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Relationships between the internationalization and operations strategies decisions of multinational companies in the soybean chain

As relações entre as decisões de atuação internacional e as estratégias de operações das multinacionais da cadeia da soja

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Abstract: Internationalization decision-making relates to the location of subsidiaries while international operations define the configuration and coordination of the processing plant activities. This paper aims to identify how internationalization strategies are related to operation strategies decisions. We illustrate this relationship with two case studies of multinational companies in the soybean chain located in Brazil. The analysis of secondary data, on-site visit to the processing plants and interviews, suggest that the location is determinant to all the other strategic operations decision categories. Findings suggest that the study framework is useful to understand international operations in other commodities chains.

Keywords: Decision categories; International operations strategy; Internationalization strategy; Multinationals; Soybean chain; Commodities.

Resumo: *As decisões de internacionalização envolvem a localização de subsidiárias, enquanto as operações internacionais decidem a configuração e coordenação das atividades das plantas. Este artigo tem como objetivo identificar como se relacionam as estratégias de atuação internacional com as decisões estratégicas de operações. Isto é ilustrado por meio de dois estudos de caso de empresas multinacionais da cadeia da soja, atuando no Brasil. A análise de dados secundários, as visitas às plantas processadoras e as entrevistas realizadas entre 2011 e 2013 sugerem que a localização condiciona todas as categorias de decisão de operações investigadas. Sugere-se que o framework do artigo seja utilizado em outros setores de commodities.*

Palavras-chave: *Categorias de decisão; Estratégia de operações internacionais; Estratégia internacional; Multinacionais; Cadeia da soja; Commodities.*

1 Introduction

Decisions about production location are key in the international business field of knowledge: producing abroad or exporting to other countries and the necessity for international operations strategies are vital to companies. Studies on international strategies involve the decisions of multinational companies about the configuration of their subsidiaries, taking advantage of the potential benefits of global operations, such as access to new markets and the supply chain configuration, skilled labor and market positioning (Barnevik & Kanter, 1994; Ferdows, 1997; Meyer, 2011; Dunning & Lundan, 2008; Buckley & Casson, 2009). For example, a multinational may have production subsidiaries in countries that have a wide

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range of strategic resources for its business or have distribution subsidiaries in relevant consumer markets. Strategic operational decisions are important in this context, since multinational firms, when deciding their location consider configuration and coordination factors that may be definitive for success or failure in their operations abroad (Meijboom & Vos 1997; Prasad & Babbar, 2000). Thus, international strategy and its implication for operations management is a challenge for managers of multinational companies.

Factors that lead to the decision to establish new subsidiaries may vary between organizations and institutional environment. The two main models of analysis in international business literature are based on the possibilities of transferring assets across national boundaries (Lee & Wilhelm, 2010). According to Uppsala's theory, behavioral and cultural aspects are the determinants of an incremental process (Johanson & Wiedersheim-Paul, 1975; Johanson & Vahlne, 2009). From the economic point of view, known as the Eclectic Paradigm (Dunning, 1980, 1988a, 1993), decisions of international operations are associated with structural issues, specifically location factors. This means that location is one of the important factors that can determine the decision of operations of a global industry. Geographic and cultural issues, the economic characteristics of the host country, local government incentives, availability and capability of labor, the supply of natural resources, fiscal and exchange incentives of the host country and infrastructure are determinants of any company´s performance (MacCarthy & Atthirawong, 2003).

According to Meijboom & Vos (1997), the success of companies in international networks depends not only on the integration of coordination and configuration decisions but also on the combination of the strategic aspects of international business with operations strategy. An understanding of how international location decision should be aligned to the operations strategy. That is, the internationalisation strategy will have a relation and an impact for the operation strategy, especially with respect to the competitive priorities and operations decisions.

Recently, a group of operations management researchers has pointed out the need to advance research on decisions about international operations from increased offshoring and re-shoring (Brennan et al., 2015), such as the quality standards in offshore operations (Gray et al., 2011). However, this is still a very incipient topic in Brazil, and little has been studied about operations strategy from multinationals operating in the country, despite the large number of companies located in Brazil for many decades. Considering that international operations focus on the premise of defining the configuration and coordination of the activities of multinational subsidiaries abroad and developing the best management for decision-making, the research problem that this paper asks us: How are the relations between the international strategy and the operations decisions of multinational companies operating in Brazil? This paper illustrates this discussion with empirical evidence from two soybean chain multinationals operating in Brazil. While using a consolidated approach in international business literature, it intends to the development of internationalization perspective in the field of operations management.

The paper begins presenting the description and theoretical discussion about the operations strategy of multinational companies. Then, it presents the method used with the description of the two case studies. The analysis of each case, as well as the cross analysis for the discussion of the proposed relations followed by final considerations and suggestions for further research on the subject.

