

# Cruise Seaports Networks: Key Relationship Indicators and Information Systems\*

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## ABSTRACT

The aim of this work is to investigate how information on cruise passenger flows are managed in the seaport system. In particular, the paper aims to understand how in the seaport system, characterized by landlord model, the Port Authority (PA) can play its function of controller and coordinator of the whole cruise relationships network when the cruise activity is contracted out to private operator, like as the cruise terminal concessionary companies. So, the analysis is focused on the relationships among the PA, the cruise terminal concessionary company and the ship agents, that are directly involved in the passengers flows information management process (collection, elaboration and reporting). The knowledge of these information is relevant to assume strategic and operative decisions on the port infrastructure investments in order to be more attractive. The passengers flow is in fact directly connected to the port financial autonomy.

Moreover the paper marks how to different port governance models could match different information systems among the main actors of a seaport system. For this reason we focus on the role played by the information systems, then we identify the mechanisms of coordination and control that govern these relationships.

This is an explorative study conducted through a qualitative approach, using case study methodology. The first results show how the use of key relationship indicators could help the PA to exercise control and coordination functions, assigned by the law.

**Key words:** relational governance, Port Authorities, cruise terminal concessionaries, ownership structures, key relationship indicators, control and information systems.

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\* Although the article is the result of a joint work, sections 2, 3, 4 and 5 are ascribed to Assunta Di Vaio, while sections 1 and 6 are attributed to both authors.

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## 1. Introduction

Over the last twenty years, despite many industries, including tourism, have been affected by the global economic crisis, the cruise industry does not seem to have registered declines.<sup>1</sup> The capacity of beds offered, the reposition from elite segments to mass markets and the involvement of the cruise companies operating in the maritime stations, as capital shareholders, are some of the factors that have encouraged this growth.

These factors associated with a specific pricing policy have led to the growth of international cruises<sup>2</sup> demand to 93%<sup>3</sup> from 2000 to 2010 and North America still remains the first demanding area, followed by Europe as second.

Mediterranean ports, particularly Barcelona, Civitavecchia, Venice, Palma de Majorca, Piraeus, Naples, Livorno, Savona and Genoa,<sup>4</sup> have played an important role in the traffic distribution.

In this scenario, the guidelines of World Bank<sup>5</sup> and UNCTAD,<sup>6</sup> aimed at improving the efficiency of port infrastructures, brought to a reorganization of functions and responsibilities in the port system. Therefore, considering as variables of analysis, the “ownership” and “management” of the areas and port facilities, it is possible to identify different port models, such as “service ports” and “private ports”. The first occurs when the ownership of infrastructures and superstructures, the management of the docks and the decisions about service delivery arrangements are

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1 For more on the growth of cruise industry please refer to World Travel & Tourism Council (2010). Progress and Priorities 2009-10. World Travel & Tourism Council Editor, London, pp 6-13. UNWTO (2008), Turismo de Cruceros. Situación actual y tendencias. World Tourism Organization Editor, Madrid; UNWTO (2003). Worldwide Cruise Ship Activity. World Tourism Organization Editor, Madrid; Hobson J. S. P. (1993). Analysis of the US Cruise Line Industry. *Tourism Management*. 14 (4), pp. 453-462; Cartwright, R. and Baird, C. (1999). The development and growth of the cruise Industry. Oxford: Butterworth-Heinemann; Dickinson, B. and Vladimir, A. (2008). Selling the Sea: an inside look at the Cruise Industry (2nd ed.). Hoboken, JohnWiley & Sons Inc, New Jersey.

2 Wild, G.P. and Dearing, J. (2000). Development of and prospects for cruising. *Maritime Policy & Management*, Routledge, London, vol. 27 (4), pp. 315-333.

3 On the development of international demand of cruise see European Cruise Council (2011), Contribution of cruise tourism to the Economies of Europe, G.P. Wild (International) Limited and Business Research & Economic Advisors, p. 8; European Cruise Council (2010). 2010/2011 Report. Grow, develop, innovate, build, protect, health, people, communities, responsible, safe, environment, enjoyment, holidays. Ashcroft & Associates Ltd, London, p. 15.

4 As referenced by European Cruise Council (2010). Contribution of cruise tourism to the Economies of Europe. G.P. Wild (International) Limited and Business Research & Economic Advisors, p. 9.

5 World Bank (2007). Alternative port management structures and ownership models – Module 3 – Port reform toolkit (2<sup>nd</sup> Edition).

6 UNCTAD (1992). Development and improvement of ports. The principles of modern port management and organization. Report by the UNCTAD secretariat. TD/B/C.4/AC.7/13.

under a public entity's responsibility (such as Ministry, Maritime Authority or Port Authority), while the second occurs when the properties of the structures, as well as the other relevant functions, are contracted out to a private company. Between these two organizational models, as evidenced by some scholars,<sup>7</sup> we can observe hybrid organizational forms, like the "landlord ports" model.<sup>8</sup> In this case the Port Authority (PA) provides the infrastructure, while investments in superstructure (equipment, port facilities and so on) and port operations are contracted out to private operators.<sup>9</sup>

In the "landlord" model, featuring most of the countries, cruise companies have found the possibility to develop a system of relationships with the port institutions. Long-term relationships between port institutions and cruise companies are not strictly related to the acquisition of capital shares. But it is not uncommon to see ports where the management of maritime stations have been contracted out to concessionary companies, whose ownership is shared between cruise companies and the PA, or other cases in which the ownership is completely private, generally the cruise companies. These concession agreements usually contain a clause that binds the parties to increase the traffic flows.

