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FROM THE PEAK TO THE DECLINE, UNDERSTANDING SHIPBUILDING FROM THE PERSPECTIVE OF OPERATIONAL CAPACITY

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Abstract: The objective of this research was to understand the decline of shipbuilding, from the perspective of operational capacity. For this purpose, continuity was given to previous work that identified the operational capabilities found in Brazilian shipyards. The processes of the shipyards were approached through a bibliographical survey, documentary research and interviews. The research is a qualitative study of multiple cases, having as units of analysis the cases of Atlântico Sul and Vard Promar shipyards. The main results indicate that in the empirical segment of shipbuilding, the operational capacity categories of improvement, cooperation and control are important, but they were not enough to keep the shipyards in operation, since the two shipyards, at the moment, are without demand for continue its activities. The results indicate that responsiveness and reconfiguration capabilities, which were weakly identified in previous works, are fundamental for adapting shipyards to current environmental conditions, which involves demand shortages and changes in development policy strategies. In view of this, the work ratifies the importance of responsiveness and reconfiguration capacity, especially in complex markets, with strong global trends and dependence on government policies, with predominantly financial characteristics.
Keywords: Operational capacity. Reconfiguration. Responsiveness.

INTRODUCTION

In 2006, TRANSPETRO launched the Fleet Modernization and Expansion Program (PROMEF), with the objective of reducing the average age of its fleet to ten years. Planning foresaw the construction of 49 large ships, in two phases of orders: the first, with 23 ships, and the second phase, with 26. PROMEF established as premises the construction of ships in Brazil, with a National Content of 65 %, in the first phase, and 70%, in the second, focusing on guaranteeing the competitiveness of the shipyards at an international level.

After more than a decade, of the 49 ships planned, 20 were cancelled, 26 were delivered and 03 were not completed. In addition, all shipyards involved are without productive activities. Political changes have reduced government demands and global demands have become scarce with the world oil crisis. In this context, although there is a consensus on the importance of this segment for society, the debates surface on the credibility and viability of the Brazilian industrial park, mainly due to the strong international competitiveness of Asian countries, more specifically, Japan, South Korea and China.

The empirical segment of shipbuilding is very conservative and difficult to collect field exploratory data. Recently some exploratory works Oliveira et. Al (2018), Oliveira (2016), Moser (2016), Amaro (2016), raised important information about the shipyards in Pernambuco, having as a theoretical link the operational capacity, theoretical framework, convergent in understanding the productive process of shipbuilding.

Thus, this work is justified since: it presents a source of complementary information for the operational capacity literature, more specifically in a little explored segment such as shipbuilding, understanding in the light of previous works the recent disarticulation of the segment.

In view of the above, this work aims to understand, in the light of operational capacity, the possible causes of the new disarticulation of the shipbuilding sector in Brazil, suggesting possible alternatives for the continuity of this important segment.

OPERATIONAL CAPACITY

Flynn, Wu and Melnyk (2010), based on the strategic management literature and applying the essential traits of the operations management domain, define operational capabilities as a set of skills, processes, routines and specific organizational practices of the company developed within of the operations management system, which are regularly used in solving your problems from the configuration of your operational resources.

The surveys found show a consensus among several authors, who consider operational capacity as a higher-level construct, developed from the interaction of resources to achieve specific objectives. However, despite this consensus, operational capabilities are often overlooked because they are not perceivable and are built into the features of operating systems. Managers' attention tends to be drawn to what is most readily apparent, such as assets, resources, and operating practices. Consequently, most of the impact of operational capabilities is often attributed to practices or resources (FLYNN; WU; MELNYK, 2010).

Operational capacity can be identified from the categories of operational capacity, initially proposed by Swink and Hegarty (1998), studied by Flynn, Wu and Melnyk (2010) and more recently discussed by Oliveira (2016). These categories, together, became the theoretical bases for the development of this work.

IMPROVED OPERATIONAL CAPACITY (*EXPLOITATION*)

The operational capacity for improvement, a term used as a translation of exploitation (initially proposed by March in 1991), refers to a differentiated set of skills, processes and routines to incrementally refine and reinforce existing operations processes. The concept, also used by Brady and Davies (2004) in the Capacity Building in Design (CCP) model, focuses on small change processes, creating improvements that translate into greater performance. Through the use of resources and the application of existing operating practices, this type of capability systematically seeks to develop new ways of doing work for customers, as opposed to major improvements or radical process changes (BENNER; TUSHMAN, 2003; PENG; SCHROEDER; SHAH, 2008; FLYNN; WU; MELNYK, 2010).