2 Operations strategy

The relationship between operations strategy and corporate strategy, already pointed out from Skinner's seminal work in 1969, has become more focused on strategic planning literature (Garvin, 1993), and the process of formulating these objectives over the years has been discussed at the distinguished levels of a company. For Wheelwright (1984), the company's corporate strategy establishes two important definitions in the company's strategy, the business in which it will operate and the acquisition of resources and commitment for each of these businesses. Thus, for Garvin (1993), business strategy is decomposed in operations strategy, since according to many authors this is a functional strategy and should be in line with other strategies. Papke-Shields et al. (2006) define this congruence as strategic alignment. After these strategies are developed, the definition of strategic priorities indicates the focus by which operations should generate competitive advantage for the company (Garvin, 1993). In this way, a direct relationship between the decisions of international strategy and its development in the operations strategy of the subsidiaries of multinational companies can be verified in conceptual terms. Wheelwright (1984) presents eight major categories to organize the different operations decisions to be carried out to an effective functional strategy. For this author, the pattern of decisions in these eight categories determines the structure of an organization (Wheelwright, 1984). The categories would be: capacities (involving quantity, volumes, time and types); Facilities (size, location and focus); Technology (operations equipment, automation and connectivity); Vertical integration (involving factors

such as direction and extension); Workforce (level of skill, payment and security); Quality (defect prevention, monitoring); Production planning (mechanization, materials control, centralization, decision rules); Organization (structure, hierarchical levels and support groups).

According to Wheelwright (1984), the first four categories, capabilities, facilities, technology and vertical integration are structural decisions due to long-term impacts and tends to require substantial capital investments by the company. The following four categories, workforce (people), quality, planning, and organization are tactical ones as due to the scope of their decisions involved in operations, they require capital investments that are more modest than previous ones, but imply greater impacts on the company's decision-making due to the higher degree of difficulty in their changes and higher costs.

Capabilities indicate that the company's business and operations strategies should not only point out what to do, but also what not to do. In addition, the decision standards related to operations strategies should be long-term; business strategies should focus attention on resources, making manufacturing focused on production (internal factors) and the competitive advantages generated by production processes should contribute to the company as a whole.

Meijboom & Vos (1997) suggest that emerging economies should be analyzed not only as possible low cost host country, but also as potential markets for sources of knowledge and learning between headquarter and subsidiaries, whose local experiences might be replicated for products and processes in others markets. The authors also warn that coordination problems in the supply chain should be considered for configuration decisions, since neglecting them may lead to serious problems in the manufacturing plants. Thus, the decision of facilities demands special attention to the location choice, especially by international business studies such as Dunning (1988a).

The role of technology in operations is key when deciding the international operations strategy. For Shi & Gregory (1998) and Monroy & Arto (2010), systems of communication, knowledge sharing and networks are drivers for the operations strategy of a globally dispersed subsidiary network. Kim & Lee (1993) emphasize the presence of factors that are determinant for the success of international strategies, as the technological changes in the area of operations advance with new systems and manufacturing processes based on IT (Information Technology) and innovations. It takes into account that business units and manufacturing plants are spread globally.

Decisions on vertical integration and supply network directly involve location issues. Subsidiaries must develop local supply networks or global suppliers (geographically distant from the company's headquarters and the subsidiary in physical and/or virtual form). The lack of local supply capacity results in vertical integration, i.e. the company needs to internalize certain functions to perform in a specific location. According to Lee & Wilhelm (2010), global supply networks indicate that there is a relationship and interdependence between locational factors, capabilities and supplier networks in international operations and operations strategy decisions.

Ketokivi & Schroeder (2004) and Fleury et al. (2010) emphasize the decision on labor. In these studies, human resources management in international operations has a strong connection to the performance of the subsidiary (policies, communication, impacts of sociocultural factors), plants installed in developed countries or emerging countries. As well, they point out the impact of the adoption of the headquarter management model or by adaptation to the specificities of the host country.

Quality is a category based on a study by Ketokivi & Schroeder (2004), which indicates that it has an influence on the processes, relationships established along the global chains. Quality also pressures factors such as outsourcing, environmental protection and community involvement and should be considered in operations strategy by multinational companies.

Additionally, production planning and organization decisions reflect the organizational structuring and the characterization of the. These two categories suffer impacts from the other categories, as well as, they can be fundamental and difficult to choose, as they may reflect the conception of the headquarter about providing autonomy or not of the subsidiaries, or the need to adapt operations to local culture and context

Meijboom & Vos (1997) point two points in the elaboration of an international operation strategy. The first factor is the configuration, which is the location of production facilities and resource allocation between facilities along the value chain, and the second factor is coordination, with decisions on how to integrate production into the facilities in order to achieve the strategic objectives of the company. The authors pointed out that, based on these two factors, the choice of location is a key factor for the success of international operations, and that operations management should look at location decisions related to logistics problems at a tactical level. Both decisions, coordination and configuration of value chain activities, should converge and be taken jointly. Briefly, international business strategies and operations strategies should have the same focus,

that is, to define the best choices depending on the sector and host country of the subsidiary. However, little studies on operations strategies do not address these aspects.

