or directly with the shipping company – if he is a “padroncino” – gets the benefit for which he is let to pay the ferry tickets at the end of each month cumulatively, instead of at the check-in¹.

These three benefits of the haulier² (meaning that flows are organized on continuous basis) explain also the reasons why such a partnership normally does not imply monetary incentives. “Discounts” are not generally given to the hauliers, in that the above mentioned benefits are judged to be “sufficient” and they can be interpreted as benefits in terms of quality of service³. On the other hand, it is the broker who benefits incentives by the shipowner, since he gets a fee for each of the road vehicle embarked.

We think that many of our results can be explained by this hierarchical-lexicographical aspect of the decision-making process related to the partnership/fidelization between shipowner and hauliers. The choice is then of port-maritime – ie, combined - type and not related to maritime services *and* port service independently. Due to the above mentioned benefits every haulier has a lasting partnership with a given shipping company. Hence the port choice is indirect: the choice set of ports will be that of the shipping company. Such a result answers the question posed by other studies whether the choice process is “shipping company first” or “port first”. We identify a choice process in the ro-ro sector in which choices are basically among carriers on given origin-destinations, rather than related to ports or mode of transport. Indeed, the interest of the research is that we deal with the choice of carriers/ports within the same mode of transport, rather than with the general issue of mode choice.

Also, the strict preference of hauliers towards shipowner (partnership) is partly in contrast with other studies that show a tendency of the decision-makers to diversify their carrier/port choices.

In the view of this hierarchical criterion of partnership one can correctly interpret the competition among ports. A practical example: the kind of competition between the port of Trieste and the port of Ancona – in which both ports are called by the same shipping company (Anek Lines) - is a different one with respect to the competition between the port of Trieste and that of Venice – in which the shipping companies calling Trieste do not call Venice and viceversa.

On such basis, we could also suggest an adjustment of the traditional interpretation of the ro-ro market saying that it is the road sector having the biggest market and decision power. This view, which is correct in general, should be slightly modified in so far as it is certainly true that the haulier chooses among different combination of port-shipping

¹ To be allowed to get ready the ticket at the ckeck-in (already stamped) without being forced to have money with himself is judged a very important criterion of the decision-making process by hauliers.

² In other words, thanks to the assurance of a stable flow over time the haulier gets a good “treatment” by the shipping line.

³ With the exception of the montly payment of the rate which is clearly a monetary aspect.

services, however these services are not seen as similar. The haulier wants to get “good” port-maritime services, however he can get them only if he establishes a partnership with some shipping company⁴. The need of programming the deliveries over time do not allow “random” port-maritime choices (ie, risky ones) in a context of “wild” competition: this is true for the operators and also as long as the customer (consignee) requires a regular and reliable transport service, thereby promoting cooperation between hauliers and shipowners.

As far as the questionnaire format is concerned, input data – as said – come from the results of the literature review and the information from a number of interviews with key-actors of the logistics chain (secondary + primary data).

The first part of the questionnaire/interview has the aim of integrating the traditional statistical information with other additional (primary) data, such as:

- overall origin-destination route;
- typical maritime and land-based paths;
- kind of cargo transported;
- frequency of trips;
- transported quantity;
- percentage of empty trucks;
- total transit time;
- land-based transit time.

In the second part of the questionnaire format the discussion on the criteria of maritime-port choice and their relative role (weights) is in depth analyzed. Criteria are classified – according to the literature – in three categories:

- choice criteria related to the maritime services;
- choice criteria related to ports;
- choice criteria related to the overall performance of the services.

In the first category we identify the following criteria:

- partnership / personal contacts with the shipping company;
- technical characteristic of ships (with regard to the kind of cargo transported);
- availability of onboard services for drivers;
- risk of damage to cargo (reputation of the shipowner);
- punctuality of service (arrival/departure);
- transit time of the maritime segment;
- freight rate;
- availability of space onboard ship (probability to find a place onboard).