Although some managers have recognized the importance of operational capacity when related to continuous improvement, many believe that its management is a challenge. Others consider that their cumulative effect can be quite significant, benefiting both existing products and future generations. Obtaining it is related to increased understanding of the process, identification and elimination of activities that do not add value, and high levels of effort and effectiveness in human resources. (WHEELWRIGHT; HAYES, 1985; HARRINGTON; MATHIAS, 1997; SWINK; HEGARTY, 1998).

OPERATIONAL CAPACITY FOR INNOVATION (*EXPLORATION)*

The operational capacity of innovation, a term used as a translation of exploration, is also a concept initially proposed by March (1991). It is a differentiated set of skills, processes and routines to radically improve by creating and implementing new and unique operations processes. Used similarly by Brady and Davies (2004) in the Capacity Building by Design (CCP) model, this type of capability focuses on seeking change and experimentation in order to alter trajectories and technologies associated with organizational competencies (BENNER; TUSHMAN, 2003; PENG; SCHROEDER; SHAH, 2008; FLYNN; WU; MELNYK, 2010).

Converging with this approach, Swink

and Hegarty (1998) defined innovation as the ability to create and implement unique manufacturing processes that radically improve performance through perception, creativity and ingenuity. Perception corresponds to the ability to identify problems, new processes and technological developments, inside and outside the industry. Creativity allows the creation and evaluation of new ideas that satisfy organizational objectives. Ingenuity is described as the application of new technologies or methods to solve problems, always with a focus on radical changes that seek new knowledge or skills using innovative behavior and experimentation with unknown alternatives, as distinct from the proposed incremental changes in operational capacity of improvement (MARCH, 1991; BENNER; TUSHMAN, 2003; PENG; SCHROEDER; SHAH, 2008)

OPERATIONAL CAPACITY FOR COOPERATION

Initially, Swink and Hegarty (1998) proposed the concept of integration as the ability to incorporate new products or processes through the flexibility to quickly introduce and manufacture new products, to learn new skills and new processes, and to adjust incorporation processes and changes. of the product, in addition to adapting to changes in the market. Later, Kim (2006) expanded the concept and proposed the term cooperation as the ability to create and maintain healthy relationships with members of the supply chain, related to product development.

Based on these works, Fynn, Wu and Melnyk (2010) developed a broader concept of cooperative operational capability. For them, the operational capacity for cooperation is constituted as the ability to bring together the parties involved to share information, converging on a common interpretation of what needs to be done. As uncertainty increases, increased cooperative operational capability is needed to help companies deal with the fuzziness of their environments and enact a shared vision in order to acquire information, interpret the environment, resolve organizational conflicts, and come to an understanding. mutual about a specific task.

The operational capacity of cooperation is based on the use of advanced technologies for processing information, providing mechanisms that enable the company to deal with the complexities of competing in a globalized environment. In order to respond to the increase in this complexity, companies seek coordination mechanisms that allow them to process more information quickly (GALBRAITH, 1973; KOUFTEROS; VONDEREMBASE; DOLL, 1998; FLYNN, B.; FLYNN E., 1999; BOZARTH et al, 2009).

This complexity present in globalized environments has been studied by many authors over time, who converged on the concept of diversity in order to explain its existence. Diversity can be seen in relation to the perspective of the product, customers, suppliers, production and work. Product diversity corresponds to the variety of products, the markets served and the volumes of individual products (BOZARTH et al., 2009). Customer diversity is characterized by the number of customers, relationships with customers, different volumes purchased and the distance between the company and customers (ANDERSON; NARUS, 1998). Similarly, the diversity of suppliers corresponds to the number of suppliers, the nature of the relationship with suppliers and the location of suppliers (GONZALEZ-BENITO, 2007; KOUFTEROS; CHENG; LAI, 2007; HOLWEG; PIL, 2008; NARASIMHAN; TALLURI, 2009). In turn, production diversity is related to changes in sales, shipping priority, and the quantity and type

of materials to be purchased. Work diversity corresponds to different types of activities in organizations, including employee dismissals (KOUFTEROS; VONDEREMBASE; DOLL, 1998; BOZARTH et al., 2009).

CUSTOMIZATION OPERATIONAL CAPACITY

The operational capability of customization has its roots in the work of Wheelwright and Hayes (1985), who presented the benefits of developing processes and equipment that are difficult for competitors to imitate, as well as the ability of their employees to maintain and improve these processes and equipment, allowing the company's dominance in what is fundamental for the business.

