

# Port Governance in Santos, Brazil: A Qualitative Approach

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**Abstract**—Given the importance of ports as links in the global supply chains and because they are key elements to induce competitiveness in their hinterlands, the number of studies devoted to port governance, management and operations has increased in the last decades. Some of these studies address the port governance model as an element to improve coordination among the actors of the port-logistics chain and to generate a better port performance. In this context, the present study analyzes the governance of Port of Santos through individual interviews with port managers, based on a conceptual model that considers the key dimensions associated with port governance. The results reinforce the usefulness of the applied model and highlight some existing improvement opportunities in the port studied.

**Keywords**—Port Governance, Model, Port of Santos, Managers' Perception.

## I. INTRODUCTION

PORTS are strategic nodes of global supply chains and key elements for development of the regions in which they are inserted. Due to its importance, in recent decades, the number of studies devoted to port management and operations has increased [1]. Part of these studies has addressed the ports as business agglomerations (clusters, chains and networks). This is an important approach since port performance is the result of activities performed by various actors of the port logistics chain, which need to be properly coordinated [2]. This coordination takes place through a port governance model, which should consider the existing governance structure, the established governance actions and the elements on which these actions are implemented [3], as well as the governance outcomes [4].

In 2012, the port of Santos occupied the 43rd position in the world ranking of container throughput with 2.7 million TEUs [5], the largest among Latin American ports. Moreover, in 2013, the port of Santos was responsible for 36.1% of the total container throughput in Brazil, with 3.22 million TEUs handled [6].

Given the existing relation between port governance and port performance, and considering the great importance of the

port of Santos for Brazilian port sector, this study aims to analyze the governance of the port of Santos from the perspective of port managers. The study follows a qualitative approach and it is based on a conceptual model that considers the key dimensions associated with port governance. The results of the study reinforce the usefulness of the considered model and highlight some existing improvement opportunities at the port of Santos.

## II. PORT GOVERNANCE MODEL

A port governance model should answer three questions: i) Who governs? ii) What is governed? And iii) How is it governed? These questions refer to three basic dimensions of a governance model: governance structure, governance elements and governance actions [3]. The first dimension refers to the institutional and regulatory framework existing in business cluster, the second is related to the actors belonging to the cluster and the associated logistics flows, and finally, the last are the mechanisms used to induce coordination. Besides that, a previous question can be asked (Why is it governed?), which refers to the governance outcomes [4]. The ultimate objective of port governance is to promote the port logistics chain performance, which is done through a port governance model [2], [7]-[10].

There are few port governance models in the literature, although just some of them deserve to be mentioned: i) the 'Matching Framework Model' [7], [8], [11]; ii) the 'Modular Port Governance Model' [9]; iii) the 'Port Authority Renaissance Model' [12]; and iv) the 'Port Governance Practices Model' [13].

The 'Matching Framework' [7], [8], [11] stands out among these models, since the 'Port Authority Renaissance Model' [12] is limited to the functions of the Port Authority, and the 'Port Governance Practices Model' [13] only examine the governance actions, which is referred by the authors as 'governance practices'. Therefore, both do not address the relationship between governance and performance broadly enough and have limited applicability.

Notwithstanding, it should be noted that even the 'Matching Framework Model' [7] and its subsequent adjustments [8], [11] have limitations [4]. The main ones are the following [4]: i) the governance outcomes are not sufficiently detailed; ii) a broader discussion about typology of governance actions and means of implementation is missing; iii) the aspects related to the actors of the port logistics chain and flows arising from the interaction of these actors are not covered; and iv) the models do not provide means of implementation in a port reform process.

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In addition to these port governance models, there are still some models of ownership and port management in the literature [14]. However, these models focus only on port structure and functions, and they do not address the relationship between port governance and performance.

In order to reduce the limitations perceived in the existing port governance models, Vieira, Kliemann Neto and Monfort-Mulinas [4] developed a new approach, based on the three dimensions of governance [3] and including an additional dimension: the governance outcomes. This fourth dimension refers to performance evaluation and identification of measures related to the port logistics chain governance. The conceptual framework of the model is presented in Fig. 1.