In the second category we discuss the following criteria:

- speed of port operations (loading/unloading, check-in, etc.);
- frequency of arrivals/ departures;
- convenience of arrival/departure time;
- proximity to the production/delivery point;
- port costs and tariffs;
- technical characteristics of ports (layout, facilities, services, etc.);
- port marketing;
- port accessibility (congestion);

⁴ Another practical real-life case: it is certainly true that a haulier coming from Germany with a full-truck load having a Greek destination can potentially choose among a number of Italian ports: Trieste, Venice, Ancona, Brindisi, etc. However, if he does not have a partnership with any shipping company he can hardly get a place onboard ship for its vehicle in any of the ports, let alone the possibility to get a comfortable cabin onboard. We point out, however, that this is true in normal conditions, ie when ship load factor is satisfying (normal and peak load periods). In “low seasons” periods it could be easier for hauliers to find space onboard ship, although the “partnership factor” prevails anyway.

- risk diversification (more than one port used).

The last category deals with criteria such as:

- total cost of overall origin-destination trip;
- total transit time;
- constraints on land-based segments;
- availability of cargo (picking-up of cargo along the way).

Having identified the structure of the decision-making chain and built a structured questionnaire format we conducted a number of on-the-field interviews. In particular, interviews were performed in the months of November, December 2002 and January 2003 at the ferry terminal of Venice. Respondents were 50 hauliers (on a total number of 60 to whom we submitted the format) mainly coming from the Greek ports of Patras and Igoumenitsa (the major Greek ports of interest). They were Greek hauliers since – as said - they represent almost all the users of the ro-ro services analyzed. It must be noted that the choice of conducting the bulk of interviews with hauliers stems from the structure of the decision-making process, which highlights the major role of them. However, on top of the 50 interviews with hauliers, other interviews were conducted with key-actors of the shipping sector and with brokers, both in Italy and in Greece.

The shipping companies of reference were the Minoan Lines and the Blue Star Ferries, both Greek. Additional information were obtained from Anek Lines calling the port of Trieste.

Through the first part of the questionnaire information that integrate traditional statistical data were obtained. Responses show that the main markets for the Venice port are Germany (using typical paths such as Venice-Brennero-Munich or Venice-Villach-Munich), Austria and Italy; other markets are the UK, France and The Netherlands. Promising markets are expected to be Norway, Spain and Sweden. Goods mainly consist in finished products on the North-South direction and agricultural products (and groupage) on the South-North direction. The accompanied technique prevails (about 60% of traffic). Trip frequency by the hauliers is every two weeks on average.

The shipping companies operating in the port of Venice manage ferry services that regularly carry cargo throughout the year, and passengers during the summer time as well. Two types of ships are used: one it is of more recent technological type and similar to fast ships (Minoan), the other is technologically more traditional (Blue Star). The Minoan Lines have a daily frequency on the Venice-Igoumenitsa-Patras route departing at 15.00 from Venice and arriving at 20.30 in Patras the second day after. From Patras there is a daily service departing at 24.00 and arriving in Venice at 6.30 on the day after. Blue Star Lines have a service from Venice on Tuesday and Wednesday (departure at 19.00 arrival at 6.00 of the second day after) and on Saturday and Sunday (departure at 12.00 and arrival at 21.00 second day after). From Patras the Blue Star Lines schedule departures each Monday, Thursday and Sunday at 23.55 and arrival in Venice at 9.00 on the second day after.

Ships have a gross tonnage ranging between 27.000 and 30.000 tons and a speed ranging between 24 and 31,5 knots. They can carry between 70 and 130 road vehicles. Freight rates on the Venice-Patras route are some 600 Euros for a semi-trailer and 700-800 Euros for a full-truck. On the Patras-Venice route freight rates are reduced on average of some 15%.

Finally, as far as the freight traffic flows are concerned, there are annually two peak periods: one in March-April (Easter) and the other on June-July. In the period 1999-2002 freight traffic increased in Venice of some 30% on average, with about 30.000 loadings and 34.000 unloadings currently.

In the second part of the questionnaire we study the choice criteria by using the following scale:

- 0: not important;
- 1: slightly important;
- 2: important;
- 3: very important.

Since we wanted to maximise the amount of information from the respondents, the second part of the questionnaire was further divided in two parts, referring to the Greece-Europe and Europe-Greece directions. In the former case we discuss the choice criteria for the (Italian) port of unloading, in the latter the choice criteria for the (Italian) port of loading. Moreover, it was asked to respondents – by means of an open question – the reasons for choosing those Adriatic ports they usually do not choose.

