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Coopetition and Cooperation in the Shipping Industry: A Study on the Brazilian Coast

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ABSTRACT

Objective: competition and cooperation occur in different areas of the market. The shipping industry is one of the areas characterized by strong competition and operational cooperation with the objective of operational improvement. Through mergers and acquisitions and joint ventures, the shipping industry has advanced with its business and sought better results. **Methods:** we analyzed coopetition strategies between global actors of shipping industry in the Brazilian market. We used the multiple case study method with the four main shipping lines in the world based on semi-structured interviews and data from official documents. **Results:** the results indicate that the shipping lines often employ the strategy of joint services and slot service in partnership with other shipping companies. Market coverage, customer needs, and reduced operating costs were identified as the main motivations for coopetition in the shipping industry. **Conclusions:** we particularly reveal the coopetition strategies of the shipping companies evaluated in the Brazilian market and their plans to continue operating in this strategic region for the shipping industry.

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INTRODUCTION

The shipping industry has been forced to cut costs and create scale due to the world's struggling economy and carrier's overcapacity (Lin et al., 2017). Countries around the world have been aggressively developing maritime transport, causing an increase in the world tonnage of ships and intense competition between carriers. The practice of operators actively acquiring shipping lines or establishing their independent firms in the process of globalization has failed to reduce competition between the companies, as they seek broader access to the global market (Chiao et al., 2015).

Increasing the intensity and opportunities for cooperation between a dominant company and a rival are already known (Crick & Crick, 2021; Klein et al., 2020). Also highlighted is the importance of the availability to get involved with competitors (Santos, 2021), especially with the most suitable (Klein et al., 2020), who must develop the relationship through the exchange of information and coordinate activities (Santos, 2021). The competition scenario is already quite efficient, mainly since the main lines contribute with large volumes to their own container allocation operations (Trapp et al., 2020). On the other hand, when creating a shared market, generating compensation due to the interaction of competition and cooperation have different effects on the connection between competition and market entry (Klein et al., 2020).

Organizations balance cooperation and competition along the time to add even more value to their business and their customers (Hannah & Eisenhardt, 2017). Cooperation in the shipping industry, through strategic alliances and mergers and acquisitions (M&A), has generated double effects: a notable increase in the size of vessels and a drop-in freight price (Midoro et al., 2005). Recent trends in the shipping industry suggest that shipping lines seek cooperation as a strategy that brings positive returns, being more relevant for the lines that have the same routes and ports that share the same hinterland (Stamatovic et al., 2018).

The decisions taken by the shipping lines affect their activities worldwide. These actions are processed in each region in different perspectives, once each country has its own particularities and market features. In Brazil, the shipping industry is a sector characterized by complexity and dynamic competition. The shipping industry has motivations to explore organizational boundaries. Strategic alliances have become an important activity in the business management process and have emerged as a new alternative for thinking about an organizational strategy geared toward cooperation. The context is the internationalization of the shipping industry, usually the largest concentration of operations in the shipping industry.

Brazil has also felt a transformation in the port area, especially after 1993, when, with the new regulation for modernization of the ports, the country was opened to the international market. The Brazilian port segment has ceased to be classified as inefficient monopolies to become a very competitive market. In the previous scenario, the actors in the port operations were obligated to accept the prices charged by the ports, in addition to all the operational limitations of a single participant. Now it is noticeable a space with an environment of competition between ports, where coopetition is needed to remain as a competitor.

The transformation of the Brazilian port sector fueled by regulatory reforms and international market integration has not only turned the once inefficient monopolies into a fiercely competitive market but has also shifted the dynamics between ports and shipping lines, ushering in an era where coopetition becomes imperative for sustained competitiveness.

The shipping lines intention is to create a way to revive and gain more competitiveness. Besides alliances, partnerships and even M&A are the preferred strategies by executives as they allow rapid organizational growth. Alliances are held as a response to the supply of shipping lines to changes in demand (Ryoo & Thanopoulou, 1999). Shipping lines are key elements in the global supply chain. They operate in environments that are cooperative, but at the same time competitive, in which results are based on a network that links companies in this segment (Asadabadi & Miller-Hooks, 2018). Competition and cooperation are the most common types of interaction between market participants, both at inter- and intra-port levels (Kavirathna et al., 2019). Coopetition, in turn, "can be carried out at the inter- and intra-itinerary levels" (Esteve-Perez & Garcia-Sanchez, 2018, p. 57).

Current academic research on the internationalization of the shipping industry has explored the intricate interplay of cooperative and competitive strategies. Notable contributions within the literature include Ryoo and Thanopoulou (1999), who delved into the effects of globalization on shipping line alliances; Heaver et al. (2000), who examined the influence of alliances and mergers among shipping lines; Slack et al. (2002), who discussed strategic alliances within the global context of the shipping industry; Song and Panayides (2002), who explored the cooperative application of game theory in the shipping sector; Midoro et al. (2005), who addressed competition strategies and market structure in the shipping industry; and Panayides and Wiedmer

(2011), who studied the existence of strategic alliances between shipping lines.

Nevertheless, there are many overlaps between the service provided by container liners and freight forwarders (Lin & Wang, 2020). The same authors analyzed the basis for cooperation, the causes of conflict, and the means to achieve sustainable relationships in the supply chain. Other studies focused on the intra-port interactions to take advantage of the common interests among all terminals in the same port on increasing overall port competitiveness (Kavirathna et al. 2020; Saeed & Larsen, 2010).

However, these aforementioned studies have approached the strategic alliances analysis but they did not mention the consequences of cooperation and competition and their impacts in the shipping industry segment. This study aims to bridge this gap in the existing literature, building upon the previously mentioned framework and problematization, answering the question: How does the dynamic of global cooperation and competition affect the shipping industry operating in Brazil?

In this paper, when addressing cooperation and competition as consequences in the shipping industry in Brazil, we support the concepts of Nalebuff and Bradenburger (1997) by identifying which organizations add value to their business by cooperating while competing, since the simultaneous existence of competitive and cooperative interactions is a fundamental characteristic of coopetition (Kavirathna et al., 2019). Our study has (a) heterogeneity between the parties involved — shipping lines, operators, cargo owners, and other shipbrokers — useful for studying aspects of the industry's proximity, including competition, and (b) although the industry is strongly dependent on relationships, the propensity to form relationships varies, therefore, these characteristics allow an exploration of the probability of forming bonds (Nowińska, 2019).

The shipping industry provides an ideal case study for at least three reasons: (a) due to the capital-intensive nature of commercial transport, efficient investment decisions are the deciding factor that determines success in this heavy assets sector; (b) although shipping companies have recently started to raise foreign assets to finance their activities, ownership remains concentrated compared to other industries; and (c) cooperation and competition under the lens of the shipping industry, being analyzed in a local market scope and considering its consequences on the stakeholders for this segment.

The findings of this study advance the existing coopetition literature by providing insights into the operational dynamics of coopetitive processes between companies. In addition, it contributes in how the coopetitive strategies influence the internationalization processes and how the particularities of the determined country may affect a global partnership in case of worldwide competitors.

In practical terms, this study serves as a valuable example of the application of coopetition strategies within the context of international companies engaging in collaborative competition in a foreign market. This empirical investigation places a particular emphasis on the nuances of the Brazilian market, offering a perspective on the utilization of coopetitive approaches by multinational firms operating within this unique business landscape.