3 Multinational companies

Dunning (1988a) conceptualized multinational companies and their activities and stating that Foreign Direct Investment (FDI) as a significant influence in the international market due to the high presence and control of the production abroad. Both Dunning and Buckley & Casson (2009) focused on the discussion between the internalization of transactions between home and host subsidiaries in participating in global supply networks, especially for locating value-added activities. Dunning (1988b) himself criticized the Eclectic Paradigm, discussing issues of competitive advantages specific to the nature and nationality of property. He argued that setting up costs and implementation of operations as well as transfers of specific advantages beyond borders, there are concerns with "where" locate plants abroad. The eclectic paradigm discussion was fostered by Dunning until the 2000s focusing on international production and its independent variables that predominate in multinational companies, as specific ownership, location and internalization advantages to FDI. The Eclectic Paradigm also supported decision making for companies that want this strategy or already use it; location (geographical) attractiveness by the possibilities of generating added value to the activities of multinationals; economic relations between multinationals and governments, including differences between interests of both parties. Likewise, the studies of Morrison et al. (1991) and Rugman & Knight (1998) were used to verify perceptions among opportunity costs by multinationals and host countries.

Dunning (2001) main work is based on propositions of the eclectic paradigm (OLI), which relate to operations decisions in international production, summarized in three sets of forces: (1) competitive advantages that companies from some nations obtain over others in the provision of markets or set or markets. This is based on specific ownership privilege (O-ownership), or its ability to coordinate income-generating assets in a way that differentiates itself from the competition; (2) it becomes interesting to internalize (I) markets to generate these assets and in particular to create added value products and / or services; (3) the location (L) chosen by the companies for their value added activities (operations) outside national boundaries, ensuring that competitive advantages that are specific to each market / industry, region or country (geographical dimensions). This discussion from the literature on international strategy indicate that there are peculiarities for each way in which strategic decisions of operations are adopted by companies and that more empirical studies should be evidenced in this relation. Among these peculiarities, we found discussions about the location of operations (geographic and infrastructure factors) that influence the multinational companies' international strategies, which vary according to the cultural, social, economic and governmental characteristics of the host country.

The location decision in Meijboom & Vos (1997) says that since the emerging economies should be analyzed not only as the possible low costs of host country facilities, but also as potential markets, sources of knowledge and learning among headquarter and subsidiary. Manning et al. (2008) go further proposing that production abroad is an opportunity for a company to search for talents and specific capabilities, especially in engineering.

The issues of configuration and coordination are important to localization, since the integration of these factors is crucial to the success of internationalization. MacCarthy & Atthirawong (2003) highlight how motivation factors in the localization decision process, skills coupled with low production costs, access to customers, tax incentives, access to raw materials, technology, responsiveness to competitors.

The studies of Meijboom & Vos (1997), MacCarthy & Atthirawong (2003), Maritan et al. (2004), Ketokivi & Jokinen (2006) and Lee & Wilhelm (2010) have an underlying common bias, as is the production process, which influences the authority and autonomy of environmental management, behavior and production issues. In addition, they emphasize the importance of decisions about "what" and "by whom" to produce and which products are focused on the plant (considering the internal environments of the companies - process and market - customers), infrastructure issues, distribution, labor, etc.) and how close the plant should be to suppliers or markets. Figure 1 summarizes the importance of the company's

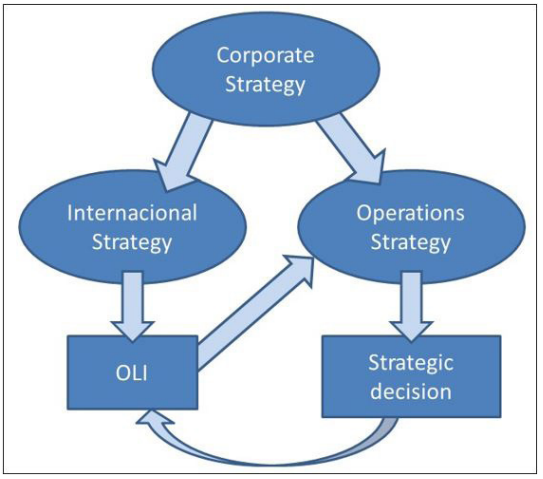

Figure 1. Proposed *Framework* for the study.

corporate strategy for international strategy and operations decisions, since the corporate strategy takes into account the overall positioning of the company and the competitive advantages obtained in operating in different countries. The strategy of producing abroad, in turn, is influenced by the advantages of ownership, internalization and location (Dunning, 1988b). Operations strategy, however, is based on strategic operations decisions that will determine the capabilities and competitive priorities that make up this strategic element and depend, in part, on the international strategy previously defined by the organization. Figure 1 shows the use of theoretical dimensions of international strategy related to the categories of decisions of operations strategy, whose complementarity are illustrated by empirical case studies.

4 Method

Since the purpose of this study is to identify the relationship between international strategy and strategic operations decisions, it is characterized as a qualitative and descriptive research. The multiple-case study provides insights for theory development, understanding and theoretical proposal of the search for patterns in desired relationships (Eisenhardt, 1989; Yin, 2010).

For the elaboration of this study, we opted for the qualitative research, using an inductive methodology through the analysis of multiple case studies. The main characteristic of this method is that the researcher arrives, through a specific survey, to conclusions that can be generalized, in order to generate and/or bring contributions to the existing theories. It is worth mentioning that it is not the number of cases or their dimension that makes the inductive method to be used, but rather if the author can understand and describe the context of social and organizational dynamics to such an extent that the reader can understand it thus generating or advancing in theory (Dyer & Wilkins, 1991). When applied in the area of operations, the researcher's goal is to get as close as possible to the world experienced by the manager and to interpret it.

