A static and dynamic strategic portfolio analysis: The positioning of Iberian seaports

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The various changes that have occurred in the seaport industry have had a continuous and substantial impact on seaport activities and management in recent decades. The highly competitive and rapidly changing environment faced by business has greatly increased the need for strategic planning. Thus, it is relevant and appropriate to apply strategic positioning tools to seaports given how competitive strategies play a key role in the growth and development of this industry. This research aims to analyse the strategic positioning of the leading Iberian Peninsula seaports using the BCG matrix from a static and dynamics perspective for the period between 1997 and 2008. The findings reveal a better positioning of Spanish seaports in relation to total traffic. Furthermore, considering container traffic, the results point to the seaports of Algeciras, Valencia and Barcelona as having attained a remarkable position of leadership. However, according to the time series analysed, the ranking of seaports has not changed significantly.

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Introduction

The seaport industry plays an important role in global trade and economic development (Hu & Zhu, 2009). Most large volume cargoes in transit between countries, including crude oil, iron ore, grain, and lumber, are carried by ocean-going vessels. The unavoidable growth in container traffic, the constant guidance and expertise required to increase the capacity of vessels drove players in the seaport sector to focus primarily on a limited number of world class seaports (Van de Voorde & Winkelmans, 2002). In recent decades, the various changes in the seaport industry have had a continuous and important impact on their activities and management (Hayuth, 1993). Nowadays, one key factor for seaports, if not the most decisive, is their competitiveness. The changes stemming from the international redistribution of labour and capital and from market integration and globalization along with a substantial rise in mobility (Van de Voorde & Winkelmans, 2002) brought about consequences for the seaport sector, especially in terms of the intense competition.

The importance of strategies formulated with the intent of gaining competitive advantage and higher standards of performance is becoming increasingly evident in the context of seaport operators (Evangelista & Morvillo, 1998; Sletmo, 1999; Jenssen, 2003; Panayides, 2003; Song, 2003; Casaca & Marlow, 2005; Cullinane, Teng & Wang, 2005; Parola & Musso, 2007). Competition in the seaport industry has intensified and as proven by the increased incidence of mergers and acquisitions (Panayides, 2003). However, such options are not always ideal, reliable and applicable to all seaport companies seeking to increase both their market share and their competitiveness.

There are many factors and steps involved in strategic planning such as: defining the business, carrying out a situational analysis, setting objectives and strategic priorities, as well as developing and implementing strategies. There has also been a shift in emphasis from processes to strategic methodologies and tools. There is also an apparent lack of research on strategic planning in the seaport context in general, and on Iberian Peninsula seaports in particular. This is a major gap in the service driven economies that now operate throughout most of the world and represents a great challenge for both researchers and policymakers. Tracking these changes provides insights into the development of research in the field, as well as highlighting areas for further attention.

Just as seaports play an important role in the development of the South African economy, serving as a transhipment point between the emerging markets of Central and South America and the newly industrialized countries of South

Asia and the Far East, they have also proven of great importance to the economic development of the Iberian Peninsula (Portugal and Spain). Traditionally, the role played by seaports in the history of Portugal and ever since the era of maritime exploration has been clear and primarily due to their geographical location (MOPTC, 1991). Since 1990, the Spanish ports authorities have been facing increased competition due to a set of changes impacting on the industry worldwide (Castillo-Manzano, López-Valpuesta & Pérez, 2008). These changes include ports specializing in specific categories of traffic, trends in route selection, the containerization process and the concentration of companies and business (Bichou & Gray, 2005). Looking at containerized cargo, the main Spanish container terminal took 22nd place in the 2007 rankings, while Portugal occupied 143rd place and South Africa 43rd (Degerlund, 2009). Hence the importance of studying Iberian Peninsula seaports, especially the Spanish, in order to identify best practices and to develop a benchmarking approach able to help Portuguese and South African seaports improve their respective positions.

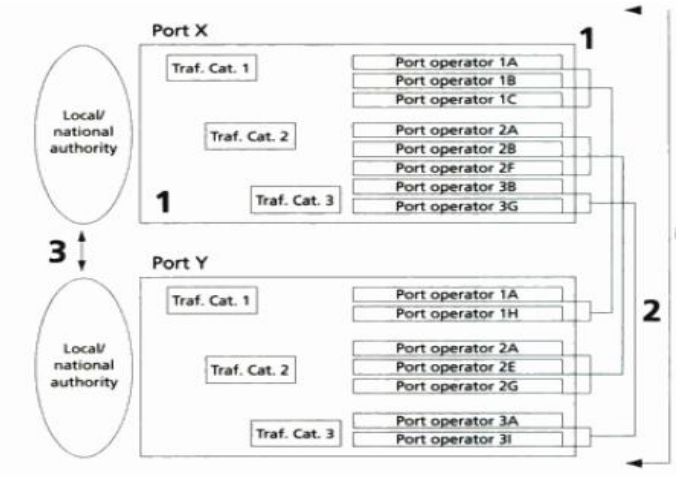
Within this context, this paper aims to analyse the strategic positioning of Iberian Peninsula seaports from both static and dynamic perspectives over the period between 1997 and 2008 and thereby identifying the most important seaports in the "Iberian range". This study deploys the BCG (Boston Consulting Group) matrix as a strategic tool and here tailored to the seaport context.