Notwithstanding the specific focus of this study on the dynamics within the shipping industry in Brazil, its findings carry broader applicability across various sectors. This is attributed to the fact that companies exhibit a strong impetus for engaging in coopetition processes, driven by multifaceted advantages encompassing enhanced networks, cost savings, strategic framework development, market intelligence acquisition, and facilitation of internationalization efforts (Monticelli et al., 2022). Furthermore, the study sheds light on organizations that add value to their businesses by cooperating while competing (Emborg & Gamborg, 2016; Nalebuff & Bradenburger, 1997).

In the next section, we review the main literature on the port coopetition and shipping industry. In the section thereafter, we set up a research methodology, which continues with the evaluation results and discussion of the multiple case study. In the final section, we summarize the results and suggest additional research.

THEORETICAL REVIEW

Cooperation with Competition

Coopetition means cooperating and competing with the same objective of other people or institutions (Sato et al., 2011). In the business context, organizations cooperate with their competitors to maximize their performance (Oliveira & Gonçalves, 2013). In contrast, cooperation means acting together with other people or groups in a collaborative climate so that the same objective is achieved (Sato et al., 2011). Developments in the past decade have severely intensified the competitive landscape between ports. Collaboration as a form of cooperation is feasible even when institutional resistance prevents mergers and joint ventures. It can be beneficial, maintaining the identity and autonomy of the ports (Stamatovic et al., 2018). Competition can present itself as a barrier to the development of activities in the form of cooperation and can even cause a relationship between organizations to be weakened

(Oliveira & Gonçalves, 2013); cooperation would unite those involved with their common goals to the point that competition would drive them away for exactly the opposite reason (Sato et al., 2011).

Organizations combine cooperation with competition as a way of maintaining the structural viability of the market in which they operate. Through complex coordination processes aimed at intentional interaction to achieve an objective, companies develop a balance between cooperation and competition (Compagnone & Simon, 2018). Moreover, companies cooperate to compete as well as compete for cooperation, that is, to be part of a network that has a high potential to provide knowledge and innovation (Leite et al., 2017). Not only the individual relationships of cooperation and competition, but also an organization can live in symbiosis, that is, coexisting with other relationships, or engaging in relationships that simultaneously contain elements of cooperation and competition (Bengtsson & Kock, 2000).

In the context of cooperation between competitors, competition is an endogenous factor, which should not be ignored in the study of coopetition (Peng et al., 2018). Therefore, coopetition is an expression formed by the combination of the cooperation and competition (Nalebuff & Bradenburger, 1997). Coopetition is based on complex relationships between actors who experience conflict with each other due to feelings of hostility and friendship that occur simultaneously because of common interests (Winckler & Molinari, 2011). Successful coopetition requires very specific relational forms that will allow competitors to share ownership of the community (Shockley & Fetter, 2015).

Coopetition is summarily composed of activities to share resources and capacities, which are driven by a cooperative mentality. In this sense, coopetition was found to improve the performance of companies to the point that it would not be achieved if they did not work together with their competitors (Crick, 2018). Shipping lines that share vessels are generally not prepared to share port facilities. High levels of competition coupled with high levels of cooperation promote the development of alliances with various partners and thus positive mutual value (Santos, 2021) — above all, because the current integration between maritime operators and terminals is becoming inevitable due to the continuous effort to reduce costs of the shipping lines (Crotti et al., 2020). Cooperation is only effective if it is based on commercial pillars, which is why the involvement of commercial stakeholders in this analysis is essential (Stamatovic et al., 2018).

Cooperation generally has a greater focus on non-competitive issues, such as lobbying and environmental practices. On the other hand, commercial cooperation leads to a departure from competition, as joint proposals are developed (Stamatovic et al., 2018). If companies are competing in a segment where there is a cooperative mindset, organizations can have access to the resources and capabilities of their competitors and coopetition can directly contribute to their growth as a company, which would be much more difficult if these collaborative strategies did not exist. Although coopetition is still far from full potential in the companies that agreed with this model, this process provides results that would not be reached by the firms acting alone (Monticelli et al., 2022).

Specifically, coopetition plays a crucial role in the shipping industry, where global supply chains depend on collaborative efforts among various stakeholders to ensure seamless and efficient operations.

Shipping Industry

Maritime transport has stood out in comparison to other modes due to the much lower level of environmental pollution as well as the competitive costs of transporting goods over long distances (Anderson, 2018). The shipping lines rarely have their own cargo to transport and do not adapt their route on account of a single shipper, but they offer scheduled transport services on fixed, reliable, and frequent geographic trade routes, thus becoming a facilitator in the transportation of goods, loading hundreds of shippers on various routes (Davies, 2016; Lun et al., 2015; Notteboom, 2004).

The breadth of trade, technological equivalence and standardization, and the increase in the efficiency of ports and shipping lines have made it easier to buy and sell goods in short time. The shipping industry is one of the major drivers of the global economy, whose maintenance and expansion depend fundamentally on affordable and competitive sea freight prices (Bloor et al., 2006; Lun et al., 2015). Currently, 90% of the general cargo in the world is transported by containers (Divyaranjani, 2018; Haralambides, 2007; Otheitis & Kunc, 2014). With the current implementation of economies of scale, which aims to maximize the use of the space available for cargo on each vessel by the shipping lines, this can create a monopoly situation in each market or route, making the lines able to have higher prices of sea freight in certain situations (Casson, 2015). Business trends in the shipping industry move toward the concept of economies of scale as well as the development of network-based management and the adoption of technology to improve efficiency and effectiveness (Divyaranjani, 2018).

Competition in the shipping industry has been quite intense, contributing to increased capacity coupled with low transportation costs (Davies, 2016). Furthermore, shipping lines have reported much lower financial performance compared to other industries in recent years. This fact is related to the combination of the capital-intensive operation and the high risks associated with revenues (Notteboom, 2004). As registered in most major countries with considerable container movement activity, in Brazil, the major world shipping lines dominate deep-sea navigation or navigation to other countries. The majority of Brazilian production exported to other countries and goods from foreign markets are transported by these large global shipping lines, also called megacarriers (Pasin, 2002). However, maritime transport is extremely relevant and strategic for a country with continental geographical dimensions like Brazil. Brazilian activities participate significantly so that the logistic process of handling cargo in foreign trade is optimized (Moura & Botter, 2016).

The Brazilian maritime industry has also felt major changes in recent decades, with a strong increase in its activities, a consequence of the direct action of the Federal Government. Many vessels started to be built and to operate in the country, significantly increasing vessel traffic in Brazilian ports (Defensea, 2019). With the intensification of competition between shipping lines, strategic alliances formed through coopetitive processes must expand the geographic coverage so that the demands of maritime transport can sustain the increase in supply (Ng, 2012). Coverage of the geographic market is vital for maintaining the competitive positions of shipping lines (Slack et al., 2002). The formation of strategic alliances allowed the shipping companies to build larger vessels since the individual companies only needed to operate certain routes of which stood out within the corporate umbrella. Shipping lines seemed to believe they discovered the benefits of combining collaboration and competition in their strategies (Ng, 2012). Such carrier collaboration techniques have already been applied in areas such as cargo where airlines cooperated (Lin & Huang, 2013).