Swink and Hegarty (1998) complemented this approach, using the concept of perception as the ability to understand customer needs to acquire, develop and transmit valuable information about products or processes, using consulting, information sharing and presentation. of product. Consulting aims to help internal and external customers with problem solving (eg new product development, manufacturing design and quality improvement). Information sharing provides critical data on product performance and process and cost parameters to customers. The product presentation, which will outline the technology, equipment and production systems, conveys the value of manufacturing resources, providing increased sales and market share.

Schroeder, Bates and Junttila (2002) recorded that the learning path inherent to specific companies resulted in the development of unique processes, which confer competitive advantage. But while there are many similarities in the practices associated with developing these processes, each company reflects an underlying ability to customize a process to meet the unique needs of a product and its target markets. Contributing to this approach, Brady and Davies (2004) were concerned with understanding the path of learning and its absorption, presenting the CCP model (already detailed in the previous section).

Fynn, Wu and Melnyk (2010), associating the perception operational capacity category proposed by Swink and Hegarty (1998) and the advantages obtained in relation to the development of specific processes, proposed the concept of customization operational capacity. For them, this capacity is defined as being a differentiated set of competences, processes and routines that develop the creation of knowledge through the customization of processes and systems of operations.

RESPONSIVE OPERATIONAL CAPACITY

Initially presented by Swink and Hegarty (1998), the operational capacity of responsiveness was conceptualized as being the ability to react, in a timely manner, to changes in materials (substitutions or variations of raw materials), in the routing of production (changes in the product), in production sequencing (reorganization of the order in the manufacturing process) and in deliveries (acceleration or redirection of deliveries). Complementing this category, Swink and Hegarty (1998) proposed another, calling flexibility the ability to move easily from one manufacturing state to another, meeting both volume changes (high volume production efficiently) and product types. (manufacture a variety of products, over a short period of time, without modifying facilities).

Fynn, Wu and Melnyk (2010), simultaneously encompassing the two categories described above, defined operational responsiveness as the differentiated ability,

within processes and routines, to react quickly and easily to changes in input and output requirements., so that a process can consistently meet customer needs with little time or cost. Also defined as the ability to manage production resources (machines, materials and production planning), it establishes the basis for the performance of flexibility strongly related to technological production and specialization, allowing the fulfillment of different combinations of products (variety flexibility) and variations in lot size (volume flexibility) (see ZHANG; VONDEREMBSE; LIM, 2003; MARTINEZ; PEREZ, 2005; SWINK; NARASIMHAN; KIM, 2005).

RECONFIGURATION OPERATIONAL CAPACITY

Operational reconfiguration capability focuses on reshaping operations resources, through investment and divestment decisions, in order to cope with environmental changes. It is based on the concept of dynamic capabilities, launched by Teece, Pisano and Shuen (1997), who in turn used the RBV (Resource Based View) fundamentals. However, while the RBV focuses on durable performance (due to differences in asymmetric resources and productivities across firms), dynamic capability describes the different abilities that firms develop to accumulate, deploy, renew, and reconfigure resources in response to changes. in its external environment (PANDZA et al., 2003a). Dynamic capability corresponds to the processes developed by the company that generate integration, reconfiguration and even the creation of market change.

For Teece, Pisano and Shuen (1997), the reconfiguration operational capacity is a differentiated set of competences, processes and routines, carrying out the necessary transformations to restore the adjustment between the strategic operations and the market environment, when its balance is disturbed. It is a valuable tool when a company is faced with a rapidly changing external environment. The operational capability of reconfiguration allows routines to adapt to unexpected changes, maintaining flexible responses and implementing synchronization in operations. According to this definition, Pandza et al. (2003b) describes the reconfiguration operational capacity as being the investment in tangible and intangible resources that provides the company, in uncertain environments, with the necessary conditions for change. It matters in uncertain and volatile business environments, where companies face innovation, economic downturns, production losses and political events.

Recent work by Girod and Whittington (2016), based on the analysis of large American companies between 1985 and 2004, found contrasting performance results for reconfiguration, where high reconfiguration capacity is associated with positive performance results, while more limited reconfiguration is associated with negative performance results, confirming that in dynamic environments, reconfiguration plays a fundamental role. The figure below presents a summary of the operational capability categories that will be used as a theoretical outline in this work.

METHODOLOGICAL PROCEDURES

The research developed throughout this work was characterized as applied and exploratory. Applied due to the use, in practice, of available knowledge of operational capacity, to respond to the demands of society in continuous transformation; and exploratory, as it provides greater familiarity with the research problem (CERVO, BERVIAN, 2007).

