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Demand-Supply Balancing: A Comparative Study Between Companies' Operation Strategies

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Abstract. Demand-Supply Balancing (DSB) strategies have been adopted by organizations in order to adjust their capacity to demand fluctuations. In service sector, in addition to demand behavior forecasting, it is essential that the organization be able to respond to the market's needs and expectations on time. The aim of this research is to compare the results of two previous studies, one carried out in Finland in manufacturing companies and other in Brazil in a service company, with the objective of identifying demand-supply balancing strategies in the context of operations management. This is an exploratory and applied research, with a quantitative and qualitative approach, through the application of the questionnaire designed by [1] in the same company object of study from [2]. The results showed an alignment between the strategies divided in six categories. The strategy that presented the least alignment in demand-supply balancing category was the supply chain structure. On the other hand, capacity management showed the greatest convergence.

Keywords: Operations Management, Demand-Supply Balancing, Comparative Study.

1 Introduction

Demand-Supply balancing (DSB) is presented in many companies' operational context. To respond to the dynamic of demand fluctuation scenarios, companies adopt operation strategies to guide management process in face of constant adaptation needs. Demand oscillations must not be accepted as inevitable, as operational management systems must work to mitigate the volatility combining several strategies [3]. One strategy is the adoption of mechanisms for demand behaviour forecasting. Operation management considers these estimations to make decisions concerning to production and capacity adequation [4]. The lack of management of these uncertainties related to demand has generated additional costs in some industrial and services sectors [5, 6].

Oil and gas exploration and production (E&P) service chain, in general, follows the investments surge by the companies in the sector. These E&P companies tend to direct their investments due to the perspectives of oil barrel price's oscillation in the international market [7]. Barrel price's cost decreased from US$ 90.00 (January 2015) to less than US$ 40.00 (May 2016). This fact has influenced the decision of E&P companies to delay or cancel investments in the sector, in Brazil, between 2014 and 2016 [8]. Oil price negative fluctuation coupled with an adjustment in companies' governance and market strategies that contributed to a reduction in investments and a generation of a demand crisis in E&P industry [9]. Service providers, in Brazil, faced a demand crisis during the mentioned years that caused problems related to DSB factors, forcing companies to search for a better understanding of market concepts and improvement of competitiveness to ensure business sustainability [10]. Companies need to learn to deal with market fluctuations, especially in services market where exists great volatility. Operations management systems together with management strategies must seek for actions to mitigate the demand variation inherent to the service industry [3].

All these scenarios, aspects and impacts of services market in the context of oil and gas industry in Brazil, affected the company studied in this research. From 2015, because of the demand crisis from the oil price decrease, the company facilities capacity level was significantly reduced, forcing the organization to adopt a different operations management strategy to adapt to this new scene. [2] in his research, identified and described an operations management model that was used by the referred company for demand crisis scenarios. The focus was the identification of the management model and the strategies used by the company. However, a comparison between the strategies adopted by the company and others that went through the same situation was not carried out as can be seen in other studies [1, 11, 12, 13, 14]. [1], as example, identified and analyzed several practices of manufacturing companies in Finland, describing how they managed with demand fluctuations in their operations in DSB spectrum. The authors' discussed various aspects of process assessment and identified factors that could be influenced and adapted in situations where there was demand variability.

The authors of this research argue that expanding and probing [2] previous study would be beneficial to the oil and gas industry and would improve the knowledge on the subject. Therefore, the research question follows: How to reduce the gaps in [2] research and improve the knowledge on DSB in the company studied? In order to reduce this academical hiatus and generate more subsidies for the results found in [2], the objective of this research is to compare the strategies adopted by companies to adapt to situations required in DSB based on [1] research applied in the service company studied in [2]. As result, this research aims to identify the strategies that coincide between the two mentioned researches, expanding the knowledge generated by [2] and bringing a greater light to the sustainability of oil and gas E&P service companies since the DSB strategies are important to ensure the continuity of companies' operations and their competitiveness.

2 Theoretical Foundation

For a better understanding of the strategies adopted for companies that operate in DSB scenarios, it is necessary to present some aspects of demand and its oscillations, capacity and demand management, and

previous studies, as following.