Literature review

The importance of seaports to national economies is highlighted widely in the literature and especially to economies largely dependent on international trade (Song & Panayides, 2008). The seaport industry has been characterised by complex growth driven by the interaction of a set of endogenous and exogenous factors (Evangelista & Morvillo, 1998). The main exogenous factors are: corporate globalisation, decentralisation as well as industrial relocation. Standing out among the endogenous factors are the intensification of technological and organisational demands, which have contributed towards releasing a stream of innovations.

The seaport industry has undergone a series of structural transformations which have contributed towards questioning the leadership of countries with longstanding maritime traditions (Evangelista & Morvillo, 1998; Song, 2003; Parola & Musso, 2007). As the contextual and transactional seaport environment has dramatically changed, global competition has been fostered by a series of factors, including the distances general cargo travels, an increase in huge transit lines, the emergence of integrated market logistics, and the advance of networked lines between seaports operations and inland transport networks (Notteboom & Winkelmans, 2001). Seaport management has been characterised by fierce competition resulting from structural changes in the industry within which large companies acquire and the small merge in a race to remain competitive (Panayides, 2003).

According to Van de Voorde and Winkelmans (2002), three types of competition can be identified in the seaport sector (Figure 1): (1) intra-port competition at the operator level, e.g. between operators 1A, 1B, 1C, in which each number refers to a traffic category and each letter to a specific operator; (2) inter-port competition at the operator level (competition between the activities of seaports in different seaports) and (3) inter-port competition in regulatory terms.



Source: Adopted from Van de Voorde and Winkelmans (2002)

Figure 1: A visual depiction of the conceptual definition of seaport competition

In the seaport industry, environmental conditions strongly determine the way seaports are created, organized, managed as well as their choice of strategy. Changes to environmental conditions generate not only many new opportunities but also new threats to seaports. These changes modify the consistency between strategy and environment and push the seaport into selecting a different strategic orientation. When engaging in strategic decision-making, seaport authorities, terminal operators and seaport users must build upon a conceptual understanding of the dynamics of international seaport competition and perform strategic positioning analyses (Haezendonck, Verbeke & Coeck, 2006). Many authorities and seaport operators are aware that any static approach to cost leadership, centralising around longstanding factors of advantage and depending upon new infrastructures to attract and retain customers are no longer sufficient in themselves to ensure competitive seaport success (Haezendonck, 2001).

In the management literature, the concept of strategy has increasingly been recognized deriving out of an awareness that a company must have a well defined field of action and a clear direction as to the sources of its growth. According to Panayides (2003), there is a positive relationship between the pursuit of competitive advantage and business performance in seaport management. The increased emphasis on strategic seaport performance is driven by the intense competition, the need to achieve competitiveness and the maximisation of shareholder profits and from contextual environment pressures. This highly competitive and rapidly changing environment has greatly increased the need for strategic planning. In this context, the concepts and practices integral to strategic planning have generated interest in organisations in many parts of the world as well

as across many industries. However, strategic positionings are often not obvious and may be based on customer needs, customer accessibility or a variety of company products/services (Porter, 1996).

Many frameworks, approaches, and techniques can be deployed to analyse strategic cases in the strategic management process. Dyson (1990) lists a number of analytical techniques, such as: the experience curve, SWOT (Strengths, Weaknesses, Opportunities, Threat) analysis, the PIMS (Profitability Impact of Marketing Strategies) model, and the BCG (Boston Consulting Group) matrix, each with specific advantages and disadvantages that allow a comparative or competitive positioning of businesses or business units. Thus far, efforts have been made to solve the strategic tools problems and some alternative methods have been put forward: (i) the concept of GSM (Grand Strategy Matrix) – where companies are parked in the four quadrants of the coordinates according to their respective categories (Christensen, Berg & Salter,1976), (ii) A'WOT (Analytic, Weakness, Opportunities, Threat) – a hybrid method to eliminate the weaknesses in the measurement and evaluation steps of the SWOT analysis (Kurttila, Pesonen, Kangas & Kajanus, 2000; Kajanus, Kangas & Kurttila, 2004), (iii) ANP (Analytic Network Process) – a multi-criteria decision making technique for solving complicated problems (Yüksel & Dagdeviren, 2007), (iv) a fuzzy SWOT matrix – an algorithm for rectifying the shortcomings and problems of the SWOT matrix through the use of fuzzy sets (Ghazinoory, Zadeh & Memariani, 2007; Lee & Chang, 2008).

Although the BCG tool has been criticised as overly simplistic and its growth rate criterion deemed inadequate for evaluating the attractiveness of an industry (Porter, 1980), this matrix has become one of the most popular tools for planners and policymakers (Robinson, Hichens & Wade, 1978; Henderson, 1979; Terwiesch & Ulrich, 2008). This Business Portfolio Matrix identifies the linkages between the business growth rate and the relative competitive position of the organization (identified by market share).