In short, the underlining reasoning is that of having an understanding about why a certain port (for unloading and loading) is chosen by hauliers and how much each criteria counts on the basis of the above mentioned scale. As said, the goal is that of finding some regularities (choice model or theory) from the specific best practice.

2. Results and discussion

Results are first presented in descriptive terms using percentage values (% on the total number of respondents). In particular, results are shown in an aggregate way both for unloading and loading choice, since we realize the two situations are similar. A summary is shown in table 1.

Basically all respondents (99%) do not diversify their port choices so as to reduce risks, on the contrary they choice one of the port that are called by the shipping company with which they have established some partnerhisp agreement. The partnership criterion is judged to be very important by basically all respondents (99%). Some 61% of respondents give no importance to the availability of space onboard ship.

Table 1. Summary of main results (percentage values)

<i>Criteria</i>	<i>Degree of importance (scale)</i>			
	<i>0</i>	<i>1</i>	<i>2</i>	<i>3</i>
Punctuality				99
Partnership / fidelization				90
Availability of space onboard ship	61			
Availability of onboard services for drivers				95
Safety of cargo		30		36
Journey sea time				84
Freight rate		56		
Proximity to market (production/delivery)				93
Port accessibility			36	40
Speed of port operations				73
Service frequency				97,5
Arrival / departure time (scheduling)				98
Port costs		63		
Technical characteristics of the port				95
Promotional activities / marketing		61		
Total O-D cost	39	34		
Total O-D transit time				83
Constraints on land-based segments	84			
Availability of cargo		84		
Risk diversification	99			

For the 93% of respondents the port choice is dictated (very important criterion) by the proximity of port with respect to market, whereby having the possibility to deliver the goods the same day or arrival. The arrival and departure time and the punctuality of service is of the highest importance, respectively for the 98% and basically 100% of respondents. The the same degree of importance – for the 95% of cases – is the availability of good onboard services for drivers⁵, while quite important – on average – is the criterion regarding the safety of cargo. Also, crucial – for some 97,5% of respondents – is the frequency of service.

Respondents judge the port costs (63%) and the freight rate (56%) less important factors. Similarly, the total journey cost is judged to be not so important (39% not important, 34% slightly important), while on the contrary the total journey time is considered of high importance (84%) and the same is true for the sea transit time. Very important – for the 95% of respondents – are the technical characteristics of the port, such as quays, facilities, services, while slightly important are the promotional activities made by the port (61%). The accessibility to port is considered relevant (36% important, 40%

⁵ The “availability of onboard services for drivers” factor can – on another standpoint – be included in the partnership criterion, in the sense that drivers ask for comfortable cabin, on top of the availability of space onboard ship for the vehicle and the possibility to pay at the end of each month. From this standpoint – in contrast with Brooks (1995, 2000) – onboard services for drivers are actually “salient” factors.

very important), while some 73% of cases say that the speed of port operations is very important. Probable constraints on the land-based segments of trip (eg, ecopoints to travel through Austria⁶, police controls, etc.) are not considered important (84%). Finally, slightly important (84%) is the need to pick up cargo along the way (availability of cargo).

The responses suggest some comments and insights.

We firstly highlight the relevance of the fundamental criterion concerned with the partnership between haulier and shipowner. Such a criterion is just mentioned in the literature as a current trend, however without giving it the relevance we find in our case-study. Consequently, the need of diversifying port and carrier choices does not emerge in the case-study, as conversely shown in the literature (Mangan et al., 2002).

Once the partnership has been established, we see the predominance of the criteria related to the quality of service rather than to those of a monetary nature. This is again a result which contrasts the recent literature (not the past one, however) – Mangan et al., 20002 in particular – that confirms the relevance of monetary elements (discounts) and the availability of space onboard ship as well (see *infra*). The predominance of “service” elements in the choice criteria is explained by a number of things. First, it is demonstrated that basically all the respondents gives a high importance to factors such as “convenient scheduling” (98%), “punctuality” (100%) and “frequency” (97,5%), and to “availability of onboard services for drivers” as well (95%) (which means comfort). The relevance of convenient scheduling (arrival/departure time) shows that the port-maritime service is competitive as long as it responds adequately to the logistics needs of deliveries for the shipper/receiver. This is also confirmed by the importance of the criterion related to proximity of the port to market with the possibility to reach it within the same day of arrival/departure (93% of cases).