In Italy these public and private partnerships between Port Authorities (PAs) and cruise companies have been favoured by legislator that considers the maritime stations as "services of general interest".<sup>10</sup> The ports reordering law n.84/94, establishing the impossibility for PA to delivery directly the port services led to a significantly growth of those public-private partnerships (PPP), where the PAs have "policy, planning, coordination, promotion, monitoring and control of port operations and commercial and industrial activities" (see Law n.84/94 and the following modifications) and the cruise companies manage the terminal infrastructures.

At the heart of this relationship, the PA is a governmental public authority, whose degree of autonomy is under a long debate, because although its administrative autonomy was established by law since 1994. Nowadays, after about twenty years

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7 As referenced by Baird A. (1995). Privatisation of trust ports in the United Kingdom: review and analysis of the first sales. *Transport Policy* 2, pp. 135-143; Liu Z. (1995). Ownership and productive efficiency: the experience of British ports. In J. McConville , J. Sheldrake , *Transport in Transition: Management*, 17 (3), pp. 221-234.

8 As referenced by World Bank (2007). Alternative port management structures and ownership models – Module 3 – Port reform toolkit (2<sup>nd</sup> Edition).

9 The Port Authority, as indicated in art. 7 (paragraph 2, the Unified Text on Ports 21.12.2010) amending Article. Law 6 of January 28, 1994, n. 84, is a not economic nationally relevant public agency ruled by special laws, with administrative, organizational, financial and budgetary autonomy. The paragraph 1 of article 7 indicates its functions that are: guidance, planning, coordination, regulation, promotion and control of port operations (listed at Article 16, paragraph 1) and other commercial and industrial activities taking place in ports, with powers of regulations and ordinances.

10 Article 6, paragraph 1, letter c) of the Act on January 28 1994, n. 84; Ministerial Decree November 14, 1994, published on G.U. November 24, 1994 n. 275.

and many other laws, the process has been left undone.

The question became more complicated with the involvement of private operators in the port activities management, because PA's decisional autonomy ("subjective") could be reduced by the necessity to share decisions about port organization, strategy and management with the cruise companies, but at the same time the partnership with private operators could increase the efficiency of the port. Moreover the private investments could increase the financial and economic autonomy ("objective") of PA, reducing its dependence by central government financial resources.

If the PA decided to contract out completely the management activities to cruise companies, conflicts of interest, information asymmetries and opportunistic behaviours could arise. In this case the PA could see compromised its function of "promotion"<sup>11</sup> (Art. 6 Law 84/94). The development of cruise traffic flows would be so guided by the interests of cruise companies that are potentially in conflict and could threaten the public interest, thereby undermining the necessary conditions for the existence of PAs, including the traffic flows and consequently the financial resources.<sup>12</sup>

In this context, the objective of this work is to investigate the system of relationship that connects the main players involved in the management of information on cruise passengers flows and the way they share information on the cruise traffic flows. In particular, we focus on the information management process, that consists of data collection, elaboration and internal and external reporting. The paper also sets the goal to identify the coordination mechanisms and the possible indicators for monitoring the relationship among the PA, cruise terminal concessionary company and any other entities that contribute to the process of managing information on traffic flows.

In order to achieve this objective we used the case studies methodology. The paper is organized as follows: Section 2 the coordination and control in the relationship between PAs and the cruise terminal companies. The key relationship indicators are discussed in the Section 3. Subsequently, Section 4 describes sample and data collection. Results and conclusions are drawn in Sections 5 and 6 respectively.

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11 For more on the promotion role played by PAs please refer to Di Vaio, A. and Pisano, S. (2011). The role of Information Systems in the Port Authority's promotion activities. In D'Atri A., Te'eni D., De Marco M. (Editors), *Information Systems: a crossroads for organization, management, accounting and engineering*. itAIS: The Italian Association for Information Systems, Springer, pp. 1-8.

12 The objective autonomy is here intended as the PA's ability to sustain itself with autonomous resources that consist of the revenues that gets from traffic flows, without being dependent on central government financial resources.

## 2. PAs and cruise terminals: coordination and control in the relationship systems

Within the system of relations, designed by norms on port activities, it seems interesting to focus the analysis on the relationship between the PA and the concessionaires of the cruise terminal.

The management of this relationship in order to improve port traffic flows and performances requires the adoption of different mechanisms of cooperation and control. Indeed, the private parties involved could adopt opportunistic behaviours that contrast with the goals cited above.

The interests of the public authority and the private entity could diverge at public interest expense. Moreover, the fact that the cruise companies are at the same time the end users of port infrastructures and, in some cases, also the owners and the managers of concessionary companies may arouse conflicts of interest.

The autonomy margins of any of them is regulated by contract. The decisions about infrastructures management should be aimed on one hand, at traffic increase, and on the other hand, at the rationalization of available economic resources. Indeed, the legislation lacks into defining how this relationship has to be governed.

The involvement of PA in the ownership of concessionary companies if, on one side, represents a control tool, on the other side, is not enough to guarantee the full control on the relationship.

In addition to the autonomy of the parties and to the clear separation of duties and responsibilities regulated by contract, the relationship between the PA and the cruise concessionary company is characterized by several interdependences related to the management of information about traffic flows.

The relationship between PA and the concessionary company is subjected to a system of constraints. Therefore it's interesting to analyze its assets, links, skills, functions and resources (Antonelli V., 2000: 31).<sup>13</sup>

Obviously the traffic flows, the prevalence of cruise on the ferry traffic and the large number of infrastructures dedicated to cruise industry increase the complexity of interdependencies and the related mechanisms of coordination.