According to these authors, the BCG matrix provides an easy way of mapping the market positions of firms and attempts to capture a dynamic phenomenon: the emergence, growth, maturation, and decline of markets. The main contribution of the BCG matrix is the attention it draws to the cash flow and investment characteristics of various types of businesses and how corporate financial resources are shifted from business unit to business unit in an effort to optimise the long-term strategic positioning and performance of the corporate portfolio as a whole (Ansoff & McDonnell, 1990; Khan & Ali-Buarki, 1992; David, 2009). This simple matrix enables managers to classify each division, since renamed a Strategic Business Unit (SBU), into a quadrant based on the growth of its industry and the relative strength of the unit's competitive positioning (Collis & Montgomery, 2008).

This study deploys the BCG matrix as a strategic tool for analysing and evaluating the strategic positioning of Iberian seaports from both static and dynamic perspectives. According to Haezendonck (2001), this tool proves very useful in analysing the competitive positioning of seaports as it determines the present position of the business in relation to competitors and their potential to increase their market share. We are also aware of the main weakness of this tool, that is, it has no temporal qualities and does not reflect whether the businesses are growing over time (David, 2009). This strategic instrument is rather a snapshot of an organization or of their business units at a given point in time. In order to reduce this shortcoming, we deploy dynamic portfolio analysis reflecting data from 1997 to 2008, as explained in section 3.3.5.

Empirical study

Territorial unit of analysis

Portugal has nine commercial seaports, but the most important in terms of container traffic are the seaports of Lisboa, Leixões, Setubal, Sines and Aveiro. These seaports are managed by companies with exclusively public capital operating under the auspices of the *Ministérios das Obras Públicas, Transportes e Comunicações* (MOPTC - Ministry of Public Works, Transport and Communication) and *Finanças e Administração Pública* (MFAP – Ministry of Finance and Public Administration). The four other seaports are less representative in terms of the handling of shipped of goods (Viana do Castelo, Coimbra, Faro, and Portimão) and answer to the *Instituto Portuário e dos Transportes Marítimos* (IPTM – Institute of Ports and Maritime Transport). In comparison, the Spanish reality is quite different as its 23 major seaports are managed by companies within the scope of the state holding company - *Puertos del Estado, SA.* (State Ports, SA.), which in addition to the implementation of government defined seaport policies also carries responsibilities in terms of safety (similar to the IPTM). Figure 2 sets out the location of the main Iberian Peninsula seaports (Portugal and Spain).

From the Portuguese seaports, the busiest three (Sines, Lisboa and Leixões) were selected for this empirical study. They represented 82.74% of total traffic in 2008 (Figure 3).

Regarding Spanish seaports, the top five, Algeciras, Valencia, Barcelona, Bilbau and Tarragona, accounting for 71.81% of total traffic in 2008, (Figure 4) were included for study.

Methodological procedures

The portfolio analysis used in this research is based on the annual reports of the eight seaports (three in Portugal, five in Spain) for the twelve year period selected (1997-2008), subdivided into three: 1997-2000, 2001-2004, and 2005-2008. The analysis is based on five categories of traffic: liquid bulk (LB); dry bulk (DB); containers (CO), ro-ro (roll-on/roll-off) and conventional cargo (CC).

Source**:** APA (2006)

Figure 2: Iberian Peninsula seaports

Seaports	Quantity (1000 tonnes)	Quantity (%)	Accumulative Quantity (%)
Sines (S)	25,149	38.70%	38.70%
Leixões (Le)	15,635	24.06%	62.76%
Lisboa (Li)	12,980	19.98%	82.74%
Setúbal	6,124	9.42%	92.16%
Aveiro	3,466	5.33%	97.50%
Figueira da Foz	1,150	1.77%	99.27%
V. Castelo	0,476	0.73%	100.00%
	64,980		

Source: IPTM (2008)

Figure 3: Total traffic in the main Portuguese seaports in 2008

Seaports	Quantity (1000 tonnes)	Quantity (%)	Accumulative Quantity (%)
Algeciras (A)	73,951	19.62%	19.62%
Valencia (V)	64,085	17.00%	36.62%
Barcelona (Ba)	60,616	16.08%	52.70%
Bilbau (Bi)	38,596	10.24%	62.94%
Tarragona (T)	33,449	8.87%	71.81%
Cartagena	25,643	6.80%	78.61%
Las Palmas	23,740	6.30%	84.91%
Huelva	20,621	5.47%	90.38%
Gijón	19,203	5.09%	95.47%
Tenerife	17,065	4.53%	100.00%
	376,969		

Source: *Anuários estadisticos de Puertos del Estado* (2008)

Figure 4: Total traffic in the main Spanish seaports in 2008

Different types of analysis may be deployed to assess the level of seaport performance in terms of its maritime traffic volume. This study is based on the Product Portfolio Analysis methodology based on the value added for different traffic categories (Haezendonck, 2001). Taking into account the differential value added by several traffic categories, this enables us to gather information both on the success of seaports in attracting cargoes and on generating high added value (Haezendonck & Winkelmans, 2002; Haezendonck *et al*., 2006). The analytical introduction of the value added concept provides for the conversion of "nominal tonnes" into "intrinsic cargo handling tonnes" or "value tonnes".

