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Strategic positioning and development options of the port of Naples in the Mediterranean containerised liner services market

Summary

This paper has been aimed at analysing competitiveness of the port of Naples within the development of containerised liner services in the Mediterranean, also taking into consideration the recent extensive investments in the infrastructure jointly made by the Port Authority and some private owners. The first part, dealing with methodology, has defined the criteria for determination of the competitive context. There follows a qualitative and quantitative analysis of traffic relations gravitating toward the Mediterranean market, with reference to ocean-going east-west services and the feeder service, as well as the evaluation of the port of Naples market share concerning the respective market segments. The third part tries to identify the main factors of the offer affecting the positioning of a port, as well as to verify to what extent the port of Naples structures are related to standards prevailing on the Mediterranean market. The final part considers a series of strategic options. Principal results show how the most significant development opportunities of the port are related to the transit function and short sea shipping, provided the organisational and infrastructures network improvement. Actual port strategy tending to transshipment development appear to present a certain risk, whilst at the same they do not significantly contribute to the overall value added. The final observation refers to the partenopean owners' entrepreneurial culture which does not appear to be adequately adjusted to changes under way.

Key words: strategic positioning, containerised liner services, the Mediterranean, Port of Naples

1. Introduction

Strategic choices connected to the organisational structure and services network of the liner shipping, have traditionally had a great impact on the port competitiveness (Slack et al., 1996).

With reference to the Mediterranean, since the '90s, this area has been considered as a marginal market because of the unsatisfactory reliability and efficiency levels of its ports; for this reason it was mainly served through dedicated services.

The increasing transport demand and the central position of this area within the main world markets have deeply changed over the latest years this scenario, bringing to a progressive integration of the Mediterranean into the global networks of the liner companies (Alberghini, 2000).

Further changes have been represented by the increasing efficiency of Mediterranean ports and the introduction in the market of vessels with a capacity exceeding 7.000 TEUs, which have exposed traditional end-to-end services on East—West route (and vice versa) to demand unbalances on the two directions of the same route.

The joint effect of these factors drove liner companies to re-planning their *routing patterns* so as to maximise slots utilisation and exploit scale economies (Ocean Shipping Consultants, 1998). The network re-planning strategies based on *transshipment* have been adopted by a growing number of carriers often within *round-the-world* or *pendulum* services. The re-organisation of the networks around strategically located transshipment hubs, is often considered a strategy aimed at not only expanding the market coverage but also combining previously separate services.

Recent studies (Beddow, 2002; Drewry Shipping Consultants, 1999) stress that in the near future the networks of the main liner companies will focus on an axial service towards the East-West route (*round-the-world* or *pendulum*). For this service over 10.000 TEUS vessels will be used, calling only a limited number of transshipment ports with a minimum number of deviations from the optimal route. The full coverage of the market will be achieved through a network of linked services along the northern-southern routes and the regional routes.

All these factors have led to a different segmentation of the containerised liner services market and therefore to a re-definition of competitive arena of Mediterranean ports.

Within such a scenario, the aim of this work is to analyse the strategic positioning and development options of the port of Naples in the Mediterranean containerised liner services market, especially in consideration of the recent infrastructural investments jointly realised by the Port Authority and private operators.

To this end, the first section, of methodological nature, defines the criteria for market segmentation of containerised liner services. In the second section a qualitative - quantitative analysis of the supplied maritime and port services within the Mediterranean market is developed, with particular reference to the East-West and feeder services. The third section analyses which factors impact on the competitive position of a port and verifies if the structure of the port of Naples is lined up with the prevailing market standards. The analysis of supply has been carried out on the basis of both the availability of infrastructures/equipments and business/organizational aspects. Such an analysis has a double aim:

- To verify the prevailing structural dimensions in the Mediterranean market;

- To benchmark the port of Naples with the others ports of the competitive context.

In the last section, some considerations on the development options are developed.

2. Market segmentation of containerised liner services: methodological and operational issues

The analysis of the strategic positioning of the port of Naples requires a preliminary overview of the containerised liner service market.

Generally speaking, this market is characterised by specialised facilities (full container vessels with vertical handling) and organisational/managerial arrangements aimed at producing port services consistent with the economic and functional approach of an integrated intermodal logistic chain (DITEA, 1999; ISFORT, 1999).

This definition, while including all the basic components which characterise the containerised port service market, is not sufficient to identify the different segments within which port competition takes place.

In order to make a more meaningful analysis and, at same time, to correctly outline the competitive scope of such a differentiated market, we can use the so called *functional criterion* based on the prevailing typologies of the functions performed in each of the ports investigated.

Based upon this criterion, a port can be classified as:

- *gateway port* (or transit port): the door of ocean traffic characterised by a strict logistics connection with large manufacturing and consumer hinterlands;
- *transhipment port*: as the previous one, it is a deep sea traffic port which, however, does not require direct links to the hinterland as its main function is to carry out transhipment from the mother vessel to the feeder ships for various local destinations;
- regional or *feeder port*: the door to the hinterland for cargoes from (or towards) hub ports; its main function is to co-ordinate cargo delivery to the end users.