One of the tool used by PAs to exercise its functions of controller and coordinator is the capital share acquisition of the cruise terminal concessionaires. Empirical studies<sup>14</sup> show cases where the cruise terminal concessionary companies'

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13 Please refer to Antonelli V. (2000). *Le relazioni trasversali tra aziende. Strutture e funzionamento*. Giappichelli Ed., Torino.

14 See the following contributions on the cruise terminal development and the ownership structure of

ownership is totally public, other cases where the ownership is mixed (public and private) and other cases where the ownership is in the hands of private companies, generally operating in the cruise industry. In Italy, there are ten port where the cruise infrastructures have been contracted out to private companies by a concession contract, while in five cruise destination ports the PAs directly manage the traffic flows.

The establishment of the concessionaires has been gradual over time and, as illustrated in table 1, we have an orientation to the PPP.

**Table 1.** Ownership structure of Italian cruise terminal concessionary companies in Italy - at 31/12/2011

Cruise terminal managed by concessionary companies	Ownership	
	Public	Private
ATI Comet Srl Messina (until to June 2011)		100,00%
GSA – Gruppo Servizi Associati (Bari Port)	-	100,00%
Roma Cruise Terminal Srl (Civitavecchia Port)		100,00%
Stazioni Marittime S.p.A. (Genoa Port)	15,22%	84,78%
Porto di Livorno 2000 Srl (Livorno Port)	100,00%	
Terminal Napoli S.p.A. (Naples Port)	5,00%	95,00%
Palacrociere of Savona (Savona Port)		100,0%
Trieste Terminal Passeggeri S.p.A. (Trieste Port)	40,00%	60,00%
Venezia Terminal Passeggeri S.p.A. (Venice Port)	2,60%	97,40%
Ravenna Terminal Passeggeri Srl (Ravenna Port)	4,00%	96,0%
La Spezia Cruise Facility Srl (La Spezia Port)		100,00%
Cruise terminals managed by Port Authorities		
Cagliari	100,00%	
Messina (from July 2011)	100,00%	
Olbia/Golfo Aranci/Porto Torres	100,00%	
Palermo	100,00%	
Piombino and Portoferraio	100,00%	

**Source:** relaboration by Di Vaio et al. (2011),<sup>15</sup> CCAA at 31/12/2011.

cruise concessionary companies in Italy: Di Vaio A., Medda F. R., Trujillo L. (2011). Public and Private Management and Efficiency Index of Cruise Terminals. *Maritime Transport: Opportunities and Threats in the post-crises world*”, *Proceedings of the Econship 2011 European Conference on Shipping, Intermodalism & Ports*”. Topic area: Cruise & Coastal shipping - University of Aegean, Department of shipping trade and transport, Chios, pp. 1-13; Di Vaio A. (2011). Il sistema informativo dei cruise terminal. Metallo C. (edit by) “L’evoluzione dei sistemi informativi: un’analisi nei contesti information-intensive” - Aracne Ed., Roma, pp. 107-127; Di Vaio A., Medda F., Trujillo L. (2011). An Analysis of the Efficiency of Italian Cruise Terminals. *International Journal of Transport Economics*. (18), pp. 29-46.

- 15 Di Vaio A., Medda F. R., Trujillo L. (2011). Public and Private Management and Efficiency Index of Cruise Terminals. *Maritime Transport: Opportunities and Threats in the post-crises world Proceedings of the Econship 2011 European Conference on Shipping, Intermodalism & Ports*”. Topic area: Cruise

In particular,<sup>16</sup> *Stazioni Marittime SpA*, in Genoa was established in 1987. It operates in five terminals, where two of them are dedicated to cruise traffic. In this structure, in addition to the PA (which holds just over 10% of capital share), there are other companies such as *Finporto Genova SpA* (shares over 23%) and *Grandi Navi Veloci* (owns the 32%). A share of 2.44% is owned by *Tirrenia di Navigazione SpA*. *Stazioni Marittime SpA* manages mainly ferry traffic, while cruise traffic is just 14%. Moreover cruise companies are directly and indirectly (i.e. through an ancillary company) the shareholders of the concessionary companies. For instance, *MSC Crociere SpA*, owns through the *Marinvest Srl* 13,23% of the terminal, whereas *Costa Crociere SpA* owns about the 6%.

*Venezia Terminal Passeggeri SpA* (VTP), in Venice was established in 1997. It manages several infrastructures: terminals n. 103, n. 107/108, n. 117, San Basilio, Isonzo 1, Isonzo 2 and Riva Sette Martiri for cruise traffic and for ferry flows. The concessionaire is a public/private partnership, where the capital of some private companies is held by public companies (for instance *APV Investimenti SpA* is completely owned by Venice Port Authority).

*Terminal Napoli SpA* (TN) was established in 1999. Initially the ownership of the structure was in the hands of six private companies. Afterwards, in 2001 the concessionary company's capital share was owned by only two private companies. In 2003 the PA of Naples acquired 5% of the capital share. From 2004 to 2010 the concessionary company of TN is owned by the following cruise companies: *Costa Crociere SpA* with 20% of the total share, *Royal Caribbean Ltd* with 20% and *MSC Cruises SpA* with 5%, respectively. MSC also participates with its holding company (*Marinvest Srl*), which owns 20% of the capital. TN manages the maritime station which covers an area of 1100 square meters and 7 berths. The infrastructure is mostly dedicated to cruise traffic.