By means of a rule, weighted nominal traffic data takes into account the differences in the added value of the various traffic categories and may contribute substantially to port management and policy (Haezendonck & Winkelmans, 2002). The rationale behind "weighted" analysis is the existence of differences in value added among traffic categories (Haezendonck, 2001). The weighting of traffic data focuses attention on the added value or welfare created in terms of the contribution made towards the gross output of a city, region or nation (Verbeke & Debisschop, 1996). In order to obtain weighted traffic categories, weighting coefficients need to be applied. Over the years, several weighting coefficients called "rules" have been proposed: (i)

the Hamburg Rule in 1976, (ii) the Bremen Rule in 1982 (iii) the Rotterdam Rule in 1985, (iv) the Dupuydauby Rule in 1986, and (v) the Range Rule in 2001. The Bremen and Rotterdam rules are often adopted and applied in traffic evaluation while the Dupuydauby rule is mentioned in only a very limited number of publications (Haezendonck & Winkelmans, 2002). In this study, the Range Rule was chosen because it is the only one based on a range of seaports. In this study, we considered one ton of conventional cargo to be equal to thirteen of liquid bulks, five of dry bulk, three of containers and one of ro-ro (Haezendonck, 2001).

Iberian seaport portfolio analysis

Portfolio analysis was applied to the structure of seaport trade across four levels, which are complementary and provide important analytical outputs (Haezendonck, 2001). However, there is no priority or hierarchy in the applicability of the different levels and they solely display the versatility of portfolio analysis. Just as in the original BCG matrix, the average annual growth rate and the average market share are respectively represented vertically and horizontally. The thickest horizontal line represents the average market share and the most stressed vertical line represents the average growth rate. However, in terms of the nomenclature of the four BCG matrix quadrants, these need adapting to the seaport context. Hence, based on terminology conceptualized by Haezendonck (2001) we used the following: Star Performer, Mature Leader, Minor Performer and High Potential (Figure 5).

First level – Seaport portfolio based on total traffic

In this first level, portfolio analysis compares the market share and the growth rates of the studied seaports, which generates analysis of the external positioning of the seaports within the defined geographical area. In this case, the Iberian Peninsula is approached as a single portfolio of seaports (Figure 6).

Seaport portfolio analysis based on total traffic between 1997 and 2008 provides the following findings: (i) only certain Spanish seaports (Valencia, Algeciras, Barcelona and Bilbau) have risen above the average range, (ii) of these four seaports, three are in the *Star performer* position (Valencia, Barcelona and Algeciras), while the seaport of Bilbau is in the high potential position because its market share is below the average range, (iii) all Portuguese seaports under analysis have growth rates and market share below the average, which places them in the *Minor performer* position.

This analysis demonstrates a more strategic competitive position of some Spanish seaports when compared with the Portuguese. As noted in the literature, the competitiveness of seaports is influenced by many factors and both internal and external to the industry. According to Van de Voorde and Winkelmans (2002), competition between seaports is influenced by factors such as structure and seaport management, managerial know-how as well as a port's regulatory authorities. Azevedo and Ferreira (2008) also argue that a major obstacle to the competitiveness of seaports has been the immediate payment or non-payment of VAT (value added tax) on goods arriving from third countries that increases operational transport costs. This may be one of several factors justifying a more competitive position in some Spanish seaports, including Valencia, when contrasted with their Portuguese counterparts.

Second Level – Seaport traffic category portfolio

In this second level, portfolio analysis compares the market share and growth rates in the five traffic categories for each seaport, i.e. the traffic volumes of each seaport is considered as a five category portfolio. We here opted in favour of the largest seaports in terms of total traffic by weighted values in each country over the 1997-2008 period (Lisboa and Barcelona). It is noteworthy that although the seaport of Sines attains the highest volume of traffic in the period considered, Lisboa seaport generated the largest volume in terms of weighted values. This occurs because the largest percentage of traffic in absolute values of Sines seaport (73.8%) in these years is bulk liquid with a weighting of 13 tons per ton of conventional cargo. The same happens in Spanish seaports. In terms of absolute values, Algeciras seaport has a higher volume of traffic, however, in terms of weighted values, Barcelona seaport attains the highest value. The justification seems similar: although the liquid bulk category does not have the highest volume of traffic in absolute values in these two seaports, it represents 34.05% of total traffic in Algeciras seaport and 23.36% of total traffic in Barcelona seaport. Figures 7 and 8 depict the positioning of the five traffic categories in the seaports of Lisboa and Barcelona, respectively.

		Relative Market Share	
		Low	**High**
Growth Rate	**High**	High potential	Star performer
	Low	Minor performer	Mature Leader

Source: Adopted by Haezendonck (2001).