METHOD

We used a multiple case study strategy, with a historical approach. The companies participating in the study are the five largest global shipping lines in 2019 and operate on the Brazilian coast, according to the ranking of the website Alphaliner (2019), and which also translates into the top five shipping lines worldwide. The data comes from bibliographic research, with interpretation through the triangulation of secondary data (company data available on the sector's websites and annual reports), primary data (semi-structured interviews), and observation technique. The primary data was collected in the form of an in-depth interview with elite informants from each selected company (Solarino & Aguinis, 2021). The original instrument was written in Portuguese. The interviews were conducted in Portuguese and translated into English for this article. For the analysis of the data, the transcriptions of the interviews were carried out, with subsequent content analysis.

The companies in this study represent 52% of the total volume handled by the segment, with annual capacity of 11,670,038 TEUs (Alphaliner, 2019). It is important to note that due to strict compliance issues and at the request of the companies studied, their names will not be mentioned in this study, henceforth the companies interviewed will be called according to the nomenclatures (Table 1).

Table 1. List of interviewed shipping lines.

Rank	Shipping lines	TEUs	Share (%)	Interviewee's position	Interview duration (minutes)
1	Company A	4,023,485	17.9	Manager	38:19
2	Company B	3,248,665	14.5	Manager	32:54
3	Company C	2,812,579	12.5	Manager	42:57
4	Company D	2,661,911	11.8	-	-
5	Company E	1,585,309	7.1	Manager	48:10

Company D, due to internal compliance rules, declined to participate in the interview, regardless of whether it accepted to participate in the interview, even while preserving the anonymity of the companies studied. Thus, in the group of the five largest shipping industry companies in the world, only four accepted to be part of this study. Even so, the four companies studied together have more than half of the movement of containers in world trade.

Semi-structured interview was used in this research (Triviños, 1990) with senior executives of the selected companies that are considered business elite informants (Solarino & Aguinis, 2021). The respondents have access to privileged and exclusive information and are able to clearly articulate an organization's situation (Solarino & Aguinis, 2021). Most of the interviews were carried out in person at the shipping lines offices indicated in this study. Two of the scheduled interviews were conducted by Skype due to the interviewees' agenda. At the request of all respondents, their names were not disclosed in this study. It was decided to interview two managers from each company, one being the commercial manager (CM) and the other the operational manager (OM). Thus, it is possible to have a broader view of the coopetition process between shipping lines, by having opinions and positions from different angles of the companies. Secondarily, information was also captured from the corporate websites of the companies interviewed, mainly to compose excerpts of the companies' stories. Data were accessed from the websites of organizations linked to the navigation sector, such as Alphaliner and Defensea.

In this study, cooperation and competition focus on the shipping industry, as a dialogical relationship (Loftus & Higgs, 2010) considering the sector and the business theme in organizational relationships. In this way, it promotes the development of a relationship and a learning style based on experiential activity (Desmond & Jowitt, 2012). Thus, it is justified not to use only a descriptive typology or to use a quantitative approach to the progress of the research. In addition, it does not directly focus on the discussion of the business topic, as in several studies (Midoro et al., 2005; Panayides & Wiedmer, 2011; Ryoo & Thanopoulou, 1999; Slack et al., 2002).

For the identification of the forms of cooperation in the shipping industry, the forms of partnerships in this segment were raised based on the researched literature (Das & Teng, 2000; Maia et al., 2015; Trapp et al., 2020), being the joint venture or joint service, as it is commonly called by the shipping lines. During the interviews, the practice of buying or exchanging slots was also noted. Thus, the shipping lines interviewed in this study were asked whether they adopted such practices in the last years of market activity in the country.

EVALUATION RESULTS

One of the activities that stand out the most in the shipping industry is the joint venture (Dacin et al., 2007; Das & Teng, 2000), commonly called in the segment by joint service since the sipping lines offer a service. The strategy for purchasing slots (Table 2) was also found: "the buyer slot is when the company does not have vessels on a service, but you acquire tacitly and expressly a regular and inalienable 'x' capacity and the company performs within this acquired capacity" (CM/Company C, 2019).

Table 2. Forms of cooperation by shipping lines.

Shipping lines	Joint service	Slot buyer
Company A	Yes	Yes
Company B	Yes	Yes
Company C	Yes	Yes
Company E	Yes	Yes

All four companies interviewed use joint service and slot buyer partnerships, showing that it is a common practice in the shipping industry. "Recently the company did this a lot, there was space left on our ships and we needed space on other services, so we make an exchange" (OM/Company C, 2019). Such actions confirm that shipping lines need each other, and the central element — competitiveness — has led to complex cooperative/competitive relations — coopetition — between ports (Esteve-Perez & Garcia-Sanchez, 2018).

The essential feature of service contracts — joint services — is that they consider the specific needs of the shipper. Such contracts, together, may result in restriction of quality competition, only if the parties can offer a comparable service individually. Thus, this research shows that joint service partnerships and slot buyers are the forms of cooperation currently in use in the shipping industry market in Brazil. "Today, the company practically does not have any services alone, at least those that matter in Brazil, that we operate alone" (OM/Company E, 2019). Therefore, the biggest and main actors in the industry perceive others as collaborators based on the principle that the itinerary is to be commercialized (Esteve-Perez & Garcia-Sanchez, 2018), and offering similar services.

In evaluating the motivation of the coopetition process (Bengtsson & Kock, 2000; Nalebuff & Bradenburger, 1997; Pant & Yu, 2018) among the largest shipping lines operating on the coast, some aspects were found in the interviews with the companies in this study (Table 3).

Table 3. Aspects of the coopetition process between shipping lines.

Positives	Negatives
Use of vessels' capacity	Reduction of jobs
Reduction of operational costs	Loss of operational independence
Risk sharing	Loss of exclusive benefits

The impact of coopetition on business units or teams, highlighting how knowledge sharing varies within the organization (Donato et al., 2018), it is also felt on the shipping lines case, where each company has a point of view for deciding how to use its available resources. Regarding the positive aspects, one of the most relevant points is the use of the vessels' capacity. "I see that the company can take more advantage of the capacity of the vessels through this process, to be able to use the vessel to the fullest" (OM/Company A, 2019). Coopetition incorporates the advantages and minimizes the disadvantages associated with purely competitive/cooperative approaches, creating solutions for terminal operators in a port when competing with terminal operators in external ports (Kavirathna et al., 2019). However, the interviewees also addressed some negative aspects. In addition to the reduction of jobs, the loss of operational independence was also cited as one of the most relevant aspects of the coopetition process. "The process brings some losses, such as the loss of operational independence in decision-making... when there is a partnership, we need to consult the partners before making an operational decision" (OM/Company B, 2019). The coopetition process also causes some benefits to be reduced or lost. "When you use a competitor's vessel, there is a possibility of not having a deadline extension, so there are some conflicts in this partnership and losses for the company" (CM/Company A, 2019).

The process of coopetition between shipping lines is not new to the segment. "The last service I remember that we had alone was the route to Asia in 2009. Today in Brazil, for example, we have no solo service, all are with partnerships" (OM/Company E, 2019). Coopetition can be a great challenge, whether due to social behaviors or the support of contradictory logics, hypotheses, and assumptions (Pant & Yu, 2018). For this reason, cooperation is only effective if it is based on commercial pillars (Stamatovic et al., 2018). Specifically, international coopetition relations are difficult to manage and maintain, once there are political, economic, and social uncertainties in each country or locality (Vanyushyn et al., 2018). All the companies' interviewed in this study stated that in addition to being a practice that has been used for a long time, they all use this model today. Contrary to the contextual argument of Lado et al. (1997)— the competitors could cooperate to compete with a third party —, "it does not make sense to be alone operating several vessels, competing with several shipping lines and with high costs ... one of the reasons for holding a joint venture is to take a little space from the market so that you have better freight prices" (OM/Company C, 2019). It is empirically confirmed that coopetition involves strategic directions, which can compromise the future of the organization (Peng et al., 2018), whether promising or not.