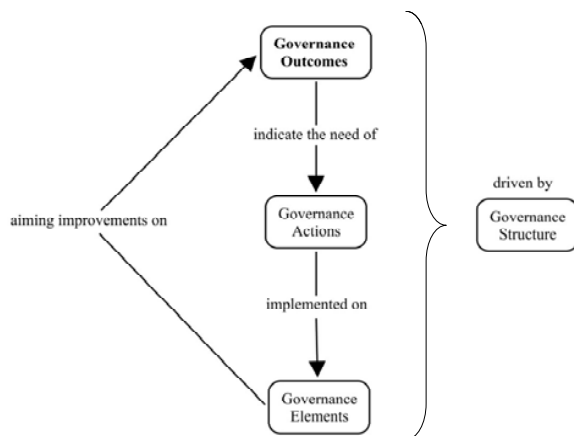


Fig. 1 Port governance model: conceptual framework [4]

The logic of this model is that the governance outcomes (why the port is governed) indicate the need for governance actions (how the port is governed) in order to increase the performance of the governance elements (what is governed), all driven by the existing governance structure (who governs). From the model, there is a comprehensive and structured logic to guide a port reform process, allowing adjustments in the existing governance model and helping to improve port performance.

In order to be considered adequate, the governance structure should provide a framework to facilitate the implementation of governance actions which allow actors and flows to be coordinated, generating an increase in the efficiency and effectiveness of the port logistics chain. Governance actions may vary, but the main initiatives are related to the quality in the port logistics chain, the information technologies used to integrate actors and flows, the training of actors within the port logistics chain and the management of port-city relationships [13].

There are three phases for the application of the model on a port reform process [4]: Phase 1 - pre-reform environment – diagnostic of port governance model; Phase 2 - port reform process – adjustments on port governance model; and Phase 3 - post-reform environment – new port governance achieved. Phases 1 and 3 are composed of three stages [4]: Stage 1 - managers' perception on port governance model; Stage 2 -

customers' perception on port governance model, and Stage 3 - port performance indicators. Finally, the stages of Phase 2 can vary widely depending on the existing ownership and port management models, and also on the policy issues involved in decisions about port governance at local and State levels.

These phases and stages can be considered as a framework to guide the port reform process. This process involves [11], [14]: i) the (re)definition of the roles and responsibilities of national and local public authorities in charge of the port sector, ii) the (re)definition of resources necessary to support each function and category of port services; and iii) the (re)definition of the roles of actors acting in the ports, in order to a better coordination of port operations.

### III. METHODOLOGICAL PROCEDURES

This article is a descriptive study with qualitative approach. The data collection was based on in-depth interviews with managers of the port of Santos. The following managers were interviewed: i) an Engineer of the Department of Planning of the Port Authority (Companhia Docas do Estado de São Paulo - CODESP), ii) the Superintendent of Strategic Planning of CODESP; iii) the Director of Commercial Development of CODESP; and iv) the President of CODESP.

A set of six open-ended questions was used, based on the later governance model proposed [4]. It should be emphasized that the present study focused on the step 1 of Phase 1 of the port governance model considered, generating elements that could potentially supply the following steps and phases.

The interviews started with an initial question, of introductory nature, aiming to assess the overall perception of the interviewee on the evolution of port governance. After that, the conceptual model and its dimensions (governance outcomes, structure, actions and elements) was presented to each interviewee followed by four key questions in order to identify how governance has evolved in that port regarding each model dimension. The interviews were rounded up with a final question in which what could (or should) change in the governance structure, actions and elements was assessed, in order to generate better outcomes.

Interviews lasted between 1:00 and 2:00 hours. Not all interviewees answered all questions, due to the specificity of their fields and to the very procedures of the interviews. However, all questions were answered by at least three interviewees, which allowed good understanding of each question studied (Fig. 2).

Interviewees	Questions					
	Q1	Q2	Q3	Q4	Q5	Q6
ES1	X	X	X	X	X	X
ES2	X	X	X	X	X	X
ES3	X	X		X	X	
ES4	X	X	X	X	X	X
Total	4	4	3	4	4	3

Fig. 2 Questions answered by each interviewee

Following the interviews, the contents were analyzed,

which identified the main characteristics of port governance, as well as possible opportunities for improvement.

#### IV. ANALYSIS AND RESULTS

This section presents an analysis of the governance model of the port of Santos from the perspective of port managers. The results of interviews conducted in Santos are presented. Questions are numbered Q1 to Q6 and interviewees are coded ES1 to ES4. The presentation of results follows the order of questions.