The research protocol is based on the literature (Yin, 2010; Flick, 2009) and designed for two units of analysis, multinational companies of the Brazilian soybean chain, denominated Alpha and Beta. These companies are selected for two reasons. First, they are important exporters in Brazil, allowing the elements pertinent to the study to be possible to be identified. Soybean is one of the main Brazilian agricultural products (agribusiness represents around 30% of the Brazilian GDP) from the 1970s with 1.5 million tons in the year, with an increase in cultivated area and productivity increase in tons per hectare (MAPA, 2008 apud EMBRAPA, 2015; IBGE, 2010). According to projections of ABIOVE (Brazilian Association of Vegetable Oil Industries), estimates indicate that soybean production in Brazil of 88.9 thousand / t in 2021/2022, will be 17.8 thousand / t higher than the production of the 2011/2012 crops. Domestic soybean consumption is expected to reach 49.6 thousand / t, representing 55.8% in production in 2021/2022, considering that the crop is mainly involved in the production of animal feed, chemicals, pharmaceuticals, enzymes and increasing importance in human food.

The second reason for selecting the companies is their market share since both have the largest participation in the international market. This suggests the existence of an internationalization strategy and operations that could be identified during the research. Semi-structured interviews, field observations and secondary data were used as collection techniques. Internal documents were made available by companies, but not disclosed due to information security and privacy policies of these companies. Semistructured guidelines were developed and previously discussed with specialists. The interviews were organized around the theoretical framework and the interviewees were selected based on managers´level of participation in the decision making of location strategy. The group of interviewees was composed of multinational managers where the manufacturing units are located. These managers were selected because of their experience in the analyzed market and time in the companies studied. They were also selected because they were able to answer questions on the topics of internationalization strategy and operations. In addition, websites and articles in the media about companies were analyzed to seek consistency on the information provided by the interviewees.

In the company Alfa, 4 managers were interviewed: regional marketing unit manager, regional storage manager, general unit production manager and national sales director. In the company Beta, 4 managers were interviewed: the regional manager in charge of 3 states, the production plant manager, the regional manager and grain and oil commercial manager. The interviews were carried out between October 2011 and September 2013. The interviews followed a semi-structured guideline that was sent in advance to the interviewees. The interviews were carried out in the companies and recorded for transcription with the authorization of the subjects participating in the research. Analysis of the data was through content analysis organized according to the literature dimensions. Each case study was analysed individually and then main findings were crossed.

5 ALPHA case study

Company founded in the year 1818 on the European continent and specialized in grain marketing. It has over 35,000 employees in more than 40 countries (20,000 employees in Brazil). The organization is one of the largest agribusiness companies in grain origination, soybean and wheat processing, fertilizer production and food manufacturing. In Brazil, it has had activities since 1905, through the acquisition of a large Brazilian company in the wheat milling activity located in the state of São Paulo, at the time. In the soybean chain in Brazil, it is present with receiving, sorting, crushing and processing plants in the following states: Bahia, Goiás, Mato Grosso do Sul, Mato Grosso, Piauí, Paraná and Rio Grande do Sul.

According to research data, the executive board formulates the international strategy at the head office, which reports its aims directly to the company's shareholders through the company's president. For this kind of decision, the board analyses the comparative advantages of each country and each location considering the existing and potential capabilities. The mission of the company is in contributing to the increase in the sustainable food supply worldwide. In order to ensure the success of the production process, ALFA provides logistical support to the agri-food suppliers in rural areas, from the harvesting of soybeans, seeking to guarantee the best conditions for the commercialization, storage and drying of grains, among other services provided. According to the company, several factors increase the risk in implementing an international operation, such as technology availability, shortage of skilled labor, logistics infrastructure for crop outflow (collapsed road transport - from the field to the plant), as well as ports requirements to ship high volumes of production abroad.

The configuration of operations connects to the location of operations facilities and the better allocation of resources between facilities throughout the value chain. For the company ALFA, the location of the processing plants helps the company to guarantee the best services for acquisition, storage and commercialization of the grain with the best possible quality for both the company and suppliers. The company configures its international operations according to location-specific features such as climate, soil, water and labor and easy access to raw materials. The company ALFA shows a concern to converge its international operations tactically and operationally. The main decisions factors towards Brazilian operations are access and proximity to natural resources at value chain upstream. Despite the low aggregation of value in soybeans production, it is evident that the company realizes that competitive advantages are beyond planting, harvesting, processing, buying and/or selling grains. The main dimension in the coordination capability to integrate all value chain activities, from crop to the consumer table. Controlling the distribution on a large scale is a relevant factor for ALFA competitiveness.

The company ALFA has a business plan (BP) to address planning and results of the company. BP demands the involvement of all organization levels in its elaboration and dissemination, interconnecting the communication between headquarters and subsidiaries. The BP regulates and socializes all key information about the organization's annual budgets, goals and objectives. The Brazilian operation, which has partnerships with local producers and Embrapa (Brazilian Agricultural Research Company), develops endogenous technology, adequate to the conditions of the region. The R & D, in this way, is carried out with support from the public sector represented by Embrapa. The company indicates that knowledge is shared through good practices, but all sort of problems (technical, commercial, operational, among others) are also divided among agents.