Regarding the motivations of coopetition in the shipping industry, the relevant variables were raised during the interviews (Table 4). Different levels of competition and cooperation can exist in a coopetitive relationship (Donato et al., 2018). Port coopetition results in greater bargaining powers against trade imposed by the government, investment barriers, mega carriers, and transport alliances (Song, 2003). As a result, competitive interactions can be described in terms of three alternative approaches: price adjustment, reduction of operational cost, reduction of vessel handling time, and simultaneous reduction of cost and time at individual terminals, all analyzed as separate scenarios (Kavirathna et al., 2019).

Table 4. Motivators for the coopetition process between shipping lines.

Motivators	Company A		Company B		Company C		Company E	
	CM	OM	CM	OM	CM	OM	CM	OM
Increase market coverage	X	X	X	X	X	X	X	X
Cost savings	X	-	-	X	-	X	X	X
Operational results	X	-	-	-	-	-	-	X

All respondents of the companies interviewed point out as one of the main motivations for coopetition in the shipping industry the increase in market coverage through operational partnerships in joint services. "The need to operate in a joint exists and is necessary so that the company can offer the market a weekly scale, with weekly volume, bringing regularity in this sense" (CM/Company E, 2019). Corroborating Chiao et al. (2015), to prevent the actions of other competitors and prevent fierce competition in the market, especially when industrial supply is greater than demand, some competitor companies join forces into the same objetive, creating an envirolment of protection to their business and new opportunities for the involved partners. This motivation goes even further with the possible diversification of some routes and markets. "If the company participates in two or three joints, it would be the same as participating in a single service, but then the company can open the fan and participate in three slings, in three different markets, something that we would not be able to do otherwise" (CM/Company C, 2019). It translates coopetition as a complex relationship between competition and cooperation — a formal structure that will allow behavioral forms, hitherto opposed, to coexist and interact dynamically (Donato et al., 2018).

Another variable highlighted by the interviewees was cost savings. "One of the main points is cost reduction, this makes us more competitive to survive in the market and to be able to offer a better sea freight price to customers" (OM/Company B, 2019). The main ports grew at the expense of 'medium' and 'small' ports between the years 2001 to 2015. 'Main' ports thus show hierarchical dominance over the 'medium' and 'small' categories (Esteve-Perez & Garcia-Sanchez, 2018). The cost is a very important factor in maintaining this segment. "A route is highly dependent on market demand and the line is unable to change much its operating costs. So, cost reduction is a very relevant factor" (OM/Company E, 2019). This aspect is in line with the findings of Lin et al. (2017), where transporters chose similar levels of coopetition to maximize their profit and that the game of coopetition can reach equilibrium under general conditions. In addition, it was noted that the cost of competition can affect the level of competition, while the cost of cooperation can influence both cooperation and levels of competition.

Even though not all respondents mentioned it, the variable of operational results was also important in this study. "Our company has always been a reference when it comes to punctuality at the scales … so the shipping lines that are part of the joint profit from the operating results and use these advantages to gain even more market" (CM/Company A, 2019). The reason is that those companies operating via coopetition have no incentive to invest more in coopetition — and to increase the size of the market — since the size of the market has already stabilized. What they need to do is spend more effort on the competition so that their profit can be maximized. That is, although the carriers form a strategic alliance, they still strive for their benefit (Lin et al., 2017).

Joining a strategic alliance is about more knowledge and information about rivals — without requiring full information sharing — and can convince hesitant individuals to become involved in limited information sharing (Klein et al., 2020; Los et al., 2020). Shipping companies provide highly standardized service and face a competitive global market (Drobetz et al., 2019). There is also the impact of the compliance rules of each shipping line, increasingly present in the dealings between shipping industry companies: "Our company follows strict global compliance standards, to respect all the requirements that exist about this type of contact" (CM/Company E, 2019). Therefore, by a network analysis of inter-firm communities in several countries, the results showed different cooperative attitudes, but above all demonstrated that companies cooperated selectively in revealing emerging patterns and hidden networks of relationships (Parola et al., 2014; Soppé et al., 2009).

The intra-port coopetition model is introduced as a non-linear optimization problem with two main decision variables: (a) the level of cooperative effort — which increases the competitiveness of the entire port, and (b) the level of competitive effort — dedicated to price adjustment, cost reduction, time reduction, and simultaneous cost and time reduction of individual terminals (Kavirathna et al., 2019). In the shipping industry segment, there is a concern from the companies from which the main decisions are made. All companies and managers interviewed stated that all decisions related to coopetition between shipping lines are made at the headquarters, with local offices having a supporting role in this process. "The branches give their opinion with market information, with commercial basis and cost of the local operation, but the strategic decisions to form or not a joint are all taken in the head office" (CM/Company B, 2019). In some situations, there is also the figure of a regional office, which acts as an intermediary between the subsidiary and the head office in decision-making. "Everything is decided by the headquarters. But in fact, today a lot is consolidated at the regional office in the Americas and then it goes to the headquarters in Europe" (CM/Company A).

The high competitiveness of the entire port is significant for all terminal operators located in that port, attracting more shipping companies, because the factors related to the ports play a significant role in the selection of container terminals (Kavirathna et al., 2019). Therefore, the actors that participate in this process are a critical point in the process of coopetition. "Each shipping line determines who will be the people who will represent it in this joint, as it may be that the study of this joint reveals that it is not a viable business. Thus, the study for a specific joint is concluded and new studies for another joint are started" (OM/Company C, 2019).

Major changes and transformations have occurred in the shipping industry globally in the last decade, but its consequences also affect the operations of international shipping lines on the Brazilian coast. Strategic alliances between companies have become commonplace in the international maritime and port industry (Table 5). A shipping company will cooperate with its competitor to access resources, forming a unique cooperative relationship, a relationship that may exceed traditional competition rules (Chiao et al., 2015). M&A, for example, have been frequent in the segment in recent years, in which shipping lines have sought to optimize resources and maximize gains. The introduction of competition often becomes more relevant through concessions for specific port services. Port competition is then used for services that allow many operators to be concurrent (Trujillo et al., 2018). Coopetition is a way of collaborating to compete, which can prevent mutually destructive competition between players (Esteve-Perez & Garcia-Sanchez, 2018). Thus, a strategic alliance can strengthen both partners against outsiders, even if it weakens the individual partner (Hamel et al., 1989).

Table 5. Strategies of shipping lines in the last decade.

Shipping lines	Merger	Acquisition
Company A	No	Yes
Company B	No	No
Company C	Yes	No
Company E	Yes	No

Allied carriers are encouraged to seek mergers with shipping companies belonging to other alliances (Crotti et al., 2020). All interviewed managers who have gone through the merger or acquisition process in the past few years believe that the process has been beneficial for companies. "In our case, it was a positive process, we joined two large companies to create one and even stronger. So, we left this merger process stronger to have more strength in the market" (OM/Company C, 2019). Other respondents pointed out that these processes also occurred for some needs. "It was a question of survival, we needed to expand the market, have more synergy ... at a certain moment, shipping lines who were going well in different markets propose to themselves: should we going to join?" (OM/Company E, 2019). Empirical studies have already highlighted, corroborating this research, the vital role of cooperation with competitors, especially to sustain industries (Song, 2003; Song & Lee, 2012). Coopetition can arise from exclusive or not always exclusive relationships with some counterparties, which can force parties to cooperate with competitors (Nowińska, 2019). Above all, more efficiency can be achieved by the ports by continuing to cooperate and efforts to facilitate more collaboration between their terminal operators, not necessarily just by merging (Knatz, 2018).