In other words, it seems that operators ask for regular, reliable services which must be compatible with the logistics needs of cargo (functional requirements) while they do not so much look for cheap services (both for the overall trip and the single land-based and maritime segments). From this point of view, it should be noted that the “scheduling” factor is an element of market segmentation *per se*. A practical example: if we use the criterion, say, “departure on Monday from Trieste at 18.00” we identify a different market with respect to the criterion, say, “departure on Wednesday from Trieste at 12.00”, even if the port is the same. This is so because the two services refer to different logistics needs of cargoes. Thus, it is misleading to discuss generally in terms of *port* choice. Conversely, we should discuss about the level of *service-to-market* provided by the port. Recently, for instance, a new service was created in the port of Ancona having an arrival time at mid morning – few operators thought it could be a success: instead, in a short period of time it has really created a “new market” resulting in a very competitive service for Ancona. Generally speaking, however, Ancona is less competitive with respect to Venice and Trieste particularly for German destinations, because hauliers arriving in Ancona at noon can reach the Italian-Austrian border only late in the evening, thus being forced to stop overnight. Conversely, if they choose Trieste or Venice they can travel all the day to delivery the goods⁷. If they use Ancona, then, they loose overnight the time saving⁸: they arrive at the port 6 hours earlier but they delivery – for instance, if we assume a common German destination, say, Munich – only few hours earlier. On top of that, they also get monetary savings (not essential but not neglectable): it has been estimated that a haulier saves in road transport costs about 250 Euro if he chooses Trieste vis-a-vis to a more expensive freight rate of only 30 Euros. However, if we consider the overall transport

⁶ At the time of the interviews.

⁷ Also, after a comfortable night onboard ship.

⁸ We refer to not-fast services.

service with respect to the logistics needs of cargo (ie, those dictated by the manufacturer/receiver) we can easily imagine a situation as the following: suppose you take the Patras-Cologne route. Those who choose the port of Venice arrive at destination, say, at noon of the same day. Instead, those who choose Ancona arrive at destination the evening of the day before, so they must delivery the goods the day after anyway. Thus, the higher speed of the trip (less transit time) has a small impact on the logistics needs (delivery time) and generally on the round-trip time.

Similarly, we should distinguished for each port (talking about port competitiveness on the same O-D axis) “back” and “forth” markets. This distinction also relates to the “availability of cargo” criterion. From the responses to interviews we realize that there is a strong preference of the hauliers to maximize the maritime segment in the case of full-truck load. This means that Trieste and Venice are strongly preferred – for full-truck load deliveries to/from German markets – to Ancona or other South Adriatic ports. Reasons are related to better comfort (ability to take a rest, onboard comfort, etc.), more convenient service (functionally) and the possibility of monetary savings. However, traffic flows are often unbalanced (except in the seasons of agricultural products) and the percentage of empty trucks originating from Greece is high. Thus, hauliers – headed say to German markets - often must choose, say, Brindisi (the Southeast port of the Adriatic) because in doing so they can pick up cargo along the Italian road segment. From this standpoint, we could say that Brindisi is very competitive for South-North trips: by choosing Brindisi the haulier has higher transport costs (road transport costs higher than maritime ones) but – at the same time - higher revenues (payload) with respect to the choice of a northern Adriatic port. Conversely, on the North-South direction trucks very often are full-loaded and therefore the strong preference to use the sea “as much as possible” definitely emerges: hence, the north Adriatic ports are chosen. In conclusion, hauliers choosing the north Adriatic ports are those who are normally able to maximise the capacity of their trucks in both directions (or at least to have a good load rate) or those who find the north-south trip satisfyingly remunerative. In this way, we explain why the respondents in the port of Venice do not judge the factor “availability of cargo” to be of importance.