2.1 Demand and its Fluctuations

Demand can be defined as the quantity of a product or service that a consumer wants and is willing to purchase for a certain price, in a defined time and in a delimited market [15]. Demand is the search for a certain product, that is established by various quantities, that consumers are willing and able to acquire due to the various price levels
in a given period of time [16]. [17] couple up demand definition with the supply one because the interdependence that one term has on the other in market dynamics. The authors defined this interaction as the model of how the market behaves, providing the basis for the comprehension of trends transformation in most scenarios. Demand depends on variables that influence consumer's choice, such as good or service price, other goods price, consumer's income, individual's preferences and habit, seasonal factors, consumers' location, credit availability and culture [18].

Environment multiple seasonality can be considered the main cause of demand fluctuation [19]. The author stated that the organizations' major challenge is to adjust products and services offered by balancing capacity utilization and processes' productivity with the quality perceived by customers. Demand variability for services is very pronounced and is the consequence of our habits and culture, which cause fluctuations in demand, leaving companies with idleness in some situations and queues in others. Oscillations in demand for services cannot be considered as certain, as service systems can mitigate fluctuations in demand through measures in their competitive strategies aiming company's profitability maximization [3]. Demand fluctuations are the result of the heterogeneity of customer profiles, and it has become a problem for operations management [4]. According to [4], sporadic variation is a normal feature of any demand, which will present ups and downs periods.

Demand fluctuations are an expected behaviour even in the best market supply strategies as organizations must adjust their operations due to the lack or surplus of products [20]. The author stated that these oscillations are the result of uncertainty conditions to which demand is subjected. It is important to understand the phenomenon and the strategies of demand and capacity management in service companies.

2.2 Capacity and Demand Management

[21] argued that it is necessary to avoid factors that generate demand instability and proposed two strategies to demand and capacity management: a) for low complexity operations: varying the capacity in the same proportion as the demand fluctuation, focusing on team adequacy through staff turnover and training; and b) for highly complex operations: avoiding capacity variation and reducing variable costs as much as possible maintaining a highly qualified and focused teams in long-term planning.
[22] stated that managers need to anticipate demand fluctuations as early as possible, so that they have more options in their strategy portfolio. The focus is on assets management and effective investments. An important factor in capacity management is human resources at operational level. [14] evinced that the operational management strategy should seek for the advantage maximation in business, especially in highly complex scenarios, such as the adoption of flexible manufacturing systems, increase in technology use and reduction in the number of working people. In demand oscillation scenarios, organizations must look for a horizontal alignment in their strategies, with marketing, operations and finance complementing each other, providing guidelines, decisions and actions consistent with DSB needs [23].

Product cost is a factor considered to be influential in demand fluctuation. To mitigate the amplitude of these variations, one of the alternatives is to reduce the cost per unit produced and to forward this reduction to prices, decreasing costs with raw materials and overhead-labour that does not add value

directly to the product or service [24]. Planning sector must contribute to balance eventual conflicts between demand and capacity, reducing inventories and keeping workforce stable, minimizing production costs [25].

Capacity management options are more numerous than demand ones, however there is a symbiosis between both options, so that the adoption of an option can influence the entire system [26]. The authors stated that demand management is the attempt to predict and understand demand behaviour, while capacity management is the exercise of allocating the necessary resources to meet demand, hence the interdependence between the two concepts and the strong influence of customer's decisions in both instances.

A set of strategies was proposed by [27] in order to reconcile capacity management with demand management, trying to establish a balance between these two aspects. [28] stated that companies have been searching for manners to respond to market fluctuations induced by customers and competitors through technology. Companies can adopt strategies to deal with demand management, as: a) proactive strategies: product modular design, differentiation postponement and make to order; and b) reactive strategy: create inventory buffers to reduce the demand uncertainty effect [12].

When demand fluctuation scenarios are identified, organizations tend to revise their strategy model. [29] presented the fundamentals of how Japanese companies reacted to demand crisis in the 90s. Current manufacturing configurations are faced with different dynamics and uncertainties that are not foreseen in ideal situations. An example of this type of uncertainty is the unpredictability of customer demand. Demand dynamics is a critical parameter, and it has been challenging to sustain customer satisfaction and maintain a competitive advantage for companies. Qualitative and/or quantitative fluctuations can cause significant variation in demand across the supply chain [11].

2.3 Coker and Helo Research

[1] aimed to identify and analyse practices of Finnish manufacturing companies concerned to DSB in their operations. The method consisted of sending a questionnaire answered by 20 companies that were part of a list of the 500 largest companies in Finland in order to identify the practices adopted to DSB. The companies were classified into six categories of activities related to product manufacturing. The results were presented in the article that serves as the basis for this research.