According to the port functions previously defined, we proceeded to the market segmentation of the port of Naples, taking into account the following criteria:

- Regarding the handling of goods coming from or directed to the market located in the port hinterland, only the ports of Southern Italy are viewed as competi-

¹ In the new transport systems – governed by integrated logistics, intermodality and containerisation – the concept of *port hinterland* is not considered any longer as a well-defined area, stable over time, but rather as a large area where ports compete to “catch” cargoes and to meet users needs (see for more details, Marchese et al., 1998).

- tors (their hinterlands can be the same served by the port of Naples)¹;
- As far as transshipment concerns, the competition involves other Mediterranean port of calls which are not necessarily geographically close to the port of Naples;
 - finally, only the ports which in 2002 recorded an overall container throughput more than 100.000 TEUs were taking into account, with the exception of those characterised by: a) geographical proximity; b) competitive potentials or c) investment plans in progress.

Table 1: The competitive environment of the port of Naples in the three market segments of containerised services

Port function \ Geographical Area	Transit	Transshipment	Feeder
Mediterranean		Princes, Algiers, and Marseilles	
Central and Southern Italy	Napoli, Gioia Tauro and Salerno	Napoli, Gioia Tauro, Cagliari and Taranto	Napoli, Salerno, Civitavecchia and Bari

The analysis of the competitive positioning of the port of Naples has been based on the ports identified in the table 1. This table illustrates both the three segments corresponding to the transit, transshipment and feeder functions, and the various competing ports in these segments.

As shown, the port of Naples performs all functions (transit, feeder and transshipment), thus competing in three different business segments. A similar situation can be found in many other competing ports such as Salerno, Gioia Tauro and Taranto performing in two or more market segments.

3. The demand of containerised port services in the Mediterranean area

3.1 A quantitative analysis of Mediterranean traffics

The analysis of the demand of containerised port services provides a first set of useful data to outline the attributes of the competitive environment in which the port of Naples carries out its functions.

In general, the substantial increase in the role played by the Mediterranean within the global operators' strategy is proven by a high increase in containers handling: from round 550.000 TEUs in 1980, *almost equally distributed between traffic from and to the Mediterranean area (O/D) and transshipment*, to over 8,7 million TEUs in 2002, where the *transshipment component is more than doubled as compared to the O/D component* (Containerisation International Market Analysis, 2002; Drewry Shipping

Consultant, 2000).

In 2002, the main Mediterranean port was Gioia Tauro, with a total amount of over 2,9 million TEUs, 90% of which under transshipment (Table 2).

The second port of the region is Algeciras (round 2,2 million TEUs), followed by Piraeus (1,398 million TEUs) and Marsaxlokk (1,3 million TEUs).

Then we have the port of Naples, with substantially lower volumes (444.000 TEUs) and the port of Salerno (375.000 TEUs).

Table 2: Functional segmentation of the containerised traffic (year 2002)

	TEUs	Transshipment %	O/D traffic	Transshipment traffic
Naples	444 000	12,5%	388 500	55 500
Salerno	375 000	12,5%	338 125	46 875
Gioia Tauro	2 954 571	90,0%	295 457	2 659 114
Total Italian ports	3 773 571	-	1 001 2082	2 772 363
Marsaxlokk	1 300 000	95,0%	65 000	1 235 000
Algeciras	2 200 141	84,5%	345 517	1 854 624
Piraeus	1 398 000	25,0%	1 048 500	349 500
Total other ports	4 928 141	-	1 459 017	3 469 124

Source: Our elaboration on Containerisation International Market Analysis 2002; D S C 2000 and Confetra

These data highlight a gap between the ports with a high vocation for transshipment and those playing a traditional role as origin and destination points (O/D traffic). However, the transit traffic in Gioia Tauro (around 10% of the total traffic), although quite low in percentage terms, is relevant in absolute terms as it actually corresponds to 295.000 TEUs, a volume quite similar to the O/D traffic of Salerno and Naples.

Analysing in detail the trend in the individual ports (Table 3), those recording a higher increase are the transshipment hubs, above all Gioia Tauro, which in a few year has achieved a leadership position (2.954.571 TEUs). The latest growth dynamics of Marsaxlokk port is characterised by a countertrend; in 1999 and 2000 a slight traffic decline was recorded (mainly due to Terminal 1 saturation and to the resulting impossibility to develop new traffic until Terminal 2 was made fully operational in 2000). However, in 2002 an extraordinary increase (about 17%) was recorded.

As expected, the growth rates of O/D ports, such as the Italian ports of Naples and Salerno are lower. The Neapolitan call has recorded a floating growth rate: since 1994 to 1997 the growth rate ranged between 10 and 20%; then it recorded a slight decline in 1998/99 (+3,7 and 4,2%, respectively) and an increase of 3,2% in 2002.

The performance of the port of Salerno has been more steady, with an average increase rate of 16% in the last two years.