6 BETA case study

The second company is also a transnational, leader in the global agribusiness sector. Founded in 1865 in the United States, it has 142,000 employees in more than 65 countries. It has activities in in the purchase, process and distribution of oilseeds, among other products for the manufacture of nutrition products for human and animal consumption. In the food segment, it operates in the food and beverage industry as a supplier of inputs, also in financial advisory services to clients, in risk and financing management and agricultural raw materials. In Brazil, BETA started its activities in 1965. Today it is among the twenty largest agribusiness companies in the country. In the soy segment, there are seven oil-processing plants in Bahia, Goiás, Minas Gerais, Mato Grosso do Sul, Mato Grosso, Paraná and São Paulo. Still, it is present in 150 municipalities of the country, among industries, port terminals, and warehouses with about 8,000 employees.

In the company, the international operations managers also hold the position of grains and oil manager in Brazil. During the interviews, he reported that the focus in operations is to connect from the production until the involvement with the final consumer, integrating the supply chain. Especially in grains, to promote solutions and products suited to the company's business. The executive says that BETA Company's international operations in countries such as Brazil are motivated mainly by the possibilities of

serving world markets, such as countries in Asia and Europe. The issues of location, climate, and proximity to the plant to raw material supply are crucial for the company's strategies. The company points out that regulatory framework is one of the biggest barriers to action in Brazil, inhibiting investments, due to lack of clarity and uncertainty in its regulations, generating great insecurity. Both ALFA and BETA operate from the planting, harvesting and processing of the soybean complex (grain, oil and bran), also in acquisition, drying, storage and distribution, commercialization through maritime transport.

For the manager, the configuration decisions culminate with factors such as logistics, technology, agricultural aptitude, regulatory frameworks, tax incentives, investment costs in the penetrated country. In the Brazilian case, it is an "expensive" country, valued currency (at the time of data collection), exchange rate factors, inflation (mainly labor), iron ore issues that impacted on constructions, making the construction of a plant very costly compared to other places in the world. Companies of the size of BETA have an interest in being present in various locations around the world, to deliberate on their best investments, considering several factors added together and never in isolation.

In regard to the supply chain coordination, the manager points out that technology, logistics (now a big bottleneck in the Brazilian grain chain), asset management (mainly financial), operations mix, risk management, location definition, relationships with customers and producers is something flexible in BETA Company's vision, that is, each subsidiary has autonomy in the operational decisions. The headquarters leave a degree of adaptation to the unit manager. The company carry out its own market research of the international grain markets, especially macro and microeconomic analyses, considering knowledge acquired elsewhere in the world to develop strategies that allow not only the penetration in foreign supply chains but also the coordination of the branches network.

The company considers the coordination and configuration from the supply chain at a systemic level. The company indicates a convergence of actions that start with global market knowledge, the definition of the location for FDI, operations targeted, and results expected. Despite the concern with the complementarity of configuration and location, they reinforce the strategic objective to upgrade the soybean chain as a whole (planting/harvesting/plant/marketing) to innovation and sustainability issues. The company carries out technical guidance in rural areas developing capabilities in local suppliers from all sizes. For the interviewee, the relation between international strategy and operations is the agricultural productivity of the country in a location that allows proximity of the raw material to the processing plant.

7 Case analysis

In sum, ALFA and BETA present many similarities on their international strategies as both are big players in the same sector. In terms of divergence, it is possible to perceive in the process of international strategy that in the ALFA focuses more on the profitability due to the shareholders 'pressure, whereas in BETA has an emphasis on following its corporate mission. This can be explained as BETA is a family business. Climate and soil condition (natural resources) are emphasized by BETA, while ALFA is more focused on logistics and technology. BETA has a greater capacity of grain distribution and storage than ALFA in the State of Mato Grosso.

Both ALFA and BETA adopt their strategic planning programs as guides for strategic definitions of international operations and operations in their units, as well as transmitting knowledge and information through the organizational structure and balancing results among different areas and segments of agribusiness. In the case of ALFA and BETA companies, it is important to focus on the commodities sector, where both started of gradual FDI, ALFA first by acquisitions and BETA commercializing grains (see Dunning, 1980, 1993; Dunning & Lundan, 2008). The drivers to establish FDI in the country are present in the Eclectic Paradigm perspective, decisions based on the generation of competitive advantages in grain operations in factories located in Brazil. They consider questions about costs (logistics especially) and location factors (advantages among suppliers network), particularly in the Brazilian case (Dunning, 1988b). Dunning (1988b) defined the specific foreign property variables for intangible assets, capabilities (technology), labor, product differentiation, marketing, and organizational capabilities. In both companies surveyed, there are investments in technological capabilities and innovation (modern plants and IT - automation), as well as collaborative R & D. As for the marketing aspects, they were not investigated, but an institutional emphasis was placed on the brand (products derived from soybean - margarine, refined oil - institutional identity). As for the international strategies adopted by companies, Multinational companies ALFA and BETA, in the soy segment, the international decision is the generation of competitive advantages in the market using Brazil as a production site and export platform.

Chart 1 summarizes the comparison between ALFA and BETA regarding their international strategies

Chart 1. Competitive advantages in international strategies of the multinationals in the soy beam chain.