[1] discussed various aspects of demand and capacity management, seeking to highlight concepts that are the basis for the questions presented in the research instrument (questionnaire). The following terms were discussed in the theoretical framework strategies: a) Demand Management: companies that managed demand by anticipating customer needs; b) Demand Shaping: demand's current behaviour to be divided into two aspects, competitive analysis and product development; c) Revenue Optimization: adoption of dynamic pricing methods and customer segmentation bases; d) Vield Management: process of making frequent adjustments to a product price in response to certain market factors; e) Collaborative Planning, forecasting and replenishment: process in addition to traditional demand management involving information sharing across the entire supply chain in order to promote collaboration between customers and suppliers, especially in long-term contracts; f) Capacity Management: capacity management and limitations of an organization processes; g) Operations Footprint: measuring and evaluating a specific configuration strategic of a production network within a business context; h) Operational Flexibility: adoption of a production structure that can be used for multiple products manufacturing; and i) S&OP (sales & operations planning): a cross-functional planning process that adjusts all levels of manufacturing outputs to satisfy current sales plans while meeting business objectives related to productivity and profitability.

The research results showed the importance of supply chain-related parameters such as supply chain flexibility and inventory management in addition to production planning and control to manufacturing companies facing demand crisis. The study is delimited to Finland companies, but it gives an idea how decision making in operations management generally can be perceived and actions taken in DSB. The

model developed highlighted the interactions between demand management and supply management to the DSB. Drastic changes in demand in terms of volume, product mix or product life cycle imply changes in decision-making process of organizations at all levels. Supply chain structure, flexibility, demand, capacity, inventory, and revenue managements are perceived as key practices for DSB strategies.

2.4 Mendes Research

[2] conducted a case study consisted of identifying a company operations model inserted in a scenario of demand fluctuation. The model identification was possible through the conduction of a case study based on an exploratory research that analysed and described the main components of the operations management process in the mentioned organization as well as the main strategies recommended for demand fluctuation scenarios. The author related strategies for demand oscillation scenarios found in literature with factors that compose processes concerned to operations management in the company under study. The main process factors managed in the context of operations management were identified, such as: raw material, machinery, measure and control, environment and facilities, human resources, method, flow, information, customers and improvement analysis.

All information was integrated into a model focusing to reproduce the set of strategies adopted in the company and its representativeness in management and sustainability. The strategies proved to be effective for the company, guiding the organization in the moment of demand fluctuation crisis. The research found 27 strategies adopted and classified them according to processes' factor, such as: a) Human Resources: quantitative adaptation, qualitative targeting, polyvalence and multi- capacity, overhead reduction, culture changing, flexibility, quick adaptation, change in allocation, contributions appreciation, incentive to innovation; b) Method: collaborative planning, flexible manufacturing, responsive capacity, contingence planning, risk analysis, periodic strategy review; c) Customer: relationship mapping, grouping by similarity, identification of demand; d) Machine/Hardware: investment in fast return niches, disinvestment in certain areas; e) Information: provision of information to reduce variability; f) Analysis and Improvement: better services and products; g) Manufacturing and Control: cost control, process variability control; Inputs: cost reduction (raw materials and others); h) Environment and layout: assets efficiency increase; and i) Flow: demand-side management.

In the model adopted by the company under study the process factors were all linked to the dimension related to human resources. This was adopted due to the interfaces that human resources have with all other factors, functioning as a binding element of all dimensions and strategies. Human resources factor connects all the others, highlighting the importance of this factor in the interdependence relationships in operations management context. The other components of the model show the guidelines adopted by the organization. [1] presented financial aspects such as price, revenue and income management that are not included in [2] previous research which focused more on the operational aspects and their components. As using the research instrument used by [1], the authors of this research consider deepening the strategies taken into consideration for demand crisis scenarios that lead to DSB as an important factor to ensure the continuity of companies' operations and their competitiveness in oil and gas E&P service industry in Brazil.

3 Research Method

A case study research is best applied when the research addresses an exploratory or a descriptive study. A single case study is chosen when there is a representative case and/or the case study is used to describe a particular phenomenon. Also, it can be used to expand on a case unearthed by a survey [30]. The company, object of this study, was chosen because there was information about its management model

and its effects on the organization's adaptation in demand crisis situation from previous study [2]. Also, the researchers were granted full accesses to the company's primary and secondary sources to continue the research conducted by [2] and to fill the gaps from the previous research (purpose of this paper). Additionally, the company agreed to participate to this study and to answer the questions raised by [1]. This was a decisive choice of the studied company due to the availability of the information and data provided which made possible to identify and compare the strategies adopted by companies to adapt in situations required in DSB.