Furthermore, we realize that the proximity of the port to the market is definitely important. In other words, the economic geography of markets plays a major role and fix in some way constraints to the competitiveness of ports. North Adriatic ports mainly serves the German and Austrian markets, while Medium Adriatic ports mainly refer to French, Italian, British and Dutch markets. However, when there is some market overlapping (eg, German and Italian markets) one – given the strong preference towards maximising the maritime leg – could infer a potential increase of competitiveness of North Adriatic ports provided they strengthen and improve their services. Take the German market: Trieste is the most preferred port because the scheduling is convenient, one can get monetary savings, etc. (see *infra*). Ancona is chosen as a second-best option⁹. Then, if the North Adriatic ports – while satisfying the partnership constraint¹⁰ - offer a higher frequency on those markets then they would capture more traffic. On the “frequency” criterion, however, the speed of ships play a determinant role. An increase of speed by the ships – aiming at improving the quality of service through higher frequencies - makes (economically) sense if it actually allows an increase in the number of calls. If this is true, then the increase of costs due to the speed increase (higher number of operating ships, higher operating costs, etc.) is outbalanced by the increase in revenues due to the amount of payload (perhaps further increased if larger vessels are used – say, carrying 130 vehicles). On the contrary, if one can not increase the number of round-trips by increasing speed, then the increase of

⁹ For instance, if the haulier loses the ship from Trieste at 12.00 he can get a ship from Ancona at 16.00.

¹⁰ remember that the shipping lines calling Venice do not call Trieste and viceversa.

speed only implies cost increases. The length of routes –which speed is clearly linked to – plays then a crucial role and it explains why fast services have been introduced in Ancona but not so in Trieste.

A further comment refers to the pretty low importance attached to the “availability of space onboard” factor. This could seem a paradox at a first glance and in contrast with the recent literature as well. However, the explanation lies in the meaning of the criterion of partnership and fidelization: the problem of finding space onboard ship does exist but it is simply solved “upstream” through the establishment of a partnership agreement.

Quite significant, in policy terms, is the low importance attached to the promotional activities of the port. In fact, it seems that hauliers are well informed about maritime and port services and they organize their activities on the basis of partnership agreement. Therefore, as suggested by literature, “personal relationships” are very important while the “impersonal” marketing activities performed by the ports seem not to impact very much. What counts more is – we state again – the availability of a service which must be “useful” for the deliveries, ie it must understand and reflect the logistical needs.

As far as the factors regarding the technical characteristics of the port – that are judged to be very important – we should point out that by deepening this issue with the respondents (by follow-up interviews) we realized that this criterion is no doubt very important, but it does not result in a determinant (“salient”) one. However, we must note the relevance of a number of criteria related - in one way or another - to infrastructural needs (see also the accessibility issue which is judged to be important by 36% of respondents and very important by some 40%).

In more general terms it strongly appears – from the interviews – that the decision-making process has the following characteristics as they are suggested by the literature:

- decision-makers often are not conscious about the characteristics of the decision-making process from a strict rational point of view. They decide on the basis of intuitions, attitudes, perceptions, experience, and have difficulties in explaining the process rationally. They do not have a formal procedure for evaluation of different alternatives, let alone statistics. Actual performance of actors does not count so much;
- the decision-making process is of straight rebuy or modified rebuy type: decision-makers are conservative in their choices in that they only periodically revisit them (thus, for extensive time periods they do not raise the problem of choices). This means that they do not consider a continuous set of options, rather – when the choice is made – they adopt some *routine* behavior;
- the fact that the decision-making process in the ro-ro sector shows a conservative (risk-averse) attitudes by the decision-makers and a process which is based on intuitions and perceptions, personal relationships and experience (rather than on rational and formal procedures) demonstrate – once again - that the choice process is a “human” activity (D’Este, 1992b). Another example of this kind – in our study – is that certain land-based paths are chosen not for rational reasons but “simply” because hauliers are familiar with them.