*Bari Porto Mediterraneo srl* operate since 2005 and is dedicated to ferry and cruise traffic. The Bari Porto Mediterraneo Srl was created in 2004 by the PA of Bari, which was the only shareholder of the concessionary company. Since 2005 the concessionary company is owned 35% by public shareholders (including the PA of Bari) and 65% by private shareholders. However, the concessionaire has been

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& Coastal shipping - University of Aegean, Department of shipping trade and transport, Chios, pp. 1-13.

16 Please refer to Di Vaio A. (2011). Il sistema informativo dei cruise terminal. Metallo C. (edit by) "L'evoluzione dei sistemi informativi: un'analisi nei contesti information-intensive" - Aracne Ed., Roma, pp. 107-127.

declared unconstitutional by the State Council on 30th July 2009. The management of San Vito's (ferries terminal) and the Cruise Terminal's maritime stations has been contracted out by concession to another private firm (GSA – Group Services Associates).

*Trieste Terminal Passeggeri SpA* in the past was completely owned by the PA of Trieste, that in 2010 sold the 60% of its shares to a consortium constituted by Unicredit Corporate Banking, Assicurazioni Generali, Costa Crociere SpA, Giuliana Bunkeraggi and Reguardia.

In 2004 in Port of Ravenna, although the terminal infrastructures were still not present, ferries and cruise traffic flows started to be managed by a new company, *T. & C. - Traghetto e Crociere s.u.r.l.* till 2008. In 2009, through a public and private partnership, *Ravenna Terminal Passeggeri SpA* (RTP) was established to manage the Ravenna port. Among the shareholders there are a cruise company (*Royal Caribbean Ltd*) and a cruise concessionary company (VTP).

*Roma Cruise Terminal Srl* was established in 2004, but it started to run his business in 2007. The ownership structure of the concessionary company is in the hands of three private companies. In particular, *Costa Crociere SpA* and *Royal Caribbean* hold 33.33% of the share equity, respectively, and *Marinvest Ltd* (the financial holding of *MSC Crociere SpA*) owns the remaining part of the equity.

Then there are cases in which the concessionary company is in the hands of public players.

*Porto di Livorno 2000 srl* started to operate in 1997 under the control of PA of Livorno (73%) and the Chamber of Commerce of Livorno, as shareholders. The concessionaire manages several terminals and berths. The infrastructure is mainly dedicated to the ferry traffic; since 2009 the port has a dedicated infrastructure to accommodate cruise traffic for boarding and disembarking. In this port the cruise flow, although in recent years showing an upward trend, appears to be fairly low in relation to handled passengers.

Finally, in 2004-2006 other concessionaires took place as *La Spezia Cruise Facility srl* and *ATI Comet srl* in Messina, whose concession expired in July 2011 is now managed by the PA.

As shown in Table 2 the role of companies in the cruise terminal management is significant. In particular, we can observe that *Costa Crociere SpA*, as well as *MSC Cruises*, controls many terminals located on the Tyrrhenian Sea. While



*MSC Crociere SpA* exercises its control directly or indirectly (through its holding company) in Naples, Genoa and Civitavecchia ports, *Costa Crociere* is in the ownership structure of Savona, Civitavecchia, Naples and Genoa ports.

**Table 2.** Controlling shares of the cruise companies in the Italian cruise concessionary companies' equity – 31/12/2011

	CRUISE COMPANIES		
	Costa Crociere SpA	MSC Crociere SpA	Royal Caribbean Ltd
EQUITY SHARES OWNED	Palacrociere in Savona (100,00%)		
	Roma Cruise Terminal Srl in Civitavecchia (33,33%)	Roma Cruise Terminal Srl in Civitavecchia (33,33%)	Roma Cruise Terminal Srl in Civitavecchia (33,33%)
	Terminal Napoli SpA in Naples (20,00%)	Terminal Napoli SpA in Naples (5,00%), (20,00% by Marininvest srl)	Terminal Napoli SpA in Naples (20,00%)
	Stazioni Marittime SpA in Genoa (5,91%)	Stazioni Marittime SpA in Genoa (13,23% by Marininvest Srl)	
	Trieste Terminal Passeggeri SpA in Trieste (29,00%)		Ravenna Terminal Passeggeri srl (24,00%)

**Source:** Chamber of Commerce at 31/12/2011 of the concessionary companies.

In this way, if on one side the cruise companies, as shareholders of the concessionary companies, guarantee traffic flows to ports, on the other side they control the traffic flows.

Moreover, the competition among the major players in the cruise market increase a lot, in particular if we considered the acquisition of terminal companies' capital shares. At the same time, potential conflicts of interest related to their role as shareholders can arise.

So, the management of cruise terminal could create potential conflicts of interest between public and private entities, so if on one hand it's necessary to implement engineering controls to protect the public interest, on the other there is a need of rationalization of terminal<sup>17</sup> activities.

In this perspective, the study on Italian cruise ports has showed that the PAs have traditional forms of control on the concessionary companies.