As a single case study, the protocol followed methods, procedures and general rules in using instruments of data collection [31]. This is an applied and descriptive research, with a qualitative approach and exploratory objectives through the application of the questionnaire designed by [1] in the same company studied by [2] to add a precise understanding to the existing body of literature and study control. The study was supported with direct data collection from primary sources at the company case [31,32]: interviews and a validation workshop. Secondary sources of data included: company's reports and documents and data were used to complement and triangulate sources with primary data. The triangulation of data strengthened the validity and reliability of this research [32]. The primary data collection consisted of more than 100 h of direct contact:

1. Application of the questionnaire to the managers of the studied company. It consists of forty-seven questions divided in eight categories distributed as follows: A) general information (five questions); B) supply chain structure (four questions); C) supply chain flexibility (eight questions); D) demand management (six questions); E) capacity management (three questions); F) inventory management (two questions); G) pricing, revenue and yield management (five questions); and H) survey feedback (two questions) [1]. The questionnaire focused on manufacturing strategies for DSB related to operations management finding parallel to this study. The instrument was tested and validated in [1]; thus, its consistency and comprehensiveness are assured.
2. Face-to-face meetings were conducted during the first quarter of 2019 to analyze the proposed questions and evaluate whether the available information was sufficient to answer the questions. Managers from the Brazilian unit were personally invited to participate in this research. The company has four managers (operations; planning and logistics; quality control and engineering; and finance and controlling) who take care of the entire operation. All of them agreed and participated in the research.
3. Active back-and-forth interactions. The questionnaire was sent to the company's operations manager, who was designated as the primary respondent to answer the questionnaire and to validate the questions and its comprehension. Later, the questionnaire was sent to the other respondents. The operations manager did not present any queries, objections or doubts related to the questions, as well the other managers. The questionnaire was applied in English, as the unit's staff are English spoken and to guarantee the questions and the responses consistency.
4. Two validation workshops with the four respondents. The questionnaire was answered by the managers after a workshop conducted by the primary respondent. This validation workshop was done to ensure coherence, applicability, consistency of responses and minimize any inaccuracy data required to answer a question and/or personal impressions. Following, the results of the questionnaire were discussed and compared with the results found by [2], in a second workshop.

It should be noted that part A (general information of the company) from the questionnaire will be presented during section 4.1 and that part H (survey feedback) had no answers. It is important to stand out that the questionnaire proposed [1] was completed jointly by the four managers and the information was consolidated into a single document in the second workshop. The managers were gathered in a room and the answers to the questions were the result of a consensus among the four managers. Then, a document consolidated and approved by all the respondents was made to ensure that the response represented the current reality of the company and guarantee the validity and reliability according to [31, 32]. Also, it is relevant to mention that there are other E&P companies in Brazil, but they did not participate in this study.

4 Results and Discussions

In this section will be presented the company and the main results and discussions regarding to the questionnaire application and its comparison to [1] and some managerial recommendations to the studied company.

4.1 Company

The company object of the study is part of an international holding which the main business is to provide solutions related to steel tubes manufacturing. The company was settled in Brazil, in 2008, to meet a demand expectation for solutions integrating products and services for oil and gas (E&P) industry. The organization was implemented as a unit dedicated basically in tubular maintenance services. However, in 2013 the unit was converted into an independent company from the group due to the addition of a logistics service. The company is located in the city of Rio das Ostras, Rio de Janeiro State, in Brazil, in a special area of the city dedicated to companies operating in the oil and gas business chain. It is important to stress out that the company's operations extend throughout Brazilian territory and abroad, including exporting products and services to several countries, with the focus on South America.

Within the general information of the questionnaire, according to the main type of industry, the company was classified as a manufacturer of metallic products. The questionnaire was answered by its managers, as the operations manager designated as the primary respondent, this part of the process has taken five days to be completed. In terms of number of employees, the company has about 220 employees (the turnover is around 5% by year) and can be compared with the medium-sized companies of the group analyzed in Finland.

4.2 Supply Chain Structure

The company has an industrial complex with six facilities dedicated to manufacturing and providing services but does not have a distribution center. It can be compared to the group of 35% of Finnish companies that did not have their own distribution center. The company, like more than 50% of Finnish companies, is dedicated to the B2B market and follows the same model in delivering products directly to customers or having a logistics operator hired for this purpose. As Finnish companies that are subsidiaries of global companies, the studied company is also part of a global supply chain. The company can be classified as a product and service provider because it has in its portfolio several products and services of various purposes within the oil and gas (E&P) chain, many of which are not found in other companies of the holding of which it takes part [33]. The company be compared to 60% respondents to the Finnish survey who declared to be part of multi-purpose companies.