Table 3: Dynamics of the container market

	1980	1990	1995	1996	1997	1998	1999	2000	2001	2001
Naples	131.119	172.671	212.000	271.000	308.181	319.000	344.844	396.621	410.000	410.000
Pos %	-	0,7%	16,0%	19,9%	21,7%	22,0%	23,0%	24,9%	25,0%	25,0%
Salerno	20.000	51.875	170.000	190.000	219.000	240.000	266.611	317.961	331.000	331.000
Pos %	-	10,0%	27,8%	29,7%	31,7%	31,4%	31,2%	32,1%	32,0%	32,0%
Crista Tauro	0	0	10.000	211.000	100.000	112.000	121.000	121.000	121.000	121.000
Pos %	-	-	5,0%	24,3%	11,0%	12,1%	12,1%	12,1%	12,1%	12,1%
Total Porto	131.119	172.671	212.000	271.000	308.181	319.000	344.844	396.621	410.000	410.000
Pos %	-	0,7%	16,0%	19,9%	21,7%	22,0%	23,0%	24,9%	25,0%	25,0%
Amalfitani	0	0	10.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000
Pos %	-	-	5,0%	24,3%	11,0%	12,1%	12,1%	12,1%	12,1%	12,1%
Magnano	20.000	51.875	170.000	190.000	219.000	240.000	266.611	317.961	331.000	331.000
Pos %	-	10,0%	27,8%	29,7%	31,7%	31,4%	31,2%	32,1%	32,0%	32,0%
Pos %	-	0,7%	16,0%	19,9%	21,7%	22,0%	23,0%	24,9%	25,0%	25,0%
Total	151.119	224.546	382.000	461.000	527.181	559.000	611.455	714.582	741.000	741.000
Pos %	-	1,4%	20,0%	23,7%	26,2%	27,9%	29,3%	31,3%	32,7%	32,7%
Pos %	-	0,7%	16,0%	19,9%	21,7%	22,0%	23,0%	24,9%	25,0%	25,0%
Total	151.119	224.546	382.000	461.000	527.181	559.000	611.455	714.582	741.000	741.000
Pos %	-	1,4%	20,0%	23,7%	26,2%	27,9%	29,3%	31,3%	32,7%	32,7%

Source: Our elaboration on Drewry Shipping Consultants, Containerisation International, Market Analysis and Confetra.

3.2 A qualitative analysis of East-West deep-sea services

Deep-sea services in the Mediterranean area can be sub-divided into two typologies (CNEL 2002):

- Mediterranean services whose origin or destination point is located within the Mediterranean area;
- Transit services which can be further sub-divided into:
 - Services calling the Mediterranean ports;
 - Transit services not calling the Mediterranean ports (*bypassing services*).

The operational approach largely widespread within the dedicated Mediterranean services is based on multi-port routes, with a limited use of transshipment (Table 4).

It is worth mentioning that a number of operators have adopted an intermediate approach combining the traditional multi-port route (with calls at the origin/destination ports) and an additional call at a transshipment port, so as to cover market areas whose size does not justify a direct call.

Regarding transit services, the growing attention paid by the main world companies to the Mediterranean market is proven by the number of deep-sea connections calling the ports both along the North-Europe/Far East route and by *round the world* and *pendulum services* (Table 5).

Within this segment, the prevailing operational approach includes a single call at a transshipment hub whose location enables to cover the whole Mediterranean market. Other solutions have been adopted: some operators prefer the so called “*two-stop transshipment*”, including the addition of a transshipment call in the Eastern Mediterranean to facilitate distribution in the surrounding markets.

Some *pendulum services*, such as the ones managed by COSCO/YML and United Alliance include a high number of direct calls, to which one or two calls at transshipment hubs are added (Naples and Haifa for COSCO/YML and Gioia Tauro for United Alliance) (Table 5).

The empirical evidence of the growing integration of the Mediterranean market into the liner network of the major world operators is provided by the choices to interconnect their own dedicated and transit services at strategically located hubs (Algeciras and Gioia Tauro for Maersk Sealand and Gioia Tauro for Evergreen/Lloyd Triestino and United Alliance). This makes it possible to have an interchange of containers amongst the various services and optimise the benefits generated by a world-wide network.

Table 5: East-West deep-sea services calling the Mediterranean ports

Service	Capacity	Frequency	Algeria	Valencia	Corsica	Marseille	Genoa	L. Tyrrhen.	Leghorn	Naples	Milano	Genoa/Tyrrh.	Algeria	Tunis	Yokoh	Thailand	Japan	Port Said	Suez	India	
Number of Services per Line																					
Grand Alliance	1,400-1,600	2										■									
United Alliance	1,400-1,600	1										■						○			
CMA CGM Line	1,000-1,100	1																			○
Algeria-M.T.	1,700-1,800	1																			
United Sealand	1,400-1,600	1	■																		
Costa Concordia	1,400-1,600	1																			
MSC	1,400	1		○																	
United Call Centre	1,600	0.4						○													○
United Call Centre	1,100-1,100	1						○													○
Number of Services per Line																					
United Sealand	1,000-1,100	1	■																		
Grand Alliance	1,100	1																			
BAL	1,100	1																			○
Costa Concordia	1,400-1,600	1																			
MSC	1,400	1		○																	■
United Call Centre	1,400	0.1																			
United Alliance	1,100-1,100	1																			○
MSC	500	0.4																			○
Number of Services per Line																					
United Sealand	1,400-1,600	1	■																		
Grand Alliance	1,400-1,600	1																			■
United Alliance	1,400-1,600	1																			○
United Alliance	1,400-1,600	1																			○
MSC	1,400-1,600	0.4																			○

Footnote: ■ denotes ports used as transshipment hubs; ○ denotes direct call ports.
Source: Containerisation International Yearbook; Drewry Shipping Consultants

3.3 A qualitative analysis of Feeder services

Given its geographical position, the Mediterranean has always drawn benefits from the availability of a wide range of regional and short-sea shipping services. This segment, traditionally dominated by services performed through Ro-Ro technologies, has experienced in the latest years a substantial increase, thanks to the stunning increase in transshipment services. The development of transshipment calls generated a wide network of feeder services which, in turn, contributed to increase the overall efficiency of the liner services in the Mediterranean area.