According to *Contribution of cruise tourism to the Economies of Europe* (2010),<sup>18</sup> Naples e Livorno are the main transit port in the Mediterranean area, while

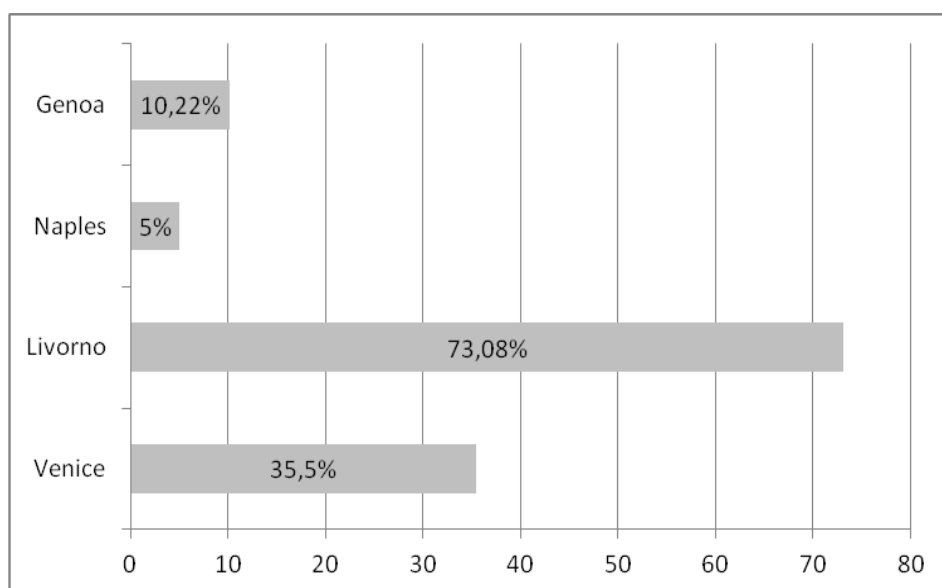
17 For more on the possible conflicts arising from separation between property and control please refer to Fama and Jensen (1983); Gedajlovic (1993).

18 European Cruise Council (2010). *Contribution of cruise tourism to the Economies of Europe*. G.P.

Venice and Civitavecchia are the main home ports. In these ports there are different kinds of control by PAs.

The figure 1 illustrates that the Naples Port Authority owns only the 5% of the equity in the concessionary company and the 95% is owned by private operators, where three of them are cruise companies (see table 2).

In the concessionary companies of Livorno and Venice there is the direct and indirect participation to equity by PAs.



Source: Chamber of Commerce at 31/12/2011.

Figure 1. The PAs' shares in the concessionary companies - at 31/12/2011

These forms of control appear to be “weak” for the timeliness and reliability of the information management on cruise flows data.

Therefore, it would be possible to use process indicators of the cruise relationship system, that could allow to PA to control information on cruise passengers flows, that is essential to play the “promotion” function and in general to adopt strategy on port development.

### 3. Key relationship indicators in the cruise passenger flows management

The governance functions of the relationship between PA and concessionary company should strive to respect the guide line of the concession contract. However, although there is a contract regulating the relationship between “public” subject (PA) and “private” subject (concessionary company), some conditions can threaten the good functioning of this relationship (e.g. information asymmetries, that affect particularly the cruise flows information management process).

Moreover, in this process it's important to consider also the relationship between the concessionaire and the ship agent, that is the first subject to manage information. In fact, he collects data related with passengers and ships, then transfers them to the cruise terminal concessionary company. The accuracy in these activities is essential to avoid information asymmetries and mistakes.<sup>19</sup>

According to several organizational studies, the contract is the main regulation tool within the relational systems and induces firms to behave correctly in order to improve performance.

However, in these cases it is not enough to govern the relationship among the players, but needs to be supported by other coordination and control tools.

In our study we can observe a critical variable of the partnership: the internal and external reporting of cruise passenger flows data, after these have been elaborated.

So the knowledge of some elements (i.e. information, language codes, the software) becomes a critical factor of the relationship (Mancini D., 2010: 53, 67 and 69).<sup>20</sup>

According to Choe “the exchange of information [become] to ensure coordination and control of activities [among] firms”<sup>21</sup> it's important to understand “if and how” the control mechanism are useful to create a long relationship system.<sup>22</sup> According to Dekker (2004: 29-32)<sup>23</sup> the control into *Inter Organizational Relationship*

19 For more on information systems please refer to Marchi L. (1993). I sistemi informativi aziendali. Giuffrè Ed. Milano.

20 Mancini D. (2010). Il sistema informativo e di controllo relazionale per il governo della rete di relazioni collaborative d'azienda. Giuffrè Ed. Milano.

21 Choe, J.M. (2008). Inter-organizational relationships and the flow of information through value chains. *Information & Management*. No. 45, pp. 444–450.

22 Mouritsen J., Hansen, A., Hansen C. (2001). Inter-organizational competencies: episodes around target cost management/functional analysis and open-book accounting. *Management accounting research*. Vol. 12 (2), pp. 221-244.

23 Dekker, H. C. (2004). Control of inter-organizational relationships: evidence on appropriation concerns and coordination requirements. *Accounting, Organizations and Society*. Vol. 29 (1), pp. 27-49.

has the role to motivate the partners to assume “performance oriented” behaviors and to coordinate the input-output information process within the relationship.

In this context the control system should motivate the partners to assume behaviors oriented to increase the traffic flows.

The focus is on the management of the cruise passenger information flows within the partnership.

Therefore, regarding the behaviors (control dimension) we analyze the control/coordination mechanisms. In particular, we consider the rules, the operation standard praxis, scheduling (ex-ante control mechanisms) and reporting tools (ex-post control mechanisms).<sup>24</sup>

Besides contract and trust, we investigate also the *information and communication system* that should allow to partners (PAs, concessionary companies and ship agents) to access and manage information on cruise passengers flows. Among them we find traditional tools, like telephone, fax, letters, meeting and innovative tools such as email, blog, video-conference, intra-net, internet.