Traditional forms of cooperation have been replaced or integrated with more articulated forms of global strategic alliances, such as waves of M&A, to establish the interconnection of networks of individual companies (Bergantino & Veenstra, 2002). These processes are likely to continue in the coming years. "Looking at the market as a whole, the M&A of shipping lines did not stop there, they are processes that will still go on ... the latest M&A have taken place more effectively" (CM/Company E, 2019). Some companies see this process as a concrete way of growth. In the case of Company C, "Yes, there is a tendency for new M&A because as the company aims to be number one in the world, there is still room for that" (OM/Company C, 2019). Corroborating it, Drobetz et al. (2019) show that shipping companies increase investment in response to increases in freight rates and reduce investment when freight rates decrease, leaving them in a position to exploit growth opportunities when they arise.

One of the issues raised in this research and during the interviews was the cabotage navigation activity. Container cabotage allows to considerably reducing costs related to the repositioning of empty containers (Notteboom, 2004). Of the total of companies interviewed, it is noted that only Company A currently offers the cabotage service in Brazil. "We operate in cabotage with six routes along the Brazilian coast. After the process of acquiring a shipping line, we consolidated this service, but before this acquisition, we had been operating in this segment for a long time" (OM/Company A, 2019). It is important to mention that other companies provide this service on the Brazilian coast but were not the object of research in this study due to the reasons mentioned in the methodology chapter. In addition, Company A, the only one in this study that provides this service, highlights the great motivations for operating in this segment.

A challenge for Brazil is that its transport matrix for the American continent is concentrated in the road modal. Cabotage is a sustainable and smart way to reduce the large number of trucks that cross the country, reversing the challenge of territorial extension and immense coastline, which are now explored by sea (Moura & Botter, 2016). "Our biggest motivation was because we saw that there is still nowhere to grow and there is plenty of opportunity within Brazil to be able to explore and make this business more attractive to the market" (OM/Company A, 2019).

Furthermore, cabotage ends up being a form of rooting for shipping industry companies in Brazil. "I think so, it makes it stronger not only with customers but because of the input we have with customer processes, bringing cargoes that were previously exclusively from the road to sea transport" (CM/Company A, 2019). Cabotage vessels need to reduce their operating costs (Casaca et al., 2017). The companies interviewed that do not have the cabotage service also agree that cabotage would be a way to be even more connected with the country's economy. "This would increase our range of work, bring a little more intermodality, making the company not only shipping line but also logistics, setting the company's roots in the country, as it would be increasing its investments" (OM/Company B, 2019).

Companies that already operate in this niche market also point out some difficulties. "There are bureaucracies, political obstacles, lack of incentives, mainly the question of the price of fuel and even this competition that we have with road transportation" (OM/Company A, 2019). Although it is undeniable that, if the above-mentioned advantages of cabotage are verified, its use on a larger scale in the Brazilian transport matrix is essential (Garrute et al., 2015), given that Brazilian cabotage presents numerous weaknesses, it requires future high investments and regulatory changes (Casaca et al., 2017). Despite the difficulties encountered in the country, the interviewed shipping lines demonstrate the importance of the operation of deep-sea navigation on the Brazilian coast. "Our operations in Brazil are very important due to the country's economy, due to the volume of cargo we have. I think that shows the reason for operating on several routes on the coast. We have even recently increased the size of vessels" (OM/Company E, 2019). This has caused the shipping lines to focus their attention even more on the Brazilian market. "Today Brazil is a point where the company has focused a beam of light and it is putting more and more eyes on the region, which I believe is giving good results for the company (CM/Company C, 2019).

FINAL REMARKS AND CONCLUSIONS

The shipping industry's market environment has felt significant changes in recent years driven by global economic changes. The agents of this industry — the shipping lines — have sought a strategy of cooperation with their competitors (Stamatovic et al., 2018) to maximize their results. One way to enhance this cooperation between competitors in this segment has been the processes of M&A and strategic alliances (Midoro et al., 2005) between shipping companies. In this way, this paper considers that shipping companies can create a mutually advantageous situation through cooperation (Klein et al., 2020; Santos, 2021).

The main motivating aspects of coopetition between international shipping lines operating in Brazil were determined. The coopetition relationship between a focal company and its competitors can affect competitive actions. A focal company that has more cooperative ties with its competitors reduces competitive aggressiveness; on the other hand, a focal company with more competitive rivalries strengthens competitive aggressiveness (Chiao et al., 2015).

Considering the problematization presented (How the process of cooperation and global competition interferes in the shipping industry operating in Brazil?), we can infer that competition rivals and competes with the same objective of other people or institutions (Sato et al., 2011) with the main aim of maximizing its performance (Oliveira & Gonçalves, 2013), to the point that collaborating with your competitors proves to promote performance above your results, superior to the isolated operations (Crick, 2018).

The study analyses used the international port industry as a sample and provided useful suggestions for the shipping companies' operations strategy. One of the main applications of the concept of coopetition is the port operation as pointed before by Lin et al. (2017) and Kavirathna et al. (2019). In a coopetition strategy, it is estimated that the terminal operators will cooperate to increase the port's competitiveness while having competitive interactions to improve the performance of individual terminals (Kavirathna et al., 2019).

It is clear from the study that the process of cooperation and competition — coopetition — interferes in the shipping industry operating in Brazil through the observation that all the companies studied are currently using coopetition processes, a market trend and an issue of survival considering the global economy and especially Brazil. In this way, a first proposition is presented: P1 — 'Companies actively engage in coopetition processes, which represent both a prevalent market trend and a vital survival strategy within the global economic landscape and the unique challenges faced by countries'.

Despite relying on joint service and slot sharing practices (commonly known as coopetition) to maintain competitiveness, the interviewed shipping lines strategically employ these methods for cost reduction and to efficiently address the diverse demands of export and import processes along the Brazilian coast. This adaptability underscores the potential for a group of organizations to diversify in response to adversity, potentially reaching a level of excellence and innovation that can serve as global inspiration (Koliousis et al., 2019). Similar aspects were founded in the study of Crick (2018), which highlights that the chance of interaction between competitors that decide to cooperate depends on the several environmental aspects, but the most important point that defines the coopetition is the possibility to share resources and capabilities. The study of Shockley and Fetter (2015) also contributes with this first proposition that coopetitive strategies may improve significantly the logistic performance, making the companies involved more likely to deliver a better level of service by sharing their resources.

Considering the affirmation presented, the second proposition is: P2 — 'The utilization of coopetition demonstrates that companies employ these strategies to achieve cost reduction and effectively meet the diverse demands of export and import processes'.'