Table 6: Main feeder services in the Mediterranean area (n° of weekly services)

Connected areas	Algeciras	Gioia Tauro	Marsaxlokk	Piraeus	Damietta
W Africa	2,5				
Portugal	2				
Spain	1	2	2	2	
North Africa	2	9	7	3	2
France	1,5	1	1	1	
Italy	2	9	7	6	1
Adriatic Sea		2	2		
Greece		14	6		1
Turkey		13	6	6	1
Black Sea		5		3	
Middle East		10	4	4	3
Total	7	38	19	25	8

Source: Drewry Shipping Consultants, 2000.

Table 6 provides useful information on the transshipment operations in the hubs of the Mediterranean: the leadership role of Gioia Tauro is confirmed by the availability of the widest feeder services network (38 weekly calls). At the same time we can see that Algeciras's role, as port specifically devoted to relay and not to hubbing operations, is confirmed by the low availability of feeder services which do not exceed seven weekly calls.

A wide range of feeder services are also available at the ports of Marsaxlokk and Piraeus, while the Egyptian call of Damietta provides a limited supply, mainly because of its size and possible role in relay or interlining operations.

3.4 Trend of the market share of the port of Naples

Despite the current constraints and infrastructure-organisation deficiencies on the supply side, the port of Naples has been able to attract the traffic managed by world-class operators, such as COSCO and Mediterranean Shipping Company (MSC). Consequently, the volume of containerised cargo handled in the port of Naples has almost doubled in the period 1994-2002 (Table 3).

Translating these figures into market shares, the port of Naples experienced a progressive erosion of its market share until 1999, both with respect to transit traffic and to transshipment, with a very slight improvement recorded in the last years (Table 7).

Actually, the competitive position of the port of Naples must be interpreted in a different way according to the different segments. Within the transshipment segment, in the period 1990/2002, a substantial decline of the Naples market share was recorded (from 6,1 to 0,98%) as a result of the entry of new specialised hubs (table 8). However, since 1998, effects of this disruptive event were absorbed or, at least mitigated, by getting a *niche* role.

A progressive decline of the market share can also be observed with respect to transit functions, (from 86,5% in 1990 to 38,39% in 2002) (Table 9). This decline can be the result of the progressive establishment of the competitive position of the port of Salerno which, in 1995 (before the starting up of the operations in Gioia Tauro), gained a 46% market share.

Secondly, Gioia Tauro entry into the market has also to be taken into account. This port, while having a prevailing vocation for transshipment function, generates nevertheless a substantial volume of containers under transit. This phenomenon does not have to be underestimated when outlining the growth options of the port of Naples and its associated market threats and opportunities, especially with reference to new potential competitors such as Bari and Civitavecchia.

It is also worth stressing that the major transshipment hubs - those located in the mainland, such as Gioia Tauro and, in the near future, Taranto - are capable of further increasing their transit traffic thanks to the scale and logistic economies that they can provide to their customers. In other words, the major transshipment ports, as intersection points of increasingly complex and sophisticated systems, can provide extremely competitive transport solutions, not only from the economic point of view, but also in terms of higher frequency in the departures of liner services, low *transit times*, higher number of overseas origin/destination points directly connected.

It is not a chance that one of the key points in Gioia Tauro development strategies is to capitalise its competitive edge in the transshipment segment, also with the aim to make it the entry tool into the transit traffic from Northern Italy's and Southern Europe's markets.

Table 7: Dynamics of the market share: total traffic

	1980	1990	1994	1995	1996	1997	1998	1999	2000	2001	2001
Naples	21,17	10,54	8,56	8,41	7,74	6,14	4,90	4,96	5,71	5,71	5,10%
Salerno	7,61	4,12	7,46	6,48	5,71	4,51	7,84	7,97	7,70	4,71	4,71%
Genoa-Taranto	-	-	-	0,59	16,70	2,94,0	12,57	11,56	15,51	12,71	11,94%
Total	28,78	14,67	16,01	15,50	19,95	14,65	12,31	12,49	20,92	13,56	13,37%
Alameda/Albi	-	7,52	16,90	19,17	16,90	17,64	16,21	15,56	17,81	14,71	14,94%
Alghero	4,71	4,91	4,21	4,99	17,25	17,64	17,97	17,29	16,90	16,01	15,62%
Pisa	19,81	17,81	11,80	11,74	16,70	14,97	14,70	14,65	14,71	15,01	16,07%
Total	73,12	65,33	63,96	65,50	70,54	59,35	58,69	57,51	55,57	57,54	54,63%
TOT a.L.	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00