4.3 Supply Chain Flexibility

Regarding supply chain flexibility, the company could be compared with 68% of Finnish companies that also have more than one supplier for their components [34]. Like 35% of Finnish companies, the company has interchangeability of components, but the Brazilian company does not use the full potential of this interchangeability, unlike Finnish companies. When it comes to new products design with the possibility of customizing products late in the process according to customers' needs, 60% of Finnish companies consider this important since the product project, the opposite of the studied company [12, 22, 27]. Concerning demand forecasts, the company follows the same method as 95% of Finnish companies,

receiving information from their customers and forwarding to suppliers of critical items, constituting an information net within the supply chain [1, 25, 26].

4.4 Demand, Capacity, and Inventory Management

The first comparative analysis on this topic is the variable costs composition where the company differs from most Finnish companies. In Brazilian company, most part of the variable cost is committed to maintaining labor force, a situation for only 15% of Finnish companies. To 92% of Finnish companies, these costs are related to materials and components. When compared to the minimum level of production capacity, the Finnish companies reported a level of 36% while the Brazilian company reported a level of 30% for its operations balance. Regarding the maximum of production level, the company prefers not to exceed its maximum capacity over 95%, by reason of strategic availability to serve customers in emergency demands. Finnish companies prefer to work at a maximum level of 90% of their capacity.

In situations where there is an increase in demand, 45% of Finnish companies try to increase their production capacity, while 30% delay orders and 25% anticipate orders. In the company, production capacity adjustment is the first option, followed by the anticipation of orders and orders delay as the last option [25, 28]. Regarding monitoring of inventory critical items, the Brazilian company adopts practically all the indicators that are partially adopted by Finnish companies. The inventory excess is 20% in the company, while most Finnish companies have a 30% excess.

4.5 Pricing, Revenue and Yield Management

Most Finnish companies (45%) adopt annual price review as the Brazilian company with its largest customers. Another similarity is in the attitude adopted in case of an increase in demand, where Finnish companies (40%) and the studied company rarely change their prices to adjust the demand for their products and services. The Brazilian company seldom analyzes the readjustments consequences on the facilities capacity; a situation slightly different from the Finnish companies that adopt this kind of analysis more often (45%). Finnish companies (91,25%) consider the adoption of discounts on their prices as an alternative to inventory adjustment, a situation that the Brazilian company not considered under any circumstances [35]. An important similarity is in the use of variable hours as a strategy to increase revenue. About 70% of Finnish companies adopt this practice, which is also widely used by the Brazilian company.

4.6 Differences Analysis

This research aims to identify the strategies that coincide between the two mentioned researches, expanding the knowledge generated by [2]. In this sense, the contrasts between the diagnosis of Finnish companies and the Brazilian company can be seen in Table 1, which respond part of the research question. As in order to reduce gaps in the previous research [2] it is necessary to understand the differences and similarities in DSB strategies taken.

Table 1. Difference quantification

Question	Finnish Companies Average	Brazilian Company
B - Supply Chain Structure		
Number of production facilities.	3.35	1
Number of distribution centers.	6.9	1
Degree of production specialization.	3.25	2
Operational performance limitation.	3.3	3
C - Supply Chain Flexibility		
The share of components used.	68%	90%
Importance of component commonality.	4.15	2
Component commonality quantification.	3.5	4
Ability to postpone manufacturing.	2.55	4
New supply chain partners proposals.	2.2	3
Supply chain partners targets.	2	3
Influence of macroeconomic developments.	2.65	2
Attention of macroeconomic developments.	2.55	2
D - Demand Management		
Measurement of cost lost sales.	1,7	2
Customer in the market analysis.	1,95	1
Competitors in the market analysis.	2,15	1
Demand behavior patterns identification.	2,2	4
Separation of products according to demand.	1,2	1
Demands forecasts sharing.	1,7	1
E - Capacity Management		
Minimum level of production capacity.	36%	30%
Maximum level of production capacity.	88%	95%
Adjustment of production capacity.	2,2	3
F - Inventory Management		
Estimate of proportion to overall inventory.	21,18%	20%
Estimate of components from VMI.	23,50%	15%
G - Pricing, Revenue and Yield Management		
Review of pricelist structure.	3,65	1
Relation between demand and prices policy.	3,45	4
Effects of price adjustment on capacity.	3,25	4
Adoption of discounts to reduce inventory.	3,65	5
Planning strategies to improve production yield.	3,05	2