However these tools are not enough to control the relationships and it could be useful to identify a “key relationship indicators map”. These *indicators* allow us to identify the determinants of the cost process. In this way, we can analyze the control “into” relationship and not the control “of the” relationship and its reflection on performance, which is outside our field of inquiry.

Therefore, the main dimension of the “efficiency relationship process” is the compliance of the transfer times among partners and the its knowledge gives to *cruise port management* information about reliability of the partners.

It’s necessary divided the cruise passengers flows management in three steps:

1. data capture;
2. processing;
3. reporting.

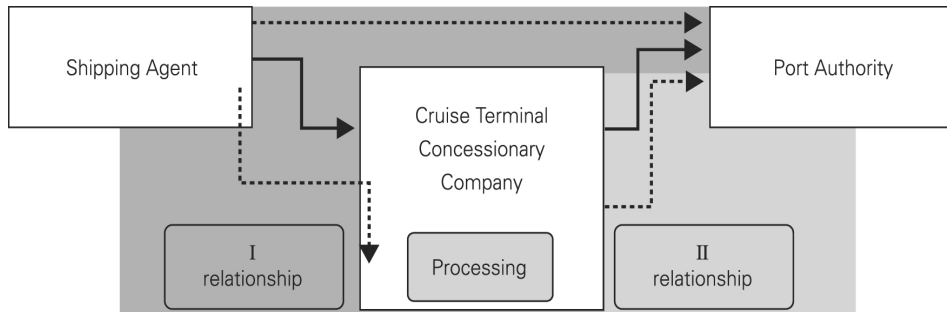
In the first phase, the cruise terminal’s concessionary company collects data on passengers and ships flows from ship agent; then, in the second step the data are processed and finally the information are transferred to board of the concessionary company (*internal reporting*) and to PA (*external reporting*).

In this process it is possible to identify two relationships: the relationship between the cruise terminal concessionary company and ship agent (or directly the ship-owner) and the relationship between the concessionaire and the PA (Fig. 2). In

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24 On the relationship between control process and its tools see Mancini D. (2010). Il sistema informativo e di controllo relazionale per il governo della rete di relazioni collaborative d’azienda. Giuffrè Ed. Milano; Smith K. G., Carroll S. J., Ashford S. J. (1995). Intra-and interorganizational cooperation: toward a research agenda. *Academy of Management Journal*. Vol 38, n. 1, pp. 7-23.

particular, within the first relationship, the ship agent sends the traffic data to concessionary company and directly to PA, when the berths are managed directly by PA. In the second phase, the concessionaire elaborates the traffic data that became information to support the internal and external decisions, so they're transferred to the board of the concessionary company (internal reporting) and to PA (external reporting).



**Figure 2.** Relationships System of the information passengers flows management

*Relationship key:*

- Direct relations to send data traffic
- ..... Direct relations to urge data traffic

In the relationships system we observe the sequential interdependencies for which the appropriate coordination mechanisms are the time planning and the standardized processes (Grandori A., 1999: 324 and 325).<sup>25</sup>

However, without a technical integration of the information system used among the players, like as a software shared, we can consider the “direct contacts” among the actors as horizontal links and coordination tools.<sup>26</sup>

The table 3 illustrates the *key relationship indicators* of the relationship system.

25 Grandori A. (1999). *Organizzazione e comportamento economico*. Il Mulino Ed. Milano.

26 Bensaou, M. and Venkatraman, N. (1995). Configurations of Interorganizational Relationships: A Comparison between U.S. and Japanese Automakers. *Management Science*. Vol. 41 (9), pp. 1471-1492.

**Table 3.** Key relationship indicator among Ship Agent, Cruise Concessionary Company and PA

Key relationship indicators	The relationship	Meaning
[1] No. traffic notices in delay/Total number of the month berths	Between cruise terminal concessionary company and ship agent	The indicator measures the reliability of the ship agent's communications to cruise concessionary company
[2] No. traffic notices in delay/ Total number of traffic at $t_1$	Between cruise terminal concessionary company and PA	The indicator measures the reliability of the cruise terminal with respect to the information transfer time established in the concession contract
[3] No. traffic notices to get back/No. work time to get back information at $t_1$	Between cruise terminal concessionary company and ship agent	The index measures the risk relationship, that is the possibility that the ship agent behavior, like as the theft of information, may adversely affect the reciprocity condition between the two players.
	Between cruise terminal concessionary company and PA	The index measures the risk relationship, that is the possibility that the concessionary company behavior, like as the theft of information, may adversely affect the reciprocity condition between the two players.
[4] No. of information managed in delay/Hours number of repair service on shared software	Among cruise terminal concessionary company, ship agent and PA	The index measures the availability of information in the system of relations.

As shown in table 3, the key indicator no. [1] notes the speed of the ship agent in carrying out his communication obliges on the effective number of passengers and ships.<sup>27</sup>

The value of the key indicator may vary from 0 to 1. If it is less than 1, it signs the unreliability of the ship agent, otherwise a value greater than 1 may indicate an inaccuracy in the berth plan of the concessionary company.

It is possible to associate this indicator to the dispersion cost of resources, such as hours of work used to get the information.

However, this indicator should be integrated with timing indicators, such as the “average response time” and the “reminders percentage”.

Furthermore, we can change the denominator of no. [1] indicator in order to obtain information on the relationship between cruise terminal concessionary company and PA. Therefore, we have the [2] no. notices in traffic delay /Total number of traffic at  $t_1$ .

This key indicator must be equal to 1. As to [1], when the indicator is different from 1 it signs a distortion in the process of data management.