Table 8: Dynamics of the market share: transshipment

	1980	1990	1994	1995	1996	1997	1998	1999	2000	2001	2001
Naples	6,10	2,41	1,75	1,69	1,71	1,11	0,84	0,85	0,91	0,94	0,89
Salerno	0,93	0,94	1,51	1,70	1,00	0,79	0,66	0,68	0,64	0,78	0,75
Genoa-Taranto	-	-	-	0,85	11,59	17,57	10,04	11,47	11,01	10,55	11,69
Total	7,03	3,36	3,27	3,65	14,01	29,47	11,53	13,00	12,56	12,27	13,33
Alameda/Albi	0,00	11,09	16,15	19,12	17,61	18,15	17,11	16,70	18,09	19,87	19,82
Alghero	77,16	68,01	61,16	58,11	47,12	47,53	42,38	41,67	41,29	42,65	40,34
Pisa	15,84	15,31	9,71	8,79	6,01	4,91	4,88	5,01	5,07	5,19	5,61
Total	91,99	96,67	96,73	96,17	73,99	69,53	66,47	67,00	67,94	67,71	66,67
TOT a.L.	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00

Table 9: Dynamics of the market shares: transit

	1980	1990	1994	1995	1996	1997	1998	1999	2000	2001	2001
Naples	8,63,1	71,81	51,44	56,29	51,51	44,49	19,70	18,85	10,64	11,11	18,19
Salerno	11,71	18,12	14,56	17,26	14,66	11,61	10,84	11,11	14,29	12,57	12,41
Genoa-Taranto	-	-	-	0,75	12,41	21,90	19,85	10,05	11,01	15,12	19,19
Total	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00

Source: Our elaboration on Drewry Shipping Consultants, Containerisation International and Confetra.

4. Analysis of the supply port services system in the Mediterranean area

4.1 Supply system in the port of Naples

The supply system of the port of Naples is characterised by three terminals with substantial differences with respect to their facilities, equipment and business segments. These terminals are:

1. Terminal Co.Na.Te.Co.
2. Terminal So.Te.Co.
3. Terminal Flavio Gioia.

Undoubtedly, the first terminal is the most important one, not only because of its facilities and client portfolio, but also because of its inclusion into transport networks of some of the major operators.

The leadership of the Co.Na.Te.Co. terminal is also confirmed considering that its market share within the port is about 80%.

The terminal So.Te.Co. is specialised in Ro-Ro technologies, while the terminal Flavio Gioia is a multi-purpose terminal, handling not only containers but also conventional and bulk cargoes.

The identification of synthetic parameters about the technical-productive capacity of such heterogeneous terminals implies a number of conceptual and technical-practical problems given the high number of factors and variables to be analysed. Consequently, the data and the estimations illustrated hereinafter have addressed both the aforementioned difficulties and the level of complexity in analysing the operational potentials of a port terminal.

Table 10: Structural parameters of the port of Naples

Supply variables	Terminal			
	Co Na Te Co	So Te Co	Flavio Gioia	Total
Pier head line (linear metres)	950	200	249	1.399
Sea basins (metres)	14	14	10,5	
Number of cranes	4	1	3	?
Pier capacity (TEU/year) ²	400.000	100.000	150.000	650.000
Total area (square metres)	140.000	25.000	25.000	200.000
Storage area (square metres)	119.000	29.750	31.250	170.000

² This parameter relates to the pierhead line loading and unloading capacity, mainly calculated on the number and typology of the portainers and the length of the pierhead line. Other exogenous variables, such as the composition of the container mix (20' and 40' containers), the average size of the vessels and the number of exchanged containers, were estimated based on the data available for each port.

Supply variables	Terminal			
	Co.Na.Te.Co	So.Te.Co	Flavio Gioia	Totale
Max. yard capacity (TEUs) ³	290 000	70 000	50 000	360 000
Max. yard capacity (TEUs)	430 000	100 000	70 000	530 000
Square meters pierhead line	147,4	175,0	100,4	143,0
Linear meters pierhead line	237,5	200,0	83,0	174,9

Source: Morvillo, 2002.

A first analysis of these data (table 10) highlights that the terminal Co.Na.Te.Co. is the only one whose size and facilities comply with the prevailing standard parameters of a specialised container terminal. When analysing the individual variables, the terminals Co.Na.Te.Co and So.Te.Co. have no specific problems regarding to the access from the sea (a 14 meter deep bottom). The 10.5 meter deep bottom of the terminal Flavio Gioia creates instead some problems as it is a strong constraint for the mooring of large sized vessels.

The analysis of the *pierhead line extension* shows additional limits in terminal So.Te.Co. which, having 200 meter linear, can not moor vessels exceeding this size. The terminal Co.Na.Te.Co. has instead a 950 meters extension which permits mooring of big vessels and the simultaneous presence of more than one vessels (as its pierhead lines are quite interchangeable) thus generating a higher productivity.

As to the *surface of the terminal yards*, once again the terminals So.Te.Co. and Flavio Gioia are heavily handicapped as they only have at their disposal a total area of 35.000 and 25.000 square meters, while the terminal Co.Na.Te.Co. has at its disposal an overall surface of 140.000 square meters.

With reference to the *equipment*, only, the terminal Co.Na.Te.Co. is equipped with 4 portainers specifically dedicated to container handling; the terminal So.Te.Co. has only one portainer, while the terminal Flavio Gioia has two 40 tons multi-purpose Gottwald cranes and one 104 tons Liebherr crane.

By using the main afore-mentioned structural parameters, a set of homogenous indicators has been developed in order to compare the supply level of the Neapolitan terminals with that of the others competitors.