Due to the complexity of the empirical segment of shipbuilding, greater flexibility was needed in the process of conducting field research, not allowing an exact and a priori definition of the paths to be followed. The survey converged to a predominantly qualitative approach, based on data collection, reduction, organization, analysis, interpretation, verification and validation (MILES, HUBERMANN, 1994).

In this work, field research was carried out through interviews and observation of facts, visits to shipyards, where the natural environment was one of the sources of data. Based on the interviewees' reports, observed data and secondary documents, we described the facts and data in detail, adding information to academic knowledge and highlighting the descriptive characteristic of qualitative research (BOGDAN, BIKLEN, 1994; GODOY, 1995; MERRIAM, 1998).

In the empirical field, our interest was characterized by the continuity of previous research and the understanding of the meanings in the research process itself. Our focus was on understanding the current situation of shipyards and the results entered in the work by Oliveira et. al, (2018), (BOGDAN, BIKLEN,1994; GODOY, 1995; MERRIAM,1998).

The way chosen to conduct this investigation was the study of multiple cases, a methodological alternative supported by the scientific community when it comes to the study of contemporary and complex events, explaining both the processes and the results and proving to be compatible with the empirical segment of shipbuilding. that encompasses these characteristics (MERRIAM, 1998; MILES, HUBERMAN, 1994). Based on these data, we limited our research to the EAS and Vard Promar shipyards, the result of previous research Oliveira et. Al (2018) and the current situation of shipyards. Thus, we delimited the EAS and Vard Promar shipyards as the unit of analysis.

After defining the cases to be studied, as well as the unit of analysis, it was necessary to determine which members of the shipyards would respond to the interviews. For this design, we defined the manager responsible for each shipyard, as it is a complementary approach to the exploratory approach of the previous work.

Based on the work of Morse (1994), Godoy (1995) and Bogdan and Biklen (1994), and based on the content analysis proposed by Bardin (2011), the organization and analysis of data in our research portrayed the understanding, the division and synthesis of the studied phenomenon (looking for a pattern, categorization, discovery of important aspects that were apprehended and the recontextualization of new knowledge). For the purposes of this research, we adopted the sequence of steps recommended by Bardin (2011), in view of its wide use and popularity in management research. This sequence consists of prior analysis, exploration of the material, treatment and interpretation of results with inference.

In the previous analysis, we read the interviews and identified the analysis corpus. We also used rules of representativeness, homogeneity and pertinence. Representativeness was respected, since the chosen cases corresponded to shipyards that were built specifically to meet PROMEF. With regard to homogeneity, both the unit of analysis and the interviewed subjects were similarly defined, following this criterion. With regard to pertinence, we verified that the data source, both primary and secondary, adequately corresponded to the objective raised by the analysis.

Initially, from the secondary data, we identified which categories of operational capacity were found in the shipyards and

Categories	Differentiated set of skills, process and routines for:	Authors
Innovation (exploitation)	Refine and reinforce existing operations processes incrementally	March (1991) Swink e Hegarty (1998) Benner e Tushman (2003) Davis e Brady (2004) Penh, Schroeder e Shah (2008) Flynn, Wu e Melnyk (2010).
Innovation (exploration)	Radically improve existing operations processes or create new processes.	March (1991) Swink e Hegarty (1998) Davis e Brady (2004) Penh, Schroeder e Shah (2008) Flynn, Wu e Melnyk (2010).
Cooperation	Create and maintain healthy relationships, internally with the various departments and externally with the supply chain, related to product development. Convergent with the category of integration presented by Swink and Hegarty (1998)	Swink e Hegarty (1998) Droge, Jayaram e Vickery (1999) Escrig-Tena e Bou-Llusar (2005) Kim (2006) Flynn, Wu e Melnyk (2010).
Efficient answer	Respond quickly and easily to changes in input and output requirements with little time or cost. This encompasses the product and volume flexibility that was proposed by Swink and Hegarty (1998)	Hayes, Pisano (1994) Hayes, Upton (1998) Swink e Hegarty (1998) Flynn, Wu e Melnyk (2010).
Customization	Create knowledge through the extension and customization of operations processes and systems. Convergent with the concept of perception that was proposed by Swink and Hegarty (1998)	Wheelwright e Hayes (1985) Schroeder, Bates e Junttila (2002) Swink e Hegarty (1998) Flynn, Wu e Melnyk (2010).
Re-configuration	Undertake the necessary transformation to re-establish fit between operations strategy and market environment when the balance of the situation is upset.	Teece, Pisano e Shuen (1997) Pandza *et al*. (2003a) Flynn, Wu e Melnyk (2010).
Control	Control, direct and regulate operational processes, understanding and monitoring their limits, adjusting and remedying undesirable variations in manufacturing results, as well as identifying sources of variation in results.	Swink e Hegarty (1998)