Competitive advantages in international strategies of the multinational of commodities.	**ALFA Company**	**BETA Company**
Companies started activities in Brazil, through FDI, acquiring native companies with culture and knowledge in the commodities sector (O)	In 1905 it entered Brazil acquiring a Brazilian wheat grinding company. It made other acquisitions in the food sector among other segments.	It arrived in Brazil in 1965, directly in the agricultural segment, leasing and acquiring warehouses, dryers/processors of commodities (corn).
Companies seek FDI: fiscal and exchange incentives by the government; infrastructure for plants; low-cost labor; possibility of expansion in productive volumes. (O)	Factors that impact competitive advantages in the decision-making process of international strategies.	
Geographic extensions available for soybean cultivation and environmental conditions, determining factors when chosen Brazil (I).	The Companies emphasized that such elements are fundamental. This elements impact simultaneously on decisions of international/operations strategies. In Brazil - unique in world terms.	
Strategic positions on international decisions in the soybean chain. (I)	Inaugurated in March / 2013 - Nova Mutum (MT) - a biodiesel beneficiation plant from soybean. It was a strategic step to act in a complementary sector, expanding participation in the soybean chain.	High "Brazil cost" - inflation, exchange, labor, regulatory milestones, and logistical "chaos" in the commodity chain. Investments in operations in South Africa, and construction and management of one of Brazil's largest port terminals for soy.
Location Motivators (L) (Dunning, 1988a)	Both organizations seek strategic resources and perceive operations as competitive advantages in Brazil or in the world. Focus on new business opportunities in agribusiness segments.	

and the main competitive advantages pointed out in the research.

These companies have international strategies with operations strategic decisions that depend on the international strategy used (Dunning, 1988a). Based on these concepts, it can be inferred that, in the case of the commodity companies investigated in the Brazilian soybean, the production are coordinated by global dispersion, with homogeneous strategies for a product also homogeneous (soy complex: grain, bran and oil). They share their operations with other units in Brazil and other global plants. They are closer to the production network model, in which activities of the value chain are dispersed around the world, seeking better resources in each location (natural, human, market) and acting in the coordination of these activities (Ferdows, 1997). Production in Brazil is mainly oriented to activities of lower value added, such as the production of commodities supplying the markets of China and Europe. However, they are also represented by the coordination of strategies with integration into the business networks in Brazil; their units integrated in the national territory with influences on costs and social issues; strategically located to access resources and, finally, the soybean processing units have significant autonomy in operations management.

In operation analysis, the multinational companies perceived the sustainable competitive advantages generated, which are based on the volumes of financial investments that these organizations make available in global chains (for example, financing farmer's crops). They also recognized the development of technologies and innovations generated by the knowledge acquired between subsidiaries and headquarters; (R & D) partnerships with other companies and chain agents, particularly rural producers and clients of these multinationals, as well as knowledge-intensive business services such as Embrapa and Esalq (USP).

Chart 2 represents the strategies identified in the companies surveyed and the international business relations with the operations. It is noted, therefore, that the strategies are similar between the two companies.

ALFA and BETA have a greater emphasis on coordination between the matrix and regional ones, predefined by strategic planning. They present very similar strategies and configurations in processes at different levels of the supply chain and focus on costs and integration on several key activities (acquisition, warehousing, distribution and operations).

Chart 2. Operations Strategies in multinational commodities (soybean).

Operations Estrategies	ALFA Company	BETA Company
About the coordination / configuration of the soybean chain.	Strategic position in operations and in the commodities segment. Converged multidomestic activities for the categories of local operations decisions.	
Strategic alignments - reconcile economic and sociocultural differences that each market has, ensuring what was planned.	Development and constant updating according to specific plans, in BP (business plan).	Permanent strategic planning.
Existing trade-off issues.	Corrective actions to solve logistics problems.	

In the analysis of operations decision strategies, the two companies seek to provide sustainable competitive advantages, using their strategic planning, indicating "what to do" and "what not to do" in their operations (Wheelwright, 1984). In both organizations the capabilities are related to the raw materials location so that the location of the production plant allows the maximization of productive capacity. This search for capacity optimization has an impact on the operational cost that tends to be reduced as capacity is expanded. Observing from the theoretical point of view, the location factor facilitates access to production resources and capacity building. When combining structural and infrastructure dimensions, with emphasis on Brazilian soybean, case studies findings show that: volumes of soybean production (harvest/storage) are the main capacity for soybeans in Brazil; specific labor for harvesting and maintenance of operations; Issues of technology availability in the plant and field; time factor between harvest, distribution, process and storage - generator of logistics bottlenecks; quality of grains delivered (moisture levels, impurities and malfunctions) - could result in crop losses for the producer and the multinational; drying and storage systems with deficiencies, especially in crop "peaks". All these elements are interrelated to both ALFA and BETA. According to the analysis developed, the decisions of the location of facilities seem to be the most important for the multinationals in this chain. The location decision is a sum between macroeconomic aspects such as the geographic characteristics or the peculiarities of the location, which are generating sustainable competitive advantages. The decision to locate a plant is linked to the strategy of the corporation as a whole (Dunning, 1988b). Both companies have resource costs as a requirement for defining operations localization strategies, aggregating facility issues and resources made available by the host country.