The first two indicators⁴, namely the ratio between yard surface and pierhead line, and the number of portainers available in the pierhead line, can be considered good proxy of the modernity level of the terminals design (Table 10).

³ This parameter relates to the pierhead stocking capacity, calculated on the basis of the available areas and the typology of the yard equipment used. Container stocking time has been assumed as being equal in all terminals, while for the stacking height two discrete assumptions were made corresponding to a maximum height (three levels) and an average height (two levels).

⁴ Thanks to the first indicator we see that the port facilities built through more modern criteria are characterised by a high square meters/linear meters ratio, while the second indicator enables to evaluate whether the number of cranes used can be increased (being the pierhead line equal), or whether infrastructures have to be substantially enlarged.

The values of the first indicator are not too different from the market standards, as illustrated hereinafter. The terminals So.Te.Co shows the higher value (175), followed by Co.Na.Te.Co. (147) and Flavio Gioia (100).

The significance of the second indicator is partially influenced by the limited equipment available in the two smaller terminals. At any rate, it is interesting to observe that the value related to the terminal Co.Na.Te.Co. (equal to round 237) confirms the possibility for increasing the equipment, but it being understood that the structural dimensions of the terminal.

4.2 The supply system in the Mediterranean competitor terminals

The main structural characteristics of the container terminals in the port of Naples become more meaningful when compared to the infrastructures and plant facilities of the main Mediterranean competitors (Table 11).

Table 11: Supply parameters in the Mediterranean ports

Terminal	Area (sq. meters)	Perimeter (m)	% of cranes	Total surface	area/m ²	Investment
Naples		1 199	8	200 000	17,0	17,9
▪ Co.Na.Te.Co	1*	950	*	100 000	17,7*	217,5
▪ So.Te.Co	1*	100	1	150 000	175,0	200,0
▪ Flavio Gioia	10,5	1*9	1	150 000	100,*	87,0
Salerno (Salerno Container Terminal)	1*	890	*	100 000	113,*	222,5
Taranto (Taranto Container Terminal)	15	1 200	*	500 000	*16,7	100,0
Cagliari (C. Anthoniozzi/Coco Terminal)	15	1 000	*	150 000	250,0	150,0
Cristo Terzo (Mazzucchi Container Terminal)	15	1 100	10	1 200 000	187,1	155,0
Algeciras		1 57*	12	625 000	197,1	171,2
▪ Terminal of Puerto de Algeciras	15	1 90	1	205 000	525,6	170,0
▪ Algeciras	16	6**	6	280 000	*7*,8	107,1
▪ Sealand	1*	5*0	1	100 000	25*,1	180,0
Alia (Alia Railway)	15	2 100	15	*8* 000	226,2	1*2,7
Pirena (Pirena Container Terminal)	11	800	8	100 000	175,0	100,0

Source: Morvillo 2002.

Regarding the O/D traffic, Naples is a direct competitor of the port of Salerno and of the port of Gioia Tauro. In the port of Salerno, the supply is exclusively based on the Salerno Container Terminal, whose size and facilities are basically similar to the terminal Co.Na.Te.Co., but its total surface is slightly lower.

The supply levels of the new entrants TCT e CICT of Cagliari can currently be compared to the levels of the ports of Naples and Salerno; however we have to take into account that, in compliance with what set out in the current development plans, the production capacity of these terminals should become similar to the one of the terminal Medcenter.

With reference to the transshipment function, the Venizelos Container Terminal has a size similar to the one of the port of Naples, while the ports of Algeciras and Marsaxlokk have a bigger size.

Table 11 clearly highlights the prevailing role played by the terminal MCT of Gioia Tauro, both with respect to its size and to the structural indexes identified.

As far as the balance between surface and linear extension of the piers is concerned, the values of the ports of Algeciras, Taranto and Piraeus are quite similar, while lower values are recorded in the ports of Marsaxlokk, Cagliari, Naples and Salerno.

The ports of Cagliari and Taranto show large margins of increase in the use of the linear extension. Theoretically these ports, with values equal to 350 and 300 respectively, could double their equipment leaving the infrastructure availability unchanged.

The data of the port of Naples highlight the possibility to increase the equipment of the terminals Co.Na.Te.Co. and So.Te.Co. It should also be stressed that the pierhead line of the first terminal is still not perfectly straight but it is sub-divided into three different pierhead lines. To some extent, this is a constraint for an equipment increase and makes it impossible to achieve the same performance recorded in others terminals (with a perfectly linear pierhead line), such as the MCT of Gioia Tauro.

4.3 Business and organisation profiles of the supply in the Mediterranean terminals

Although the structural supply pattern of a terminal is strategically crucial, we also have to take into account the supply component represented by the *intangible assets* (i.e. managerial, business and professional skills) and other factors related to the external environment, such as the policies implemented by Port Authorities and local/national governments, the social context, the industrial relationships and the availability of skilled manpower. However, identifying, measuring and comparing the importance of these factors within such a large competitive environment is extremely difficult and goes beyond the aims of this work.