The shipping lines also mentioned that there are more positives than negatives in the decision to enter coopetition. The main negative aspects address the loss of operational independence, exclusive benefits, and possible reduction in jobs. The gain or loss process does not seek to destroy market participants, but rather to reduce their market shares because ports need each other to generate itineraries (Esteve-Perez & Garcia-Sanchez, 2018). On the other hand, the value of the cooperative benefit is the same for all operators of a given port, regardless of differences in their cooperative efforts, and is used as a component of the generalized cost function of shipping lines (Kavirathna et al., 2019). The positive aspects, on the other hand, address the better use of the vessels' capacity, reduction of operational costs, and the sharing of risks inherent to the activity of a joint service. In the study of Bengtsson and Kock (2000), the authors have also mentioned that coopetition is an attractive strategy to improve the performance and results of the companies involved, besides to offer more support in case of more radical innovation. For some cases of innovation, the study of Roig-Tierno et al. (2018) affirms that a company by itself may not be capable to move forward or it would take a considerable period to complete the process.

Cooperation processes between competitors are essential for the continuity of the shipping industry. It is a model close to the inevitable for the survival of companies not only in the studied sector. No one else works alone — using slot or joint strategies — either out of necessity or to reduce risk. Among the factors, we highlight the reduction of costs, greater coverage of routes, offer of services such those of competitors, and optimization of assets, vessels. To be a big player in this market today, companies need to cooperate with competitors.

So, a third proposition is presented: P3 — 'In the contemporary market, companies must engage in cooperative strategies not only out of necessity but also to mitigate risk.' This finding is also mentioned by Pattinson et al. (2018), who state that the coopetition process is part of the strategic change plan of companies that understand the possibilities of mutual gaining and learning between the firms that decide to jump into the coopetition. The study of Vanyushyn et al. (2018) also fits this proposition and highlights the knowledge generate of this interaction as the main aspect of coopetition, where the companies involved pressure each other for improving and developing its partner.

This paper is scientifically relevant to the shipping lines segment, as it promotes indications for assistance in favor of the development of coopetition between companies in the sector, or as a means of defense, in competition, of companies not participating in a coopetition.

This paper reinforces the existent literature and is in line with most of the available coopetitive studies, where the analyzed companies mentioned there are much more positive than negative points in a coopetition, taking into consideration all the aspects and reflexing the daily basis operation. Furthermore, this research sheds light on the business landscape by analyzing the coopetition process in the maritime transportation industry along the Brazilian coast. It underscores the importance of contextual uniqueness in shaping coopetition dynamics, rules, and practices. Additionally, understanding how stakeholders navigate a coopetitive environment and discerning the ensuing impacts can profoundly influence their operations, not solely within Brazil but on a broader scale.

Taking everything into account, the main theoretical contributions are: (a) coopetition as a strategic imperative: the paper contributes to the understanding of coopetition (cooperation and competition) as a prevalent and vital strategy in the shipping industry operating in Brazil. It argues that coopetition processes represent both a prevailing market trend and a crucial survival strategy within the global economic landscape and the unique challenges faced by countries; (b) operational impacts and cost reduction through coopetition: the paper highlights that despite potential negative aspects, such as loss of operational independence and exclusive benefits, the positive outcomes include better use of vessel capacity, reduced operational costs, and shared risks. This contributes to the understanding of how companies strategically employ coopetition for operational efficiency and cost-effectiveness; (c) coopetition as a necessity for survival: the paper contributes to the idea that cooperation processes between competitors, i.e., coopetition, are essential for the continuity and survival of the shipping industry. The study underscores the idea that, in today's competitive landscape, companies in the shipping industry need to cooperate with competitors to be significant players. This finding aligns with existing literature on coopetition and emphasizes the importance of collaborative strategies for survival and success in the industry.

These theoretical contributions collectively provide insights into the strategic choices and operational implications of coopetition in the shipping industry, particularly in the Brazilian context. The paper contributes to the broader literature on coopetition and sheds light on the specific challenges and opportunities faced by shipping companies in the region.

We suggest alternatives for replicability, since, as in any case study (Eisenhardt, 1989), the purpose of the analysis is not to provide a highly generalizable result but to expand our knowledge of the variety of mechanism strategies. A detailed interpretation of the limited numerical results could not be provided in the absence of a case study approach. The study is also limited by considering only joint ventures and M&A as strategies of the companies in the case.

Therefore, further studies should be carried out considering a case study application based on industrial data. Further investigation can be carried out with a larger number of companies and that is greater than 52% of representativeness in the shipping industry to compare the results regarding the coopetition process between these companies. A future exercise would be to extend the model and the solution algorithm to form coopetition that requires dedication, at the level of effort, close to equality between the parties.

REFERENCES

Alphaliner. (2019). *Alphaliner TOP 100*. https://alphaliner.axsmarine.com/PublicTop100

Anderson, A. (2018). *Navegação segura e portos eficientes: formação de uma empresa de consultoria no porto de Santos*. Instituto CEUB de Pesquisa e Desenvolvimento – ICPD.

Asadabadi, A., & Miller-Hooks, E. (2018). Co-opetition in enhancing global port network resiliency: A multi-leader, common-follower game theoretic approach. *Transportation Research Part B, 108*, 281-298. https://doi.org/10.1016/j.trb.2018.01.004

Bengtsson, M., & Kock, S. (2000). Cooperation and competition in relationships between competitors in business networks. *Journal of Business & Industrial Marketing*, *14*(3), 178-193. https://doi.org/10.1108/08858629910272184

Bergantino, A. S., & Veenstra, A. W. (2002). Interconnection and co-ordination: an application of network theory to liner shipping. *International Journal of Maritime Economics*, *4*(3), 231–248.

Bloor, M., Datta, R., Gilinskiy, Y., & Horlick-Jones, T. (2006). Unicorn among the cedars: On the possibility of effective 'smart regulation' of the globalized shipping industry. *Social & Legal Studies*, *15*(4), 534-551. https://doi.org/10.1177/0964663906069546

Casaca, A. C. P., Galvão, C. B., Robles, L. T., & Cutrim, S. S. (2017). The Brazilian cabotage market: A content analysis. *International Journal of Shipping and Transport Logistics*, *9*(5), 601-625. https://doi.org/10.1504/IJSTL.2017.086316

Casson, M. (2015). The role of vertical integration in the shipping industry. *Journal of Transport Economics and Policy*, *20*(1), 7-29. https://www.jstor.org/stable/20052764

Chiao, Y-C., Huang, C-J., & Hsu, S-M. (2015). Does multimarket contact lead to mutual forbearance? The influence of the coopetition network of maritime and port companies. *International Journal Shipping and Transport Logistics*, *7*(5), 529-552. http://dx.doi.org/10.1504/IJSTL.2015.072020

Compagnone, C., & Simon, B. (2018). Cooperation and competition among agricultural advisory service providers. The case of pesticides use. *Journal of Rural Studies*, *59*, 10-20. https://doi.org/10.1016/j.jrurstud.2018.01.006

Crick, J. M. (2018). The facets, antecedents and consequences of coopetition. An entrepreneurial marketing perspective. *Qualitative Market Research: An International Journal*, *21*(2), 253-272. http://dx.doi.org/10.1108/QMR-11-2016-0109

Crick, J. M., & Crick, D. (2021). The dark-side of coopetition: Influences on the paradoxical forces of cooperativeness and competitiveness across product-market strategies. *Journal of Business Research*, *122*(C), 226–240. https://doi.org/ 10.1016/j.jbusres.2020.08.065

Crotti, D., Ferrari, C., & Tei, A. (2020). Merger waves and alliance stability in container shipping. *Maritime Economics and Logistics*, *22*(3), 446–472. https://doi.org/10.1057/s41278-019-00118-6