Figure 5: The BCG matrix applied to seaport context

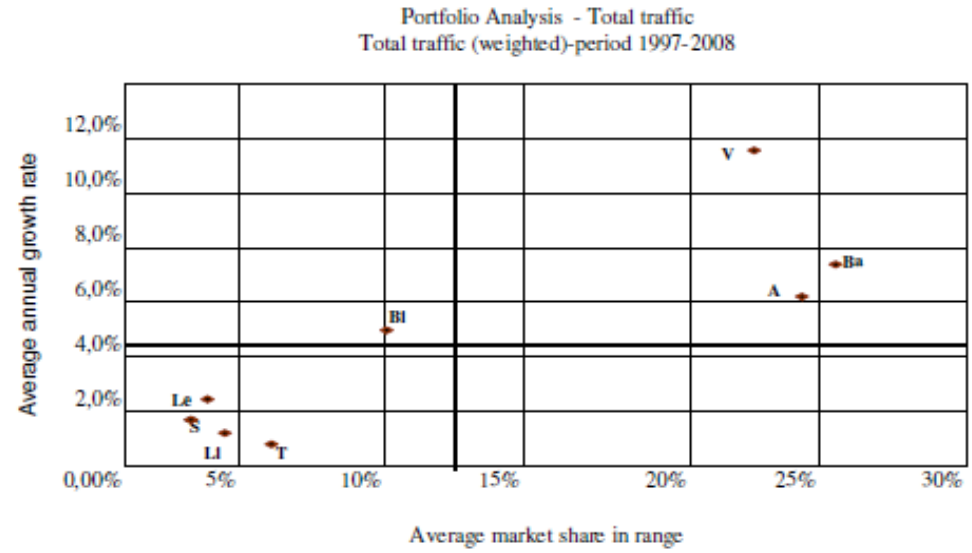


Figure 6: Portfolio of Iberian Peninsula seaports – Total traffic weight (1997-2008)

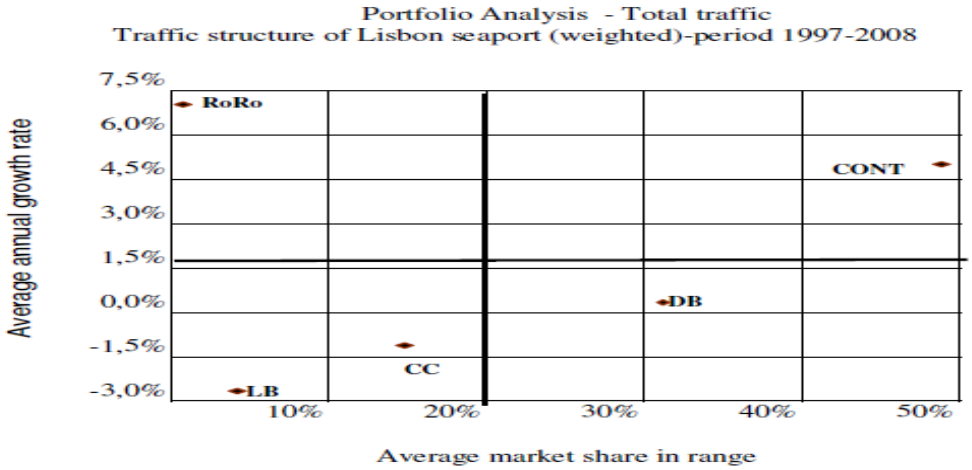


Figure 7: Lisboa seaport portfolio – Traffic structure (1997-2008)

Analysis of Figure 7 demonstrates how the increased weighted value traffic flows in Lisboa seaport in is concentrated in containers with this category proving the seaport's Star Performer. Moreover, despite the ro-ro category returning the lowest market share (0,67%), it showed the highest growth rate in the period considered (6,95%) positioning it as high potential, i.e. a category in which the seaport should invest. Liquid bulks and conventional cargo with negative growth rates and with a very low average market share allow us to classify them as Minor Performers. The dry bulk traffic category, while recording a growth rate of 0.28%, takes an above average market share (31,60%), turning this category into the Lisboa seaport *Mature Leader*.

At the Barcelona seaport (Figure 8), in addition to containers and conventional cargo, emphasis has been placed on ro-ro traffic, which is the category with the largest market share in weighted values (32,52%).

These three categories are Star Performers, while the bulk traffic category is a Minor Performer. It showed be noted that dry bulk traffic registered a negative rate of average growth (-2.63) for this period.

Third level – Seaport portfolio by specific traffic category

At this level, the positioning of seaports within the range for each traffic category is compared and contrasted. Thus, the seaport positioning results from each market share category making up the range and its respective rate of growth. From the five categories studied, we decided to choose the container traffic (Figure 9) for the following reasons: it is the category with the largest flow of traffic (with an average market share of 34,82% of total traffic), it has the highest growth rate (196,81%) of the period under analysis and this category has also been the subject of several research projects in recent years which have enhanced the importance of seaport competitiveness (Cullinane, Wang, Song & Ji, 2006; Notteboom, 2007; Sohn & Jung, 2009; Dias, Azevedo, Ferreira & Palma, 2009).