##### *A. Q1: General Perception on the Evolution of Port Governance*

All interviewees (ES1 to ES4) mentioned the new Port Law (Law N°. 12815 of June 5, 2013) when answering this question. Interviewees ES1 and ES2 stated that this law lacks a clear specification of the functions of the port authority. Interviewee ES2 added that the port authority itself has difficulty to clearly identify who the customers of the port are, which hinders the establishment of the mission and vision of the port in the context of strategic planning, which is in its early development stages.

Interviewee ES2 stated that the logistics coordination is under the responsibility of terminals, but mentioned that the port is working on a new road plan, aiming to improve the logic of cargo arrival at terminals and reduce queuing. However, the interviewee acknowledged that it is an incipient project and there is a shortage of information for the port authority to manage the logic of arrivals, since such information is concentrated in the terminals. On the other hand, interviewee ES2 stated that ship scheduling is under the responsibility of the port authority, except in the case of some private terminals.

Analyzing the content of the interviewees' answers, five main factors are identified: i) the existing legal framework (new Port Law); ii) lack of a clear definition of the functions of the port authority; iii) lack of coordination between the authority ports and terminals; iv) lack of strategic planning for the port, and v) the need to improve the logic of cargo arrival in the terminals.

Comparing the responses of managers of the ports of Valencia and Santos, there is the existence of a greater autonomy of the Port Authority in the former, which has its functions clearly established by the Port Law, and the existence of governance actions (creation and development of Fundación Valenciaport, Information and Communication Technologies, and Marca de Garantía). Besides these factors, the need for a better sequencing of arrival of vehicles at the port of Santos was also mentioned, in order to eliminate or minimize queuing, which does not exist in the port of Valencia.

##### *B. Q2: Evolution of Governance Structure*

With respect to governance structure, all interviewees (ES1 to ES4) mentioned the new Port Law and the Secretariat of Ports (SEP). Interviewee ES2 stated that the new Port Law generated a higher concentration, taking away CODESP

jurisdiction in lease processes, which became under the obligation of the Secretariat of Ports (SEP) and the National Agency of Waterway Transportation (ANTAQ). Interviewees ES1, ES3 and ES4 added that the new Port Law weakened the role of the port authority. According to interviewee ES4, the new law brought some uncertainties, such as: i) the leasing model; ii) the rates charged in terminals; iii) the approval of the Development and Port Zoning Plans (PDZs) by SEP and iv) the jurisdiction over some functions such as the monitoring and penalties for noncompliance. Interviewee ES4 added that the government, as grantor, should give more autonomy to the Docks on issues such as dredging, lease control and enforcement.

Interviewees ES1, ES2 and ES4 mentioned the PDZ as a key element in the formal relationship between SEP and port authorities. According to interviewee ES2, the PDZ is made by the Port Authority and approved by its Board of Directors, following SEP guidelines and submitted to the above-mentioned Secretariat for approval. Interviewees ES1 and ES2 stated that there were some delays in the approval of the last PDZ, and ES2 stressed that it is not being considered in the ongoing bidding. Therefore, it is an element that is not generating proper coordination of the port system.

Another aspect cited was the change of status of the Port Authority Council (CAP) from deliberative body to advisory body. All interviewees were in favor of the change, stating that Board often obstructed governance initiatives, due to different individual interests involved. Finally, interviewee ES4 mentioned that a closer relationship between the SEP and the Port Authority is required. Fig. 3 presents a summary of the main aspects of governance structure evidenced in interviews with CODESP managers.

Factors	Interviewees				Total
	ES1	ES2	ES3	ES4	
Brazilian Port Law	X	X	X	X	4
Secretariat of Ports (SEP)	X	X	X	X	4
Port Authority Council (CAP)	X	X	X	X	4
Plan of Development and Zoning (PDZ) of the port	X	X		X	3
National Agency for Waterway Transportation (ANTAQ)		X			1
Board of Directors of the Port Authority		X			1
<b>Total</b>	<b>4</b>	<b>6</b>	<b>3</b>	<b>4</b>	<b>17</b>

Fig. 3 Factors associated with the governance structure

The importance given to the Law of Ports and to SEP as a governance structure is clear. The participation of PDZ as an instrument of governance is also significant.