Dacin, M. T., Oliver, C., & Roy, J-P. (2007). The legitimacy of strategic alliances: An institutional perspective. *Strategic Management Journal*, *28*, 169-187. https://www.jstor.org/stable/20142430

Das, T. K., & Teng, B-S. (2000). A resource-based theory of strategic alliances. *Journal of Management*, *26*(1), 31-61. https://doi.org/10.1016/S0149-2063(99)00037-9

Davies, J. E. (2016). Coition, contestability and the liner shipping industry. *Journal of Transport Economics and Policy*, *20*(3), 299-312. https://www.jstor.org/stable/20052882

Defensea, C. (2019). *A situação portuária no Brasil:* Implementação de sistemas de controle de tráfego marítimo e de melhorias na segurança física das instalações. https://www.defensea.com.br/post/roz%C5%A1i%C5%99ujte-svoji-komunitu-na-blogu

Desmond, B., & Jowitt, A. (2012). Stepping into the unknown: Dialogical experiential learning. *Journal of Management Development*, *31*(3), 221–230. https://doi.org/10.1108/02621711211208853

Divyaranjani, R. (2018). Mergers and acquisitions in the container shipping industry. *International Journal of Supply Chain Management*, *7*(1), 212-217.

Donato, A., Carfì, D., & Blandina, B. (2018). Coopetitive games for management of marine transportation activity: A study case. *Mathematics*, *6*(12), 1-17. https://ideas.repec.org/a/gam/jmathe/v6y2018i12p322-d190016.html

Drobetz, W., Janzen, M., & Requejo, I. (2019). Capital allocation and ownership concentration in the shipping industry. *Transportation Research Part E*, *122*, 78-99. https://doi.org/10.1016/j.tre.2018.09.010

Eisenhardt, K. M. (1989). Building Theories from Case Study Research. *The Academy of Management Review*, *14*(4), 532-550. https://doi.org/10.2307/258557

Emborg, J., & Gamborg, C. (2016). A wild controversy: Cooperation and competition among landowners, hunters, and other outdoor recreational land-users in Denmark. *Land Use Policy*, *59*, 197-206. https://doi.org/10.1016/j.landusepol.2016.08.030

Esteve-Perez, J. & Garcia-Sanchez, A. (2018). Dynamism patterns of western Mediterranean cruise ports and the coopetition relationships between major cruise ports. *Polish Maritime Research*, *25*(1), 51-60. http://dx.doi.org/10.2478/pomr-2018-0006

Garrute, M. M., Mendes, D. R. F., Pinheiro, A. A., & Oliveira, M. A. C. (2015). Contrato de afretamento e navegação de cabotagem. *RVMD*, *9*(1), 245-268. https://portalrevistas.ucb.br/index.php/rvmd/article/view/5738

Hannah, D. P., & Eisenhardt, K. M. (2017). How firms navigate cooperation and competition in nascent ecosystems. *Strategic Management Journal*, *39*(12), 3163-3192. https://doi.org/10.1002/smj.2750

Hamel, G., Doz, Y., & Prahalad, C. (1989). Collaborate with your competitors—and win. *Harvard Business Review*, *67*, 133-139.

Haralambides, H. E. (2007). Structure and operations in the liner shipping industry. In, D. A. Hensher, K. J. Button. *Handbook of Transport Modelling* (2nd ed., pp. 761-775). Emerald Group.

Heaver, T., Meersman, H., Moglia, F., & Van de Voorde, E. (2000). Do mergers and alliances influence European shipping and port competition? *Maritime Policy & Management, 27*(4), 363-373.

Kavirathna, C. A., Kawasaki, T., & Hanaoka, S. (2019). Intra-port coopetition under different combinations of terminal ownership. *Transportation Research Part E: Logistics and Transportation Review*, *128*, 132-148. https://doi.org/10.1016/j.tre.2019.06.001

Kavirathna, C. A., Kawasaki, T., Hanaoka, S., & Bandara, Y. M. (2020). Cooperation with a vessel transfer policy for coopetition among container terminals in a single port. *Transport Policy*, *89*, 1-12.

Klein, K., Semrau, T., Albers, S., & Zajac, E. J. (2020). Multimarket coopetition: How the interplay of competition and cooperation affects entry into shared markets. *Long Range Planning*, *53*(1), 101868. https://doi.org/10.1016/j.lrp.2019.02.001

Knatz, G. (2018). Port mergers: Why not Los Angeles and Long Beach? *Research in Transportation Business & Management*, 26, 26-33. https://doi.org/10.1016/j.rtbm.2018.02.001

Koliousis, I. G., Papadimitriou, S., Riza, E., Stavroulakis, P. J., & Tsioumas, V. (2019). Strategic correlations for maritime clusters. *Transportation Research Part A*, *120*, 43-57. https://doi.org/10.1016/j.tra.2018.12.012

Lado, A. A., Boyd, N. G., & Hanlon, S. C. (1997). Competition, cooperation, and the search for economic rents: A syncretic model. *Academy of Management Review*, 22, 1101141.

Leite, E., Pahlberg, C., & Aberg, S. (2017). The cooperation-competition interplay in the ICT Industry. *Journal of Business & Industrial Marketing*, *33*(4), 495-505. https://doi.org/10.1108/JBIM-02-2017-0038

Lin, D-Y., & Huang, C-C. (2013). Coopetition in international maritime shipping. *Polish Maritime Research*, *20*(79), 5-12. https://doi.org/10.2478/pomr-2013-0022

Lin, D-Y., Huang, C-C., & Ng, M-W. (2017). The coopetition game in international liner shipping. *Maritime Policy & Management*, *44*(4), 474-495. http://dx.doi.org/10.1080/03088839.2017.1295325

Lin, Y., & Wang, X. (2020). Coopetition in the supply chain between container liners and freight forwarders: A game theory approach. *Transportation Planning and Technology*, *43*(8), 771-782. http://dx.doi.org/10.1080/03081060.2020.1828932

Loftus, S., & Higgs, J. (2010). Researching the individual in workplace research. *Journal of Education and Work*, *23*(4), 377-388. http://dx.doi.org/10.1080/13639080.2010.495712

Los, J., Schulte, F., Spaan, M. T. J., & Negenborn, R. R. (2020). The value of information sharing for platform-based collaborative vehicle routing. *Transportation Research Part E: Logistics and Transportation Review*, *141*, 102011. https://doi.org/10.1016/j.tre.2020.102011

Lun, Y. H. V., Lai, K-H., Wong, C. W. Y., & Cheng, T. C. E. (2015). Greening and performance relativity: An application in the shipping industry. *Computers and Operations Research*, *54*, 295-301. https://doi.org/10.1016/j.cor.2013.06.005

Maia, T. S. T., Ferreira, M. A. S. P. V., & Maia, F. S. (2015). Especificidades de ativos e alianças estratégicas no setor farmacêutico brasileiro. *Revista de Gestão do Unilasalle*, *4*(2), 59-80. http://dx.doi.org/10.18316/2316-5537.15.4

Midoro, R., Musso, E., & Parola, F. (2005). Maritime liner shipping and the stevedoring industry: market structure and competition strategies. *Maritime Policy & Management*, *32*(2), 89-106. https://doi.org/10.1080/03088830500083521

Monticelli, J. M., Garrido, I. L., Vieira, L. M., Chim-Miki, A. F., & Carneiro, J. (2022). Can Competitors cooperate? The impact of formal institution agents in promoting coopetition among emerging market exporters. *Journal of Business & Industrial Marketing*, *37*(9), 1915-1932. https://doi.org/10.1108/JBIM-10-2020-0482

Moura, D. A., & Botter, R. C. (2016). Transporte marítimo - O corredor verde para o Brasil. *Revista Gestão Industrial*, *12*(2), 126-138. http://dx.doi.org/10.3895/gi.v12n2.3844

Nalebuff, B. J., & Brandenburger, A. M. (1997). Co-opetition: Competitive and cooperative business strategies for the digital economy. *Strategy & Leadership*, *25*(6), 28-33. https://doi.org/10.1108/eb054655

Ng, A. K. Y. (2012). Container liner shipping, port development and competition. In D.-W., & Song, P. M. Panayides, *Maritime Logistics: Contemporary Issues*, 5-28.