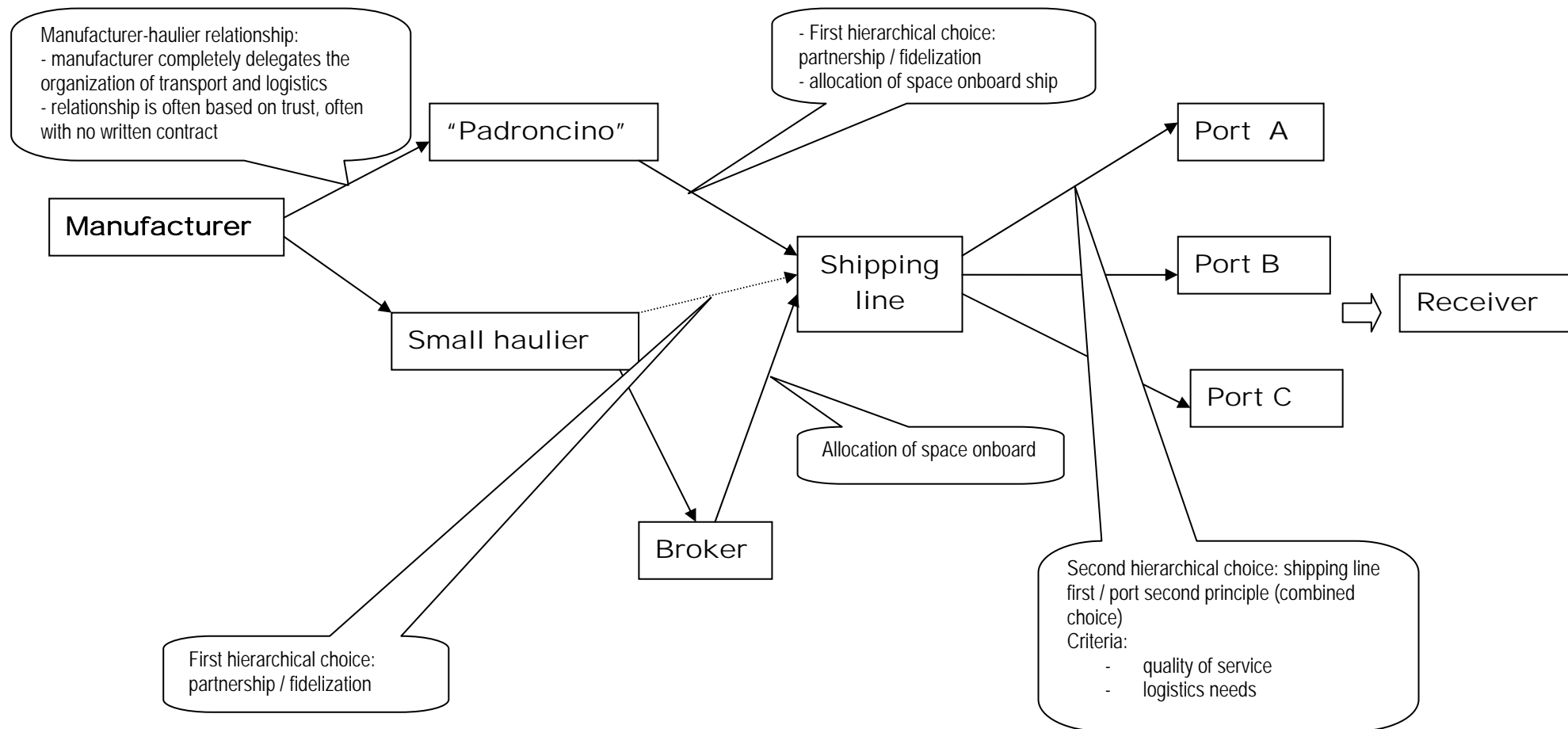


Figure 1. The port-shipping choice model (process-oriented) in the Adriatic ro-ro market on the Italy-Greece axis

3. Conclusion

In conclusion we are able to illustrate the general structure of a decision model (figure 1) which can be classified as a process-oriented model on the basis of the literature. It can be summarized as follows:

- the manufacturer is basically not interested in transport and logistics organization and he leaves all such decisions to hauliers;
- the haulier made a first-level choice (hierarchically) with which he establishes a partnership agreement with a shipping company; personal relationships, perceptions, conservative attitudes prevail on the rationality of choices, on top of the concrete benefit he gets from the agreements. The haulier does not diversify their port-maritime choices – in contrast with Mangan et al. (2002) – and solves the problem of finding space onboard ship through the partnership agreement;
- the shipping company organizes and provides their services by calling certain ports; the port choice is then determined by the principle shipping line first – port second;
- on the basis of this principle, haulier (second-level of choice) chooses the maritime-port service basically by considering the quality of service (functionally), ie giving priority to the needs of “fluidity” of traffic and of the logistics of deliveries. Monetary aspects are secondary, in contrast with some recent literature (Mangan et al., 2002).

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