<sup>27</sup> On the relationship between trust and uncertainty see Axelrod, R. (1984). *The Evolution of Cooperation*. Basic, New York; Ouchi, W. (1980). *Markets, Bureaucracies, and Clans*. *Administrative Science Quarterly*. Vol. 25, pp 129-141.

In particular, if the PA contract out only some berths to the concessionary company, the indicator does not allow to have an integral, complete and immediate vision of the cruise passenger flows handled in that moment and to account them.

Finally, the [1] and the [2] could be supported by information resulting from the indicator [3].

This indicator measures the efficiency of data collection process that is the number of information retrieved in a well-defined time. This index is related to the number of traffic notices in delay.

Obviously the number and the type of indicators may vary according to the research questions.

The key relationship are particularly useful to manage information within networks when an technical “integrated” information system, such as shared software,<sup>28</sup> has been not implemented.

In this case, it is possible to use other key relationship indicators that measures the efficiency of the technical integrated information system. Indeed, as the table 3 shows, the index [4] measures the availability of information.

Any inefficiency in solving technical problems will be reflected on the cost of server service.

## 4. Sample and data collection

The research has been conducted through the case study methodology.

The study has been focused on the Italian territory, where, since 1994 ports started a process of infrastructures specialization towards cruise or container industry. However only from 2005 we assist, particularly in cruise industry, to the growth of the number of concessions agreements on behalf of private firms.

The criteria that have been followed for the selection of case studies are:

1. the relevance of passengers flows handled by concessionary cruise terminal company;
2. the ownership structure of companies to which the management of infrastructure has been contracted out;
3. the stability of ownership structure.

The concessionary companies selected were:

- *Venezia Terminal Passeggeri SpA* (VTP) and *Porto di Livorno 2000 Srl* (Livorno 2000), home and transit ports respectively, whose ownership can be

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28 Bensaou M. and Venkatraman N. (1996). Inter-organizational relationship and information technology: A conceptual synthesis and a research framework. *European Journal of Information Systems*. Vol. 5, pp 84-91.

assimilated to a *Public governance model*. In particular, from the ownership structure analysis results that these companies though their juridical status is private, they are mostly or completely owned by public entities. For example, one of the shareholders of VTP is *APV Investimenti SpA*, that is completely owned by the Venice Port Authority while the other private companies are owned by public subjects. The PA of Livorno is the main shareholder of Livorno 2000, while the remaining equity is owned by the Chamber of Commerce of Livorno, another public entity. The ownership structures of VTP and Livorno 2000 identify different organizational models according to the (direct or indirect) participation of PA to the ownership structure of cruise terminal companies.

– *Terminal Napoli SpA* (TN) and *Roma Cruise Terminal Srl* (RCT), *transit* and *home* ports respectively, whose ownership structure configures a *PRIVATE/public governance model* for TN and a *Private governance model* for RCT. TN is almost completely private owned (95%). The 45% of its equity is in the hand of cruise companies (*Costa Crociere SpA*, *MSC Crociere SpA* and *Royal Caribbean Ltd*) and the 20% is owned by *Marinvest Srl* (it is the financial holding of *MSC Crociere SpA*). The ownership of RCT, instead, is equally shared among two cruise companies (*Costa Crociere SpA* and *Royal Caribbean Ltd*) and *Marinvest Srl*.

To collect data for our study we conducted interviews and submitted semi-structured questionnaires to managers that handle and use data on passengers flows (accounting manager, commercial managers, general directors and the board).

The questionnaire was articulated in three sections, one for each phase of information management process (collection, elaboration and internal/external reporting). The questions were aimed at investigate the following aspects: the actors involved and the function they play; the nature and quantity of data elaborated; technologies used; the procedures employed; the frequency and timing of operations; the integration degree of information exchanged between the concessionary company and PA). The questionnaire has been submitted by phone to accounting and sales managers, while some CEO members have been face to face interviewed.

## 5. Results

VTP and Livorno 2000, whose ownership and management is “completely” public, present different degrees of automation of the several steps that characterize the passenger flow data management function.

VTP’s infrastructures are employed only for cruise flows, while the Livorno



2000's infrastructures are also used for ferries flows, operated by the same concessionary company.

In the first phase (I) VTP passengers flow data are collected by clients (ship agents or cruise companies) with the support of a general accounting software platform, named AS400 (IBM), in which the agent periodically leads the passengers flow data. The software interface enables the ship agent to enter data about services demand, number of transit passengers, number of home passengers (embark and disembark passengers) and other information related to the docking of ships (i.e. number of affected, name of ship, vessel size and so on). The data collected are used by VTP for invoicing (passengers, berths and so on) the services supplied to clients.

In the Livorno 2000 instead these data are received via email or fax and reported by employees in a software for management accounting. This program is used by the terminal company to invoice and apply the fares to the ship agent or cruise companies.

Then these collected data are elaborated. In this second phase (II) the software used by VTP allows a multi-access from its departments (administrative, technical, sales & marketing, operational, security). The software is also useful for statistical analysis concerning the flows of passengers and ships, however it is not able to link the data collected, relating to the passengers flow, to each VTP infrastructure (i.e. terminals n. 103, no. 107/108, no. 117, San Basilio 1 Isonzo and Riva Sette Martiri quay). As a result, this negatively impacts on the usefulness of these data for the support of VTP management decisional processes, because they are not able to measure the "performance" of each infrastructure. The software for management accounting of Livorno 2000 allows to extract some useful information, such as trends during time, incidences, average values and so on. In both terminal companies the collected data are substantially quantitative. After their elaboration, data on cruise passenger flows are transferred to cruise company management (internal reporting) and PA (external reporting) (phase III).