Notteboom, T. E. (2004). Container shipping and ports: An Overview'. *Review of Network Economics*, *3*(2), 86-106. https://doi.org/10.2202/1446-9022.1045

Nowińska, A. (2019). Ships and relationships: Competition, geographical proximity, and relations in the shipping industry. *Journal of Business Research*, *101*, 161–170. https://doi.org/10.1016/j.jbusres.2019.04.021

Oliveira, F. O., & Gonçalves, C. A. (2013). A Dicotomia entre cooperação e competição em um aglomerado territorial turístico. *Revista de Cultura e Turismo*, *7*(1), 152-170. http://periodicos.uesc.br/index.php/cultur/article/view/313

Otheitis, N., & Kunc, M. (2014). Performance measurement adoption and business performance - an exploratory study in the shipping industry. *Management Decision*, *53*(1), 139-159. http://dx.doi.org/10.1108/MD-02-2014-0108

Panayides, P. M., & Wiedmer, R. (2011). Strategic alliances in container liner shipping. *Maritime Policy & Management*, *32*(1), 25-38. https://doi.org/10.1016/j.retrec.2011.06.008

Pant, V., & Yu, E. (2018). Modeling simultaneous cooperation and competition among enterprises. *Business & Information Systems Engineering*, *60*(1), 39-54. https://aisel.aisnet.org/bise/vol60/iss1/4/

Parola, F., Satta, G., & Caschili, S. (2014). Unveiling co-operative networks and 'hidden families' in the container port industry. *Maritime Policy & Management*, *41*(4), 384–404. https://doi.org/10.1080/03088839.2013.782442

Pasin, J. A. B. (2002). Indústria naval do Brasil: Panorama, desafios e perspectivas. *Revista do BNDES*, *9*(18), 121-148. http://web.bndes.gov.br/bib/jspui/handle/1408/11435

Pattinson, S., Nicholson, J., & Lindgreen, A. (2018). Emergent coopetition from a sensemaking perspective: A multi-level analysis. *Industrial Marketing Management*, v. 68, p. 25–35. http://hdl.handle.net/2263/62850

Peng, T-J. A., Yen, M.-H., & Bourne, M. (2018). How rival partners compete based on cooperation? *Long Range Planning*, 51, 351-383. https://doi.org/10.1016/j.lrp.2017.10.003

Roig-Tierno, N., Kraus, S., & Cruz, S. (2018). The relation between coopetition and innovation/entrepreneurship. *Review Management Science*, *12*(2), 379–383. http://dx.doi.org/10.1007/s11846-017-0266-8

Ryoo, D. K., & Thanopoulou, H. A. (1999). Liner Alliances in the globalization era: A strategic tool for Asian container carries. *Maritime Policy & Management*, *26*(4), 349-367. https://doi.org/10.1080/030888399286790

Saeed, N., & Larsen, O. I. (2010). An application of cooperative game among container terminals of one port. *European Journal of Operational Research*, 203, 393-403. https://doi.org/10.1016/j.ejor.2009.07.019

Santos, J. N. (2021). Linking joint value creation to the interplay of competition and cooperation: A fuzzy set approach. *Industrial Marketing Management*, *92*(6), 45–54. https://doi.org/10.1016/j.indmarman.2020.10.015

Sato, L., Andrada, C. F., Evora, I. M. A., Neves, T. F. S., & Oliveira, F. (2011). As tramas psicossociais da cooperação e da competição em diferentes contextos de trabalho. *Arquivos Brasileiros de Psicologia*, *63*(n. esp), 1-104. http://pepsic.bvsalud.org/scielo.php?script=sci_arttext&pid=S1809-52672011000300002

Soppé, M., Parola, F., & Frémont, A. (2009). Emerging inter-industry partnerships between shipping lines and stevedores: From rivalry to cooperation? *Journal of Transport Geography*, *17*(1), 10-20. https://doi.org/10.1016/j.jtrangeo.2008.04.006

Shockley, J., & Fetter, G. (2015). Distribution co-opetition and multi-level inventory management performance: An industry analysis and simulation. *Journal of Purchasing & Supply Management*, *21*(1), 51-63. https://doi.org/10.1016/j.pursup.2014.09.002

Slack, B., Comtois, C., & McCalla, R. (2002). Strategic alliances in the container shipping industry: A global perspective. *Maritime Policy & Management*, *29*(1), 65-76. https://doi.org/10.1080/03088830110063694

Solarino, A. M., & Aguinis, H. (2021). Challenges and best practice recommendations for designing and conducting interviews with elite informants. *Journal of Management Studies*, *58*(3), 649-672. https://doi.org/10.1111/joms.12620

Song, D. W. (2003). Port co-opetition in concept and practice. *Maritime Policy and Management*, *30*(1), 29-44. https://doi.org/10.1080/0308883032000051612

Song, D.-W., & Lee, E.-S. (2012). Coopetitive networks, knowledge acquisition and maritime logistics value. *International Journal of Logistics Research and Applications*, *15*(1), 15–35. https://doi.org/10.1080/13675567.2012.662949

Song, D.-W., & Panayides, P. M. (2002). A conceptual application of cooperative game theory to liner shipping strategic alliances. *Maritime Policy & Management*, *29*(3), 285-301.

Stamatovic, K., Langen, P., & Groznik, A. (2018). Port cooperation in the North Adriatic ports. *Research in Transportation Business & Management*, *26*, 109-121. https://doi.org/10.1016/j.rtbm.2018.03.006

Trapp, A. C., Harris I., Rodrigues, V. S., & Sarkis J. (2020). Maritime container shipping: Does coopetition improve cost and environmental efficiencies? *Transportation Research Part D: Transport and Environment*, *87*, 102507. https://doi.org/10.1016/j.trd.2020.102507

Triviños, A. N. (1990). *Introdução à pesquisa em ciências sociais: A pesquisa qualitativa em educação*. Atlas.

Trujillo, L., Campos, J., & Pérez, I. (2018). Competition vs. cooperation between neighbouring ports: A case study in Chile. *Research in Transportation Business & Management*, *26*, 100-108. https://doi.org/10.1016/j.rtbm.2018.03.005

Vanyushyn, V., Bengtsson, M., Näsholm, M. H., & Boter, H. (2018). International coopetition for innovation: Are the benefits worth the challenges? *Review of Managerial Science*, 12, 535–557. https://doi.org/10.1007/s11846-017-0272-x

Winckler, N. C., & Molinari, G. T. (2011). Competição, colaboração, cooperação e coopetição: Revendo os conceitos em estratégias interorganizacionais. *Revista Gestão Estratégica*, *4*(1), 1-12. https://revistas.uepg.br/index.php/admpg/article/view/13960

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