To provide a rough and - to some extent - subjective evaluation of the business and organisation profiles of the terminals identified, we have used a number of qualitative judgements (Table 12):

- Degree of vertical integration of the terminal-running companies (whether belonging or not to company groups controlling additional stages of the transport chain, such as the maritime stage);
- Degree of horizontal integration (whether controlling or not more than one port terminal at local/international level);

- Public or private nature of the economic entity controlling the terminal;
- Size of the terminal company and of any reference groups.

In general the companies' profiles managing terminals in the Mediterranean market are highly heterogeneous (Table 12). In the Western area private companies prevail (except for Malta Freeport Corp., a publicly-owned company running the Marsaxlokk terminal), either operating at local level (Naples and Salerno), or at international level (PSA in Genoa Voltri, P&O Ports in Cagliari, Contship/Eurokai in La Spezia and Gioia Tauro), or owned by ship-owners (Algeçiras and Taranto).

Table 12: Business and organisation profiles of the supply in the Mediterranean terminals

Terminal	Degree of vertical integration	Degree of horizontal integration	Typology of the economic entity	Company size
ITALIAN PORTS				
Naples				
Co.Na.Te.Co.	Medium	Medium	Private	Small
So.Te.Co.	Medium	Low	Private	Small
Fianco Gioia	Medium	Medium	Private	Small
Salerno SCl	Low	Low	Private	Small
Cagliari	Low	High	Private	Large
Gioia Tauro	Medium	High	Private	Large
ICI	High	High	Private	Large
OTHER MEDITERRANEAN PORTS				
Algeçiras	-	-	-	-
SeaLand	High	High	Private	Large
Masul	High	High	Private	Large
IpulCont	Low	Low	Private	Small
Malta Marsaxlokk	Low	Medium	Public	Medium
Piraeus	Low	Low	Public	Medium

Source: Morvillo 2002

In the Eastern Mediterranean area, public companies prevail, such as Port Authorities and local governments (see for example the port of Piraeus).

As far as the positioning of the port of Naples is concerned, terminal-running companies are characterised by a small size in comparison to the main competitors.

Co.Na.Te.Co. terminal's stock capital includes shares held by many operators involved in the various segments of the shipping market; these companies have also

interests in other companies performing in the logistics and railway transport sector or in other port terminals (including the terminal Flavio Gioia).

The terminal So.Te.Co. is nearly fully owned by the group Morelli, closely linked to the Genoa shipping company Messina which is also the main customer of the terminal.

The other main share-holders of the terminal Flavio Gioia is the Gruppo Investimenti Portuali, a company which also runs the terminal SECH in Genoa and holds shares of the CICT terminal's stock capital (Cagliari). Each terminal-running company is characterised by a peculiar vertical and horizontal integration; however these companies and their relevant reference groups usually operate only at local or national level.

5. Growth options of the port of Naples

As result of the analysis carried out, it is possible to outline some growth options within the containerised liner service market and, more specifically, within the three market segments identified.

Undoubtedly, the port of Naples should focus itself on the enhancement of its competitive position within the transit function (the main function currently performed in the port). In the last years the port of Naples has recorded an interesting growth trend but, considering the data in terms of market share, the port presented a negative trend in 2002. This is mainly due to a consequence of the current problems related to: the port-market logistic links to the regional and national market and bad conditions of the port areas (due to traffic congestion and poor rationalisation of the available areas). As these problems are related not only to infrastructural aspects but also to the organization and commercialisation of the intermodal services, proper agreements with logistic companies could drive to a substantial short-medium term improvement in the positioning of the port of Naples. However, in the medium term, it also necessary the adjustment of the communication facilities.

To this purpose it is necessary to go beyond the fragmentation-based approach which has traditionally characterised the port operational cycle, and adopt a "network"-based approach where each actor performs its activity in close relation with the others.

With reference to the transshipment function, that is the segment in which Port Authority and others private operator are investing in a massive way, some preliminary considerations have to be made. First of all, this function is carried out by others ports with a supply level, in terms of facilities and equipment, which can be hardly reached by the port of Naples. As a consequence, it can never directly compete with the major multi-user hubs of the Mediterranean, such as Gioia Tauro or Malta. It is only possible to pursue a strategy aimed at positioning the port as a *niche hub*, specifically devoted to one or two operators. Coherently with such an approach, MSC and COSCO, because of their business strategies, have recently entered into an agreement for the future

management of the Darsena di Levante, once it will be completed. Both companies have already acquired 46,25% of Co.Na.Te.Co., a terminal-running company which manages around 80% of the container handling and has been granted the only licence of the new dockyard.

From the companies perspective, any location and structural drawbacks would be offset by the opportunity to use almost fully dedicated terminals, under quasi-monopoly operational conditions. From the Port Authority perspective, even though this strategy will allow an quick increase in the container throughput, it is quite risky because of the high dependence on a few single ship-owners. In fact, in the port already exists a *quasi-monopoly market organisation* that determined a dramatic reduction of the number of users; this because of both the better conditions offered by Co.Na.Te.Co to its shareholders and the risks of disseminating confidential information. No ship-owner is willing to share information concerning the cargo and its customers with a stevedoring company belonging to a competitor. In order to pursue this strategy a number of constraints have to be removed; particularly it is required to up-grade the infrastructures in order to facilitate the physical and economic access of the big deep-sea vessels.