According to the APA (2006), container traffic flowing through Iberian Peninsula seaports is substantially concentrated, with 80% of traffic moving through only three facilities: Algeciras, with 29 million tons (Mton) per year on average, Valencia with 22 Mton/year and Barcelona, with 16 Mton/year. After these come the seaports of Lisboa (5 Mton/year), Bilbau (5 Mton/year) and Leixões (3 Mton/year), with container traffic in other seaports of little or practically no significance. Hence, following analysis of container traffic for the 1997-2008 period at the eight seaports analysed, we chose to consider only the five aforementioned seaports, excluding Sines and Tarragona since container traffic is of little significance and even nonexistent in some years (with market shares of 0.76% and 0,39%, respectively).

On the Iberian Peninsula, it appears that the seaports of Algeciras, Barcelona and Valencia are clearly the Star Performers regarding container traffic. Algeciras is definitely the seaport handling the largest volume of container traffic with a market share of 35,97% and an average growth rate of 9,85% over the twelve years in question. However, Valencia attains the highest average growth rate (14,57%). With market shares and growth rates below average are the seaports of Lisboa, Bilbau and Leixões and correspondingly Minor Performers in this category. Leixões seaport, despite its low container traffic market share (4,06%) in the period does turn in an average growth rate of 7,69%, very close to the overall average (8,74%), which suggests this seaport might have potential for growing its container traffic.

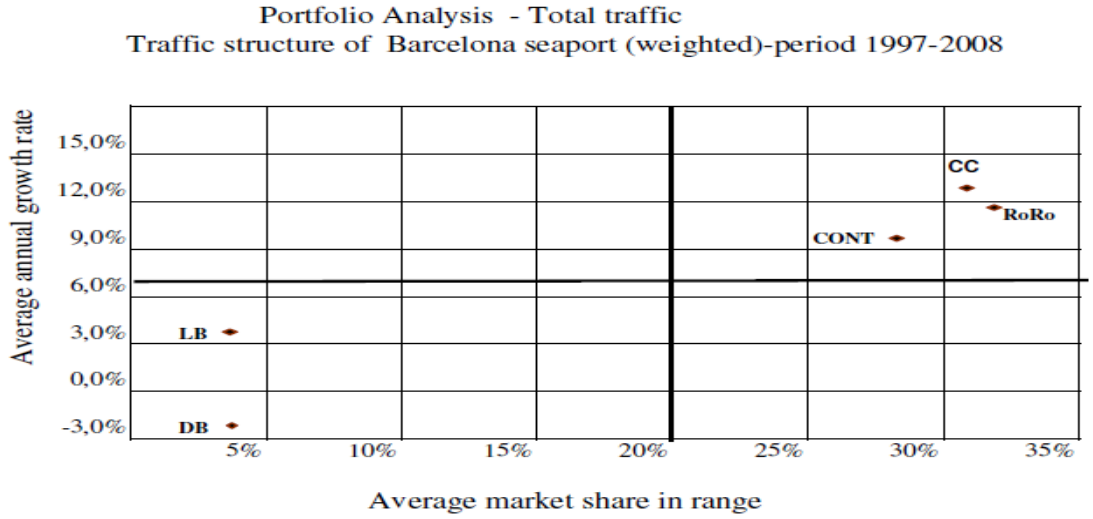


Figure 8: Portfolio of Barcelona seaports – Traffic structure (1997-2008)

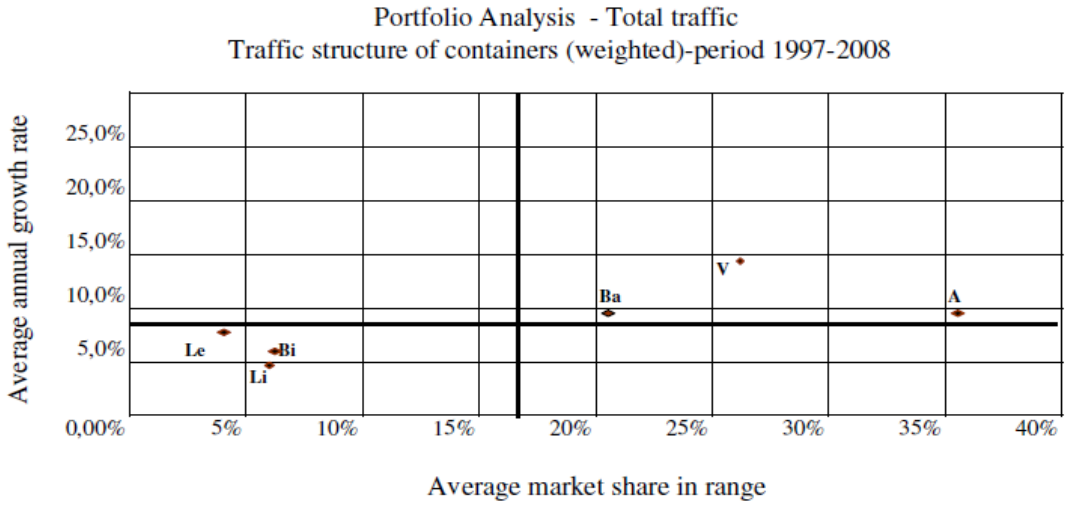


Figure 9: Traffic structure of containers (1997-2008)