The major difference between the Brazilian company and the Finnish companies can be seen in the supply chain structure. The factors in which the strategies evinced the greatest alignment were capacity and inventory management [36]. These two aspects of management concentrate large part of the companies' investments in both scenarios [25]. In this context, it shows companies' concern to manage inventory costs for replacement, in case of positive demand fluctuation, or for maintaining minimum levels in case of negative fluctuation [24]. In the case of capacity, the management of production assets, workforce and flows resulting from productive activity also has strategic relevance in the markets subject of this research [26].

4.7 Managerial and Theoretical Recommendations

In order to reduce the academical hiatus and generate more subsidies for the results found in [2], and respond the rest of the research question: How to reduce the gaps in [2] research and improve the knowledge on DSB in the company studied?, some managerial and theoretical recommendations on how Brazilian company could increase its degree of alignment with Finnish companies are summarized in

Table 2.

Table 2. Recommendations to increase the alignment

Aspect Evaluated	Recommendation to get a better alignment	Reference
Supply chain structure	Increase the degree of supply chain integration. Standardizing information plans and production results.	[37]
Demand management	Increase the amount of data to be analyzed from the perspective of methodological data science, in order to obtain detailed information on the relationships and interdependencies that can affect the dynamics of demand management.	[38]
Pricing, revenue, and yield management	Structure pricing in data collection and negotiation throughout the chain, considering buyers, sellers and intermediaries.	[39]
Supply chain flexibility	Integrate multiple competencies from multiple sources in order to build internal flexibility competencies and then promote this flexibility across the supply chain.	[34]
Inventory management	Apply computational process simulation, to coordinate an application of methods from inventory management and capacity management resulting in improvement. The target is to preview the levels of stock and resources demanded to support the operations.	[36]
Capacity management		

The main theoretical contribution of this study is to show that some management strategies in crisis situations where there is a fluctuation in demand, can be adopted in different geographical and market contexts as corroborated by [40]. In this way, the application of management practices identified through the case studies can be effective in solving problems even outside the study's original circumstances [41]. This research main managerial contribution is to generate more subsidies for the company object of this study to improve its competitiveness and strategies in DSB situations in the E&P industry segment diminishing academical hiatus and expanding knowledge on the subject.

5 Conclusions

This research aimed to compare strategies adopted by companies to adapt to situations required in DSB in Finland [1] with a service company in Brazil studied in [2] from the oil and gas (E&P) industry. It compared both operations management model and strategies through a common assessment to the two realities, with a questionnaire application. Data were collected and analyzed where common practices were observed as well as differences. The strategy that presented least alignment in DSB category was the supply chain structure. This difference may be related to the fact that the company in Brazil has only one production unit and does not have a distribution center. It is inserted in the oil and gas industry where the solution provided to customers requires another supply structure, focused on production flexibility and proximity to consumption centers, reducing distribution centers' needs.

In the case of the company, cost management strategy has been improved over the last four years with inventories structuring and management. Finnish companies in many cases are part of global production chains and need to have managing systems and strategies in order to control inventory levels and effectiveness in supplying demand. In Brazilian company, variation in its operational capacity is linked to assets mobilization and demobilization and temporary labor hiring. The company operates at least 30% of its capacity level very similar to the Finnish companies (84%). When it comes to maximum level of

capacity the companies from both countries' present similar strategies. Brazilian company adopts 95% as limit as a strategy to absorb eventual demands for emergency services, a very common situation in oil industry in Brazil.

It can be concluded that there are more convergences than differences between the two DSB strategy models. The fact that the organization operating in Brazil is a subsidiary of a multinational company may have contributed to this affinity in dealing with demand fluctuations, since in both scenarios there is an integration with global supply chains and operations management strategies. In this sense, the previous results from [2] can be confirmed. Limitations are related to the scope of the researches used as the base to this study and the scenarios of Finland and Brazil and the investigation of one single company in Brazil. The results showed that there are strategies that can be applied in different economical, geographical and social contexts as well as other industries and markets segments for DSB in different crisis demand scenarios. As a suggestion for future research, it is proposed to explore the major differences in terms of practices and strategies in more companies in Brazil, as well as in more diverse industries and market segments. Other companies from E&P industry should be included in the comparison, in the future, in a multiple cases research.

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