Figure 1: Operational capacity categories

Source: Elaborated by the authors

which categories would need to be developed. From the interviews (Appendix) we identified the current situation of the shipyards and the perceptions of their managers. The last phase comprised the treatment of results, inference and interpretation, consisting of capturing the manifest and latent contents contained in all the collected materials (interviews, documents and observation). The comparative analysis was carried out from the juxtaposition of the different categories existing in each analysis, emphasizing the aspects considered similar and those that were conceived as different.

Another consideration to be followed in data analysis is associated with the treatment of multiple cases, which must be done at two levels of analysis: within a case and crossing cases (MERRIAM, 1998). Converging with this proposal, the research initially used an in-depth analysis in each shipyard and, subsequently, there was a cross-referencing of data between the two shipyards (with the aim of discovering variations in the data, considering the differences regarding the production processes and the specificities of their management systems). Such considerations served as a basis for the generation of useful propositions for future studies.

DISCUSSION REGARDING THE RESULTS

Based on the theoretical outline of operational capacity and the semi-structured interview applied to shipyard managers and the work of Oliveira et. al (2018), it was possible to survey and discuss the data presented.

Estaleiro Atlântico Sul S.A., created in November 2005 and concluded in April 2010, has Camargo Corrêa and Queiroz Galvão as partners. The venture received an investment of R$ 2.2 billion. With an installed processing capacity of around 160,000 tons of steel per year, it was the first shipyard to be built in Pernambuco and produces all types of cargo ships of up to 500,000 Gross Tons (DWT), as well as offshore platforms. Completed the fifteen (15) vessels contracted by the PROMEF program in June 2019, currently without demand to continue its activities.

According to Oliveira et. al (2016), of the categories of operational capacity, customization, responsiveness and reconfiguration capabilities were the weakly perceived capabilities, thus indicating signs of problems for quick adaptations to changes in the external environment, which were consolidated with changes in government strategies, the lack of of national demand and the need to search for global markets. The difficulty in developing these capabilities confirms the lack of adaptation to instabilities caused either by the external environment (high competition, excess international demand, oil crisis), or by the internal environment (change in government policies), as shown below.

Categories analyzed	Results found
Improvement	Strongly perceived
Innovation	Perceived
Cooperation	Strongly perceived
Customization	Weakly perceived
Responsiveness	Weakly perceived
Reconfiguration	Weakly perceived
Control	Strongly perceived
Subtitle:	
Not perceived	It was not identified
Weakly perceived	Identified, very vaguely. Scarce and rare examples almost not remembered.
Perceived	Identified with less intensity, but perceived in the interviews.
Strongly perceived	Easily identified with great intensity, mentioned by many interviewees and present in the organization

Figure 2: Overview of operational capabilities - EAS

Source: Oliveira *et. al.* (2018)

The Vard Promar shipyard, located in Ipojuca (PE), belongs to the multinational Fincantieri. It is focused on the construction of gas tankers and offshore support vessels, with investments worth R$ 350 million, starting construction in 2011 and starting operations in 2013. With capacity to process 18 thousand tons of steel per year, it generates around 1,600 direct jobs. Similar to EAS, in 2018 it delivered the last vessel of the PROMEF program and currently presents its industrial park covering only ship maintenance and repairs, without presenting new demands. Similar to the EAS, responsiveness and reconfiguration were also weakly perceived as suggested by the work of Oliveira et. al. (2018) presented in the following figure, thus confirming a structure with difficulties in adapting to strategic changes in the internal and external environment.

Categories	Results analyzed
Improvement	Strongly perceived
Innovation	Weakly perceived
Cooperation	Strongly perceived
Customization	Perceived
Responsiveness	Weakly perceived
Reconfiguration	Weakly perceived
Control	Strongly perceived
Subtitle:	
Not perceived	It was not identified
Weakly perceived	Identified, very vaguely. Scarce and rare examples almost not remembered.
Perceived	Identified with less intensity, but noticed in the interviews.
Strongly perceived	Easily identified with great intensity, mentioned by many interviewees and present in the organization

Figure 3. Summary of operational capability categories -Vard Promar

Source: Oliveira et. Al. (2018)

From the results found in the two shipyards, we crossed the consolidated information in Figure 4 below. When we compare the information, we confirm that, in both shipyards, the categories of operational capacity of improvement, cooperation and control were strongly perceived and weakly perceived the capacities of responsiveness and reconfiguration.