In VTP the internal reports are automatically generated and all information are transferred electronically. In Livorno 2000 instead managers export data from the software into excel sheets that transfer to the head office. Regarding the external reporting to the PA the two companies instead have a different degree of automation of their information systems. VTP transfers its data to Venice Port Authority through an integrated information system named Logis (Logistics Information System). The software is based on a document workflow system implemented by the PA that allows the transfer of statistics in real time and to have information on passengers flows any time the users need and without mistakes or incongruities. The system is also able to collect information on other sectors of the maritime industry. It is a

web-based application that, by using standard internet browser such as Internet Explorer and Mozilla Firefox allows accredited users (shipping agency, terminal operators, etc.) to send data online to all requiring offices (PAs, Police Offices and so on). To sum up, the implementation of this system allowed the informatization of all material data exchange processes between the PA and the other actors of the port, improving the quality of information flows and creating an integrated “seaport system”. Livorno 2000 instead monthly transfers its reports on excel spreadsheets via email or fax to PA. The data transferred are then aggregated to measure the total flow of cruise passengers in the seaport of Livorno. Unlike the VTP, Livorno 2000 has not implemented a program of integrated information system.

The information and communication processes, organizational and operational procedures and planning and control systems of TN and RCT, whose management is mostly or exclusively private, instead, have an almost similar level of automation.

TN’s infrastructures and RCT’s infrastructures are employed only for cruise flows.

In the first phase (data collection) the procedures and the degree of automation are mostly the same of the two previous cases.

In the second phase the data are processed and in RCT they are elaborated by an accounting software, while in TN the data are elaborated by the commercial department though excel spreadsheets.

In the third phase, the two cruise terminal concessionary companies follow different procedures. The TN commercial department transfers every month (via email) statistics reports to the General Director, the General Coordinator and the administrative manager, that subsequently transfer them to the Board. In RCT the General Director receives, monthly and through e mail, the statistics reports from accounting department. After the transfer of data on passenger flow, TN Board may assume only operative decisions on the optimization of cruise flows. The strategic decision on the traffic increase are assumed by other authorities (regions, municipalities) and the PA. RCT board instead is able to decide how to increase passenger flows and the productive capacity of the terminal.

With reference to data transfer to PA, both the concessionary companies employ the same procedures and the same automation tools. TN transfers (every month and via e mail) the statistic reports to the PA that aggregates data elaborated by the berths managed directly by the PA. These two terminals periodically transfer to PA’s administration also a list of values billed and payments received for the security rights. TN sends to PA also the accounting schedules.

We can observe that the information system on cruise passengers flow for these two cases is automatized, but it is not integrated.

## 6. Conclusions

This paper gives a contribution to existing literature on the cruise industry investigating and relating variables that other studies on these topic have still not enquire, as the control tools and coordination mechanisms into relational governance in the seaport systems. In particular, on the role that these play into the relationship among the main actors to cruise passenger flows information management.

The paper shows how to different *governance models* of the cruise terminal concessionary companies is associated a dissimilar degree of data technical integration among the players to manage the cruise passengers information.

In particular, when the concessionary company shareholders are mainly cruise companies, whose main interest is the growth of their own traffic, integrated information systems, that could allow data sharing between PA and cruise companies, seem to be not so indispensable. So if contracting out the cruise terminal infrastructures to cruise companies, on one side, guarantees to the ports certain embarking and disembarking passenger flows, that are more lucrative than transit passenger flows, on the other side, this choice can favor opportunistic behavioral assumptions from the private party to public party expenses. Of course, this phenomena, if it's not controlled by the public authority with specific tools, could have negative effects on the PA's financial autonomy. This could happen because the knowledge on traffic flows is a critical variable to assume decisions about the improvement of seaport system facilities in order to increase port traffic flows. The PA's revenues are in fact strictly related to passenger flows.

Moreover, the results of this analysis evidences how, through the participation as major shareholder to the concessionary company capital equity, like in VTP case, the PA can rationalize operational processes and adopt solutions that allow the control of information. In this way, the PA seems to perform better its function of public interest safeguard, avoiding to be captured by cruise companies or ship agents, as it happens in Naples and Civitavecchia ports. These situations can threat the independence of PAs, that is strictly related to the financial autonomy of PA.

However, this study shows also that the control and coordination tools used, like the participation to the concessionary companies' equity, are not sufficient to assure the relation governance. So, in this paper we suggested some key relationship indicators, that can help to govern these kind of relationships, because offer a measure of the relationship efficiency. In particular, the key relationship indicators may be helpful to PA to have a complete prospective of the cruise seaport system.

The implementation of a key relationship indicators system could facilitate PA in its controlling and coordinating activities.

Nevertheless, the share equity participation seems to be the strategic tool

used by PA to control the traffic flows, in order to link them to the territory rather than to one or more cruise companies' routes. PAs, in this way, can play better to their institutional role, creating network with public and private subjects without losing the control. It follows that the increase of traffic flows in this way would be not dependent by cruise companies strategies, that changing their routes could move their customers from a port to another, reducing the port revenues and consequently its financial autonomy.

Finally, these consideration are limited to the four cases investigated, and therefore cannot be extended to the whole universe or be considered as best practices. Future empirical developments will be extended to other Italian terminals and could have as aim the implementation of the key relationship indicators, here proposed, in the main seaport systems like Venice, Civitavecchia, Naples and Livorno.

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