##### *C. Q3: Evolution of Governance Actions*

As for governance actions interviewees ES1 and ES2 cited: i) information systems for port logistics, such as the Electronic Data Superhighway (Superhighway) system by CODESP, the Port Data Concentrator (CDP) of the Port Without Paper (PSP) System and the IRS Siscomex Cargo; and ii) the National Commission of Port Authorities (CONAPORTOS), also cited by interviewee ES4.

Regarding the Superhighway system, interviewees ES1 and ES2 mentioned that this is an operational tool restricted to the relationship between the port authority and shipping agents. Such tool allowed the replacement of document (paper) with digital information.

As for the PSP, interviewee ES2 highlighted the excess amount of information that must be included in the system, the inaccuracy of some information input, such as the volume of cargo handled, and the lack of an effective integration of this system with the Superhighway and Siscomex Cargo. The interviewee also mentioned that there is no effective integration between authorities in the ports and in that sense, the CONAPORTOS initiative is still too recent. Interviewee ES1 stressed the issue of IRS fiscal secrecy, which makes the integration between agencies difficult, and reported that there have been other initiatives of coordination similar to the CONAPORTOS one which do not show satisfactory outcomes, highlighting the need for an effective public agency to coordinate the port sector at a local level. On the other hand, interviewee ES4 stressed CONAPORTOS as a very important aspect to address specific issues, solve problems and equip the decision making process. Fig. 4 presents a summary of the findings related to the governance actions in Santos.

Factors	Interviewees				Total
	ES1	ES2	ES3	ES4	
National Commission of Port Authorities	X	X		X	3
Information systems for port logistics	X	X			2
<b>Total</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>5</b>

Fig. 4 Factors associated with governance actions

There is a clear dependence of the central body (SEP) and lack of action by the port authority for the coordination of actors and associated logistics flows. One aspect to highlight is a great expectation regarding CONAPORTOS, in the sense that it will be configured as a framework for the coordination of the port logistics chain.

#### D.Q4: Evolution of Governance Elements

As for the governance elements, all interviewees (ES1 to ES4) reported an increase in productivity and efficiency of port operations and cost reduction for both containerized and bulk cargo. According to interviewee ES1, it was possible due to a higher participation of the private sector in the ports. On the other hand, the interviewee cited the lack of infrastructure in the port logistics chain (regulating warehouses), the lack of an effective National Plan of Logistics and Transport (PNLT), the political instability and the lack of investment as factors that drive the governance elements. Interviewees ES1 and ES2 also mentioned the current need for management at the Port Authority as a factor that hinders port governance.

Interviewees ES1, ES2 and ES4 mentioned the risk of creating competition problems (unequal competition from terminals located outside the organized port) due to the new Port Law. In this context, interviewee ES2 also highlighted the difficulty in coordinating the port system after the new law.

Fig. 6 presents a summary of the results concerning the governance elements at the port of Santos.

Factors	Interviewees				Total
	ES1	ES2	ES3	ES4	
Increased productivity and efficiency of operations	X	X	X	X	4
Cost-cutting	X	X	X	X	4
Competition problems arising from the Port Law	X	X		X	3
Lack of management in port authorities	X	X			2
Greater participation of the private sector in ports	X				1
Lack of warehouse infrastructure	X				1
Lack of effectiveness in the National Plan of Logistics and Transport	X				1
Political instability in the port sector	X				1
Insufficient investment	X				1
<b>Total</b>	<b>9</b>	<b>4</b>	<b>2</b>	<b>3</b>	<b>18</b>

Fig. 5 Factors associated with governance elements

It can be seen in Fig. 5 that interviewees perceive an increase in productivity and efficiency of the port sector, as well as cost cutting in recent years. However, many problems are cited, related to the coordination of the system and investment in infrastructure. The governance structure and the governance actions generate effects on the governance elements, producing greater or lesser coordination of actors and logistics flows within the port logistics chain. This, in turn, impacts the governance outcomes, aspect discussed in the next question (Q5).

#### E.Q5: Evolution of Governance Outcomes

Regarding the governance outcomes all interviewees (ES1 to ES4) highlighted an increase in efficiency and productivity of the port in recent years. However, all interviewees cited the high dwell times - especially on imports - as a critical issue.