Operational capacity categories	EAS	Vard Promar
Improvement	Strongly perceived	Strongly perceived
Innovation	Perceived	Not perceived
Cooperation	Strongly perceived	Strongly perceived
Customization	Weakly perceived	Perceived
Responsiveness	Weakly perceived	Weakly perceived
Reconfiguration	Weakly perceived	Weakly perceived
Control	strongly perceived	Strongly perceived

Figure 3. Crossing of results

Source: Oliveira et. Al. (2018)

The results of Oliveira et. al. (2018), with regard to responsiveness, indicated a difficulty for shipyards in meeting rapid changes, whether in terms of design, process or product, culminating in a very low responsiveness capacity, which makes the organization very fragile in situations of major changes in the environment. indoor or outdoor environment.

With regard to reconfiguration, the results by Oliveira et. al. (2018) based on the concepts presented by Flynn et al. (2010) also indicated a low capacity for reconfiguration, as many interviewees consider shipbuilding to be more stable, even mentioning the duration of the product itself, which varies between 25 and 30 years. However, this observation is myopic because the external environment depends on many factors such as oil, seasonal policies and demands and, in the Brazilian case, demands induced by government strategies, indicating an extremely unstable and dynamic market.

Unfortunately, the lack of development of the capacity for responsiveness and reconfiguration exacted a high price, the two shipyards were unable to quickly adapt to fluctuations in the international market

and changes in internal government policies, ending up practically closing down activities due to lack of demand.

An important point to be highlighted is that one of the shipyards, in an embryonic way, sought a reconfiguration in the use of one of the equipment, the floating dock, which was mentioned in the previous work as an attempt at reconfiguration. In fact, currently the Vard Promar shipyard presents the use of its operational structure for naval repairs, confirming the importance of reconfiguration for survival in unstable environments. He is seeking this reconfiguration, taking into consideration, the changes in the domestic market.

FINAL CONSIDERATIONS

From the surveyed data, we identified that despite the operational capabilities of **improvement, cooperation and control were strongly perceived, they were not enough to generate the necessary adaptation to changes in the external environment. Low importance given to responsiveness and reconfiguration capabilities**, in an extremely dynamic environment, creating a delay for the proper adaptations to the environment, it charged a high price, practically causing the closure of the activities of these shipyards.

The shipbuilding industry in Pernambuco directly employed around 13,000 direct employees and 60,000 indirect jobs, which currently corresponds to less than 100 jobs. We also emphasize that despite the limitations of the work in terms of scope, this research, in addition to continuing an exploratory research, it ratifies fundamental concepts of the importance of operational capacity associating competitiveness and mainly organizational survival, thus suggesting that the capabilities operational responsiveness and reconfiguration are directly associated with this survival.

This research opens up a range of opportunities for further research in operational capacity, being a rich source of data on the resumption and decline of Brazilian shipbuilding. Diverging from the criticisms received regarding the lack of international competitiveness and the effectiveness of development policies over the last ten years in Brazil, the research shows that operational capacity is a unique, gradual and slow process for the various industrial segments, including the shipbuilding. However, it is essential that public policies for promotion do not have an exclusively financial character, providing only funding. These funds must be linked to triggers for the development of operational capabilities, thus creating motivation for the implementation of a naval culture that is more process-oriented and less focused solely on results.

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APPENDIX

Brief history: Why is the shipyard without demand? How difficult is it to find new markets? What are the actors (internal and external) that participated in the development of the shipyard? After the delivery of all the products, what were the most experienced difficulties? Did you manage to evolve responsiveness? And the reconfiguration? What actions to achieve new demands?
Operational capabilities of:
Responsiveness: Is there flexibility in responding to rapid changes in the project, process and/or product? Do these changes affect the cost? How is it charged? Adjustments for unexpected variations in input components and materials are performed easily and quickly (volume, design and product)? Are adjustments to unexpected changes in labor requirements easily and quickly accomplished?
Reconfiguration: Do you consider the shipbuilding market more stable or with a lot of changes? Why? When the environment is modified, are there possibilities for changes in internal arrangements and processes to serve the market? Are these changes based on industry best practices? Are there skills to respond to market changes?