Fourth level – Seaport portfolios by traffic category, based on its market share of overall seaport traffic

This level also takes into account the weighting of a particular traffic category within the overall range. However, the difference between the third and fourth levels lies in the usage of each seaport's traffic category market share and not the range of traffic. This level also introduces an additional dimension to analysis of the portfolio: a circle whose area is proportional to the absolute volume of seaport traffic in relation to the total range. The centre of the circle represents the growth rate and market share. According to Haezendonck (2001), the main advantage of this layout is that each seaport simultaneously displays: the position of a class within the overall seaport traffic framework, the class size considered in relation to the category size achieved by

other seaports and the annual category growth rate. In this level, the stronger horizontal line represents the average total traffic market share in the range and the more pronounced vertical line portrays the average growth rate in the category. For the same reasons as detailed above, this study subjects container traffic to analysis (Figure 10).

The first conclusion to be drawn from figure 10 is that container traffic is the main category at all the seaports studied as the seaports of Algeciras, Valencia and Barcelona are the Star Performers in the "Iberian Peninsula range" in containers when comparing the total traffic of each seaport and the annual container growth rate and the seaports of Lisboa, Leixões and Bilbau are the Mature Leaders. On analysis of the circles, we may conclude that Algeciras handles the largest amount of container traffic in the range, followed firstly by Valencia and then Barcelona. The seaport with the lowest level of container traffic is Leixões. Although the seaports of Lisboa, Leixões and Bilbau return very low container traffic market shares compared with the total range, they feature in this analysis as Mature Leaders because their container traffic market share within the framework of each seaport's traffic is both high (48.58%, 37,44% and 20,28%, respectively) and higher than the average total traffic market share for the range.

Dynamic seaport portfolios

Static portfolio analysis should be complemented by dynamic analysis in order to incorporate the progress of positionings over different periods of time (Haezendonck, 2001). The main purpose of dynamic analysis is to analyze the evolution within certain temporal frameworks so as to produce conclusions about future opportunities for seaport development in a given category. Correspondingly, three periods were chosen: 1997-2000, 2001-2004, and 2005-2008. Figure 11 depicts the dynamic analysis of container traffic in the five previously selected seaports. For a better understanding of changes in strategic position in each period, these periods were set out chronologically.

Through the dynamic analysis of container traffic, we find that only Valencia was able to maintain its Star Performer position in all of the twelve years analysed. The seaports of Barcelona and Algeciras made the Star Performer classification in the first two periods but in the third, despite market share in the range rising (from 20,09% to 21,05% and 35,72% for 36,11%, respectively), the rate of container growth was below average (8,38% and 7,02%, respectively), which positions them as Mature Leader in this latest period. Also regarding container traffic, Leixões returned high potential for the 1997 to 2000 period, with a growth rate (9,63%) slightly above the average range even while its rate of growth and market share fell to below average, classifying it as a Minor Performer. The seaports of Lisboa and Bilbau were positioned as Minor Performers in container traffic throughout all periods with both their growth rates and market shares below the averages.

The better strategic positioning of the Algeciras, Barcelona and Valência seaports is also supported by the high levels of seaports efficiency identified by Dias *et al*. (2009). Furthermore, the Bilbau seaport is considered a Minor Performer which is also corroborated by Dias *et al*. (2009) in terms of efficiency in ranking it lowest.

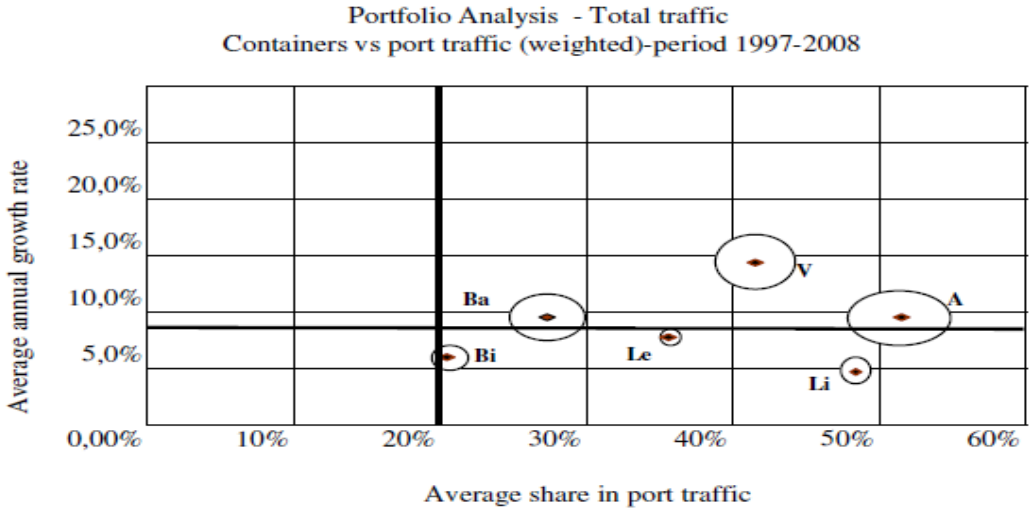


Figure 10 : Containers vs seaport traffic (1997-2008)