In addition to the factors for innovation and technology expertise in the sector, which are developed in Brazil, by institutions specialized in partnerships - EMBRAPA / ESALQ and / or R & D area of the multinationals themselves, with experiments established directly on rural suppliers farms contribute to the location of processing plants in Brazil.

The strategic decisions on the capabilities (Canel & Khumawala, 1996; Meijboom & Vos, 1997) in the ALFA Company show operations in sectors complementary to the soybean chain that operates in the Brazilian market, due to the location (for example, biofuel plant - MT). BETA, in turn, is investing in port activity, taking advantage of location opportunities and generating sustainable competitive advantages, as in the case of Porto de Santarém, in the State of Pará.

The location has direct impacts on the international strategies and respective decisions of operations in multinational companies of commodities. Elements such as proximity to sources of raw materials (soybean farms); Logistics that favor the flow of the harvest, from the field to crushing plants, extending to the ports (exports); The good location facilitates the relationships in the networks of companies with partner entities (multinational / Embrapa / farm, as examples).

As for the technology decision categories investigated (Shi & Gregory, 1998; Monroy & Arto, 2010), ALFA and BETA point out that there is a contrast between the crops and the multinational (operations) regarding the technological factors. Planters, harvesters, airplanes of high technological capacity are used in the cultivation, but rudimentary processes of logistics of grains to the plant (caused by the precarious infrastructure in roads). Storage issues aggravate them. However, multinationals are equipped with state-of-the-art technology (automation) in reception, storage, drying, distribution and processing (grains, oil, bran).

BETA Company, in addition to the partnership for advances in technology studies and innovations in the commodity segment with EMBRAPA, has since 2010, an agreement with ESALQ (University of São Paulo) for studies in the field of agriculture in different crops varieties. It exists within the university a lab especially for research with the multinational.

In regard to the vertical integration, through the information obtained in the interviews with the

multinationals, the integration with supply was the one that received less emphasis. It is inferred that this fact is that these multinationals hold the position of coordination and configuration of commodities chain and consequently bargain power, which leads to a low decision of vertical integration with suppliers, in the majority, soy farmers.

However, there was a divergence between the companies in strategic terms. In spite of operating at different levels of the soybean chain in Brazil, BETA adopted the strategy of acting in the activities focused on maritime services, particularly in the management of the Port of Santarém in the State of Pará, inaugurated in 2015. ALFA tries to compensate for the logistical "chaos" among other barriers, with investments in biofuel plants, in the same state of Mato Grosso.

Both companies use the ERP and CRM system to improve processes in soybean operations. The ALFA and BETA companies provide technical support to their grain suppliers, financial and technical resources, directly inside the farms, as well as support in the commercialization of the harvest. Even though there are assumptions and strategies pre-defined by the headquarters in strategic planning, since the commodity market presents a high degree of changes, there are changes according to the suppliers' needs and delivery.

The labor is a key factor in strategic decisions in operations, especially in what implies relationships between headquarter and subsidiary. Despite the technologies that these companies use, the human factor remains the basis of success. In both companies, power/bargain decisions are concentrated in the home country, but there are discussions established through BP (ALFA) and strategic planning (BETA Company) defining guidelines and policies in organizations - issues of operations, commercialization, diverse activities and even behaviors (rights/duties) between their employees' teams in the different units in Brazil and in the world.

Regarding behavioral elements and people's performance in manufacturing processes (Ketokivi & Schroeder, 2004), the two companies have HR policy/program systems to encourage the development and growth of people in the organization. Elements on productivity, qualification of professionals (all must have higher education - the company helps financially to provide this condition). Both ALFA and BETA have a career plan focused on growth in technical, social and sustainability actions. The multinationals maintain intranet information systems to update information about the organization and the sector and periodically develops (monthly and bi-monthly) an internal (informative) magazine. Each country develops its own magazine within the local reality. The strategic quality decision in operations in the commodities segment is fundamental because it deals with factors related to human food (food security and public health, among others) and animal nutrition (interdependence between grain and other industries).

The decision of quality of the commodity are mainly at the standardization levels in their operations. They use reserve logistics and specific technologies to ban errors from its operations in Brazil and worldwide. They develop specific quality programs from the farm (producer - handling of seeds, fertilizers, herbicides and technical elements of application in the field), extending until the commercialization of grains, guaranteeing standards according to international determinations (Ketokivi & Schroeder, 2004). They control processes in plants that involve environmental care, use of energy and water resources, transcending the activities of receiving, drying and storage of grains. At ALFA, BP (business plan) sets quality standards in operations for safe, effective, efficient processes and trained people.

Production planning decisions converge in the way of planning and controlling strategies of international operations, covering issues of management relationships between subsidiaries and headquarters. Company ALFA and BETA have developed strategic planning programs in Brazil and the world, defining their activities in advance for economic and social insertion in foreign countries and achieving the results projected by the board of directors. In addition, as already reported, we identify the guidance of companies via their BP and strategic planning, in the same way as the use of tools such as ERP.