As far as the feeder segment is concerned, the access to this market is strictly related to the economic transshipment approach which favours the concentration of huge volumes of traffic in large hub ports. On the other hand, it facilitates the access to the market to those ports that, although lacking large available areas or high amount of equipment, can however aspire to become terminal of the feeder connections gravitating around transshipment ports. In fact in terms of physical and economic accessibility, structural dimensions and operational efficiency, these services could be effectively performed by medium-sized port terminals capable of ensuring good flexibility levels.

The feeder segment in the port of Naples could be enhanced through strategies aimed at favouring its inclusion in the routes of the main feeder companies operating in the market and, above all, through co-operation agreements with the major multi-user transshipment hubs of the Mediterranean.

A further growth opportunity for the O/D traffic is represented by the European policy on Short Sea Shipping trough the financial support to the infrastructural projects of the port Industry. Within this framework the position of the port of Naples is particularly favourable to supply short-sea shipping services with other European countries, such as France and Spain, and with the main islands.

Moreover, horizontal and vertical agreements among port operators and other actors involved in the transport chain would enable to carry out smooth transport and logistics services, imposing the *door-to-door* approach. A new competitive prospect is then outlined where the competition will take place among logistic networks rather than individual ports.

In conclusion, any port strategic choice will be successfully accomplished only if there will be a common strategic view between the Port Authority and all the others port actors. A shared and long-term growth strategy requires an entrepreneurial culture open to accept changes and prepared to face the complexity of the competitive environ-

ment. Exactly this seems to be the main weakness of the entrepreneurs operating in the port of Naples, being characterised by a very low attitude to invest and an orientation to defend their own weak niche position.

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Strateški položaj i opcije razvoja luke Napulj na Sredozemnom tržištu kontejnerskoga linijskog prijevoza

Sažetak

Ovaj rad ima za cilj raščlambu konkurentnosti luke Napulj u okviru razvoja kontejnerskog prijevoza u Sredozemlju, uzimajući u obzir i novija velika ulaganja u infrastrukturu koja je zajednički poduzela lučka uprava s nekim privatnim subjektima. U tome cilju, u prvome se dijelu, koji je metodološke naravi, utvrđuju kriteriji za utvrđivanje konkurencijskoga konteksta. Potom se raščlanjuju kakvoća i količina prometnih veza koje gravitiraju prema Sredozemnom tržištu, a u svezi s prekoceanskim servisima istok-zapad i feeder-servisom te se ujedno procjenjuje tržišni udio napuljske luke na tržištima koja su predmetom istraživanja. U trećem se dijelu predlaže prepoznavanje glavnih činitelja ponude koji mogu utjecati na položaj neke luke i utvrđivanje mjere u kojoj su objekti napuljske luke povezani s pretežitim standardima na Sredozemnom tržištu. U posljednjem se dijelu razmatraju brojne strateške opcije. Glavni rezultati pokazuju kako su najznačajnije mogućnosti razvoja luke povezane sa funkcijom provoza i kratkom plovidbom, uvjetovano poboljšanjem organizacijske i infrastrukturne mreže. Aktualni lučki strateški izbori koji gravitiraju prema razvijanju prekrajne djelatnosti pokazuju izvjesnu rizičnost, a s druge strane se njihov doprinos ukupnoj dodanoj vrijednosti ne čini znatnim. Na koncu se primjećuje da poduzetnička kultura napuljskih brodara ne odgovara u dovoljnoj mjeri promjenama koje su u tijeku.

Ključne riječi: strateško pozicioniranje, kontejnerska linijska plovidba, Sredozemlje, Luka Napulj

Posizionamento strategico e opzioni di sviluppo del porto di Napoli nel mercato dei servizi di linea containerizzati del Mediterraneo

Sommario

Il presente lavoro ha come obiettivo quello di analizzare la competitività del porto di Napoli nello scenario evolutivo dei traffici containerizzati del Mediterraneo, anche in considerazione dei recenti massicci investimenti infrastrutturali realizzati congiuntamente dall'Autorità Portuale e da alcuni operatori privati. A tale fine, la prima parte, di carattere metodologico, definisce i criteri per la delimitazione del contesto competitivo. Successivamente viene sviluppata un'analisi quali-quantitative delle relazioni di traffico gravitanti sul mercato mediterraneo con riferimento ai servizi oceanici est-ovest ed ai servizi di feederaggio e viene altresì valutata la quota di mercato del porto napoletano nei segmenti di mercato oggetto di indagine. La terza parte si propone di individuare i principali fattori dell'offerta in grado di influenzare il posizionamento di un porto e verificare in che misura le strutture dello scalo partenopeo siano allineate ai prevalenti standard di mercato nel Mediterraneo. L'ultima parte sviluppa una serie di considerazioni sulle opzioni strategiche. I principali risultati evidenziano come le più significative opportunità di sviluppo del porto siano legate alla funzione di transito ed allo short sea shipping, a condizione di migliorare il network organizzativo e infrastrutturale. Le attuali scelte strategiche del porto tese allo sviluppo del transhipment, si presentano alquanto rischiose e, d'altra parte non sembrano contribuire significativamente al valore aggiunto complessivo. Un'ultima notazione riguarda la cultura imprenditoriale degli operatori partenopei che non sembra sufficientemente adeguata a far fronte ai cambiamenti in atto.

Parole chiave: posizionamento strategico, servizi di linea containerizzati, Mediterraneo, Porto di Napoli