According to interviewees ES1 and ES2, the current length of stay of containers in the Port of Santos terminals (15 days on average, on import), is much higher than the standards observed internationally. In this sense, a point emphasized by all interviewees (ES1 to ES4) was the interest of terminals to maintain these times due to storage revenue earned. Interviewee ES2 also mentioned the existence of high dwell times in short sea shipping operations. The results are presented in Fig. 6.

Factors	Interviewee				Total
	ES1	ES2	ES3	ES4	
Increased productivity and efficiency of operations	X	X	X	X	4
High dwell times on import	X	X	X	X	4
High dwell times in cabotage		X			1
Revenue associated with these storage dwell times	X	X	X	X	4
<b>Total</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>13</b>

Fig. 6 Factors associated with governance outcomes

The main problem perceived is the high dwell times of

containers in the terminals, especially in the case of imports. Indeed, the lack of coordination (governance) of actors and logistics flows impacts this dwell time and the port operations as a whole.

*F.Q6: Opportunities for the Improvement of the Governance Model*

Asked about 'what could (or should) be changed in governance structure, actions and elements to generate better outcomes' (question 6), the interviewee ES1 mentioned that the main problem in Brazil is related to the lack of integration of information systems. The respondent ES2, in turn, cited the need for developing the strategic planning of the Port. The existence of cultural barriers (resistance to change) was also cited by the respondent. Accordingly, the respondent ES1 mentioned the need for a 'management shock' at the port authority, citing shortcomings relating to corporate governance, employees' qualification, effective public policies and management autonomy, which were also quoted by respondent ES4.

Respondent ES2 complemented, stating that it is necessary to advance in the port-city relations. Accordingly, the respondent reported that there is a secretariat to dialogue with the port at the Santos City Hall, but the CODESP interlocutor still need to be set. It was mentioned by respondent ES2 that there is a cooperation agreement between the City Hall and the CODESP to revitalize the port.

The respondent ES1 finalized, stating that the main problems are associated with lack of a clear definition of the functions of the port authority and the need to develop a management policy.

Fig. 7 presents the synthesis of aspects that could or should be enhanced in the governance of the port of Santos from the managers' point of view.

Factors	Interviewees				Total
	ES1	ES2	ES3	ES4	
Need for greater autonomy	X			X	2
Cultural barriers	X	X			2
Lack of information systems integration	X				1
Lack of Port's Strategic Planning Development		X			1
Need to reset the Port Authority Structure		X			1
Need for Employees' qualification	X				1
Need for Management qualification	X				1
Improvement of port-city relations		X			1
Lack of definition of the port authority functions	X				1
<b>TOTAL</b>	<b>6</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>11</b>

Fig. 7 Factors associated with the governance elements

The answers from Santos port managers regarding to possible improvement opportunities were quite varied, and several aspects were identified. The opportunities for improvement cited by managers are basic and included, for example, the need to clearly establish the port authority functions, redefine its structure, qualify its employees, and

develop its strategic planning. Managers also mentioned the integration of systems, which can be associated with the concept of port single window.

## V.CONCLUSIONS

The analysis of port of Santos from the conceptual model showed the applicability of the model, since its dimensions (governance structure, actions, elements and outcomes) and its application process proved to be useful for the evaluation of port governance. In addition, the analysis of port governance from the managers' point of view can assist in the direction of improvement actions to be implemented in the port of Santos.

The results of the interviews with port managers bring three main findings: i) a passive position of the port authority; ii) SEP acting as a governance body of the port system and port logistics chain; and iii) strategy and port marketing actions done mainly by port operators (terminals).

Port managers' answers showed an incipient governance model driven by SEP. The lack of governance actions, associated with the existing governance structure, impacts directly in the port logistics chain (governance elements) and in its efficiency and effectiveness (governance outcomes).

However, notwithstanding its contribution, some limitations from this study must be stressed. The first of these limitations relates to the partial application of the model, which was restricted to stage 1 of phase 1 of the considered model. Secondly, due to the fact that this is a cross-sectional study, it has not been possible to analyze the evolution of governance over time.

As an indication for future studies, it is suggested: i) the complete application of the model, considering a port reform process in its different steps and phases; ii) the application of the model to other ports, subject to different models of port management; and iii) promote an in-depth discussion on governance outcomes from the studies that have already carried out on port performance analysis.

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