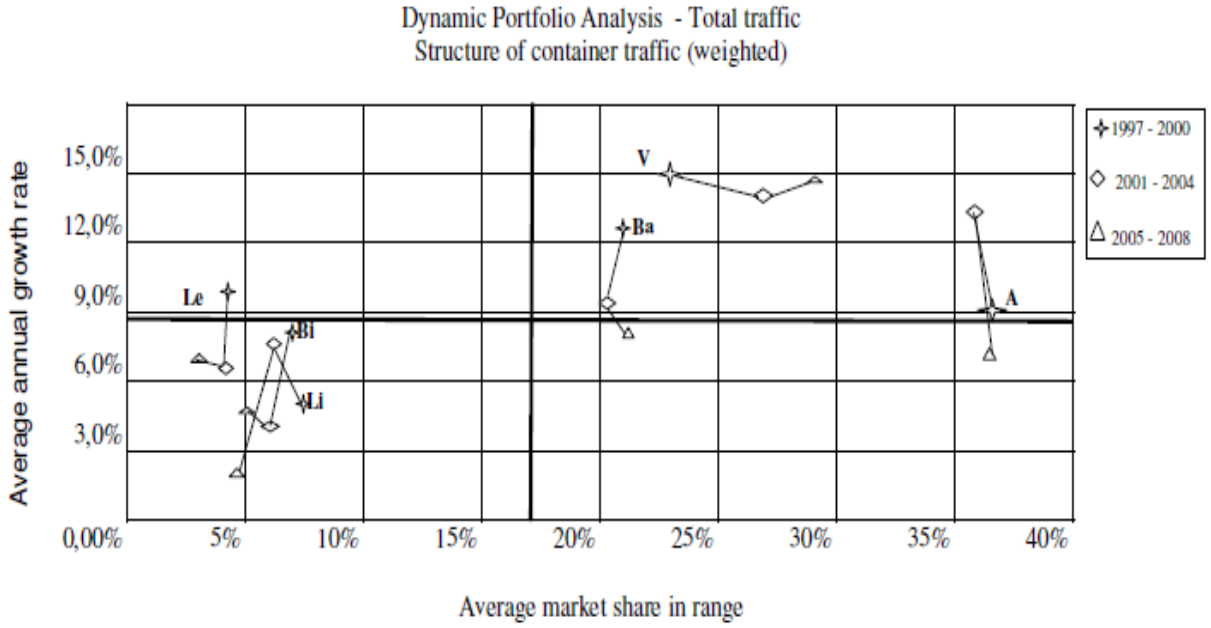


Figure 11: Dynamic portfolio analysis of container traffic (weighted)

Final considerations

This research sought to analyse the strategic positioning of Iberian Peninsula (Portugal and Spain) seaports through recourse to dynamic portfolio analysis. BCG matrix applications have proven its usefulness as a tool both for strategic business unit position decision making and for short term strategic resource allocations. After due analysis, we would make the following observations: while analysing the Iberian Peninsula as a single seaport portfolio, it does appear that the main Spanish seaports are better positioned in relation to total traffic. This finding immediately raises some questions for future research: what factors have contributed towards that positioning? What benchmarking practices should Portugal take to match or exceed the ranking of Spanish seaports? In the two major Spanish and Portuguese seaports (Lisboa and Barcelona), considering the traffic in weighted values, container traffic is positioned as the Star Performer of these seaports. However, ro-ro traffic has also evolved and is the best positioned category in the seaport of Barcelona and with great potential in Lisboa.

In general, it would appear that apart from Sines and Tarragona, at the eight major Iberian Peninsula seaports, the greatest emphasis has been placed on container traffic, with all showing high rates in comparison with the total traffic at each seaport. However, within the "Iberian Peninsula range" the leadership of the seaports of Algeciras, Valencia and Barcelona in this category is remarkable. Dynamic analysis enabled a visualisation of the progress in this category in three periods of the twelve years and found that the position had not changed significantly during this period.

In general terms, as limitations of this study we may point out how the tool used is static in nature, although dynamic analysis serves to significantly reduce this limitation, the need to complement this study with other information especially inputs covering the financial, economic and social structures of seaports and their host environments so that certain evidence and considerations may be better understood and justified.

In future research, it would be of relevance to apply the same methodology to South African seaports. A benchmarking approach comparing South African seaports to those of the Peninsula Iberian would prove interesting and enable a better understanding of their respective strategic positionings. In turn, this will boost our awareness of the main factors responsible for the different levels of seaport competitiveness and performance.

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