Both multinationals converge to strategies in their respective subsidiaries scattered around the world with standardized organizational development processes. The main bias is to maintain activities in similar operations, and in identical quality standards, yet provide sustainable strategic results.

At ALFA, there is concern about the autonomy of its units throughout the world, defined by the BP, in accordance with the objectives defined by the board. In BETA Company, the focus of the organizational structure, despite its magnitude and complexity, behaves like a family business, organizational issues seek to facilitate communication between home country and subsidiary in all global operations, regardless of the segment of the organization. Chart 3 demonstrates the operations strategic decisions that are similar or not between ALFA and BETA, as for the respondents interviewed.

Capabilities are important decisions of operations strategies, especially the volumes of production and capacities in technology that are notorious in all the

Chart 3. Comparison between ALFA and BETA companies - operations strategy decisions.

Similarities between perceptions about strategies	ALFA Company	BETA Company
Capabilities	Differences in technology between harvesting and grain storage capacities.	Involve production volumes, technology and process detailing.
Installations	Prioritize facilities located near sources of raw material (farm), logistic conditions and facilities with supply chain agents.	Prioritize facilities located near sources of raw material (farm), logistic conditions and facilities with supply chain agents.
Technology	Presence of partnerships for development, with Embrapa and experiments in rural properties.	Presence of partnerships for development, with Embrapa and ESALQ, in addition to experiments in rural properties.
Vertical Integration	Present at all levels of the soybean chain. Reaches all links. Bureaucratic factors affect negotiation and logistics problems.	Active in all links of the soybean chain. Especially issues on logistics, transport, and management of ports.
Workforce	Qualification of employees, safety at work, training, growth opportunities, internal policies for people.	Concern about behaviors that motivate teams to work in leadership and self-assessment.
Quality	Permanent concern in maintaining quality of the grains (moisture, damages and burned).	Permanent concern in maintaining quality of the grains (moisture, damages and burned). Own internal programs already mentioned.
Planning and production control	All planning carried out by business plan (BP), with one year in advance discussed at all levels, commercial and operations.	They follow the company's global strategic planning, integrated with Brazil with other parts of the world.
Organization	Autonomy of the subsidiary based on BP actions.	Differentiated characteristics due to the behavior of a family business.

processes developed in the plant and other activities of the soy value chain. Issues about facilities, particularly location, have proven to be one of the main categories of operations decisions, alongside capabilities, also in commodities. Factors such as proximity to raw materials sources, logistics and supplier relationships, are drivers to the facilities decisions, as well as determining international decisions.

8 Final considerations

This article investigates the relationship between internationalization decisions and operations strategies of multinational companies in the soybean supply chain. Due to the lack of studies integrating these the two themes, this article sought to explore this issue in two multinationals. The results suggest that the strategic internationalization decision regarding location is a determining factor for the success of the Brazilian soybean chain. The location of the production plant seems to have a greater effect on the other decisions since it allows them to leverage them. Particularly in soybeans, the structural and infrastructure elements are concomitant among the investigated multinationals. In commodities, complementary aspects between technology and innovation must be observed involving production volumes, such as the optimization of the use of time (greater speed in operations in the soybean chain) among others (Shi & Gregory, 1998).

In the proposed framework, technology is interdependent in commodities in Brazil, due to the advances made in initiatives of the multinationals of the sector in the last decades, with partnerships in the sector. Such advances are transmitted to other parts of the world in which corporations transfer the acquired knowledge, which should promote the Brazilian chain to international standards in the agribusiness segment. Our study argue that the relationship between internationalization decisions and operations strategies where categories of operations strategy decisions are interdependent and cause direct impacts on the different levels and activities in the soybean value chain, that is, any change in one of them will have repercussions in the other categories, as well as interfere in the international strategies adopted by the multinational.

However, as highlighted earlier, the decision to locate the production plant stands out when compared to other decision categories. This finding contributes to the operations strategy since the decisions regarding this strategy cannot be deliberately thought out and disconnected from the internationalization strategy. This finding places some limitations on the literature on this topic since it does not take into account the influence of the internationalization strategy for the operations strategy. In future studies on international operations strategies, priority should be given to the location decision for other operational decisions. It is possible that this interrelationship is stronger in the case of commodities than in the case of other products. In any case, the existence of a condition for the operations strategy, even in a specific market, already constitutes a contribution to this theme. Still, in all the categories investigated, there were direct relationships among them, which could mean for multinational corporations a greater coordination with sustainable competitive advantages at all levels of the soybean value chain. First, there is an impact of the location of the production plant to the capacities and facilities that the company can develop. The proximity to the suppliers, in the case of producers, and to the commodity production, determines the production capacity, assuming that the demand is constant for the analyzed commodity. In this case, the capability of supplier network might determine the capability of the company A second relationship is that location, based on the internalization decision (Buckley & Casson, 2009) allows access to the technology at a low cost, since Embrapa makes available the technology developed by it at no cost to interested parties. This is an additional benefit and driver for the strategic decision to FDI in Brazil and that directly impacts technological development and innovation operations. A third relationship arising from the location of the production plant is the need for vertical integration with the chain members that are responsible for the production flow. Because the company's premises in a particular location is a specific fixed asset, the company can not run the risk of having logistical distribution problems, as it may not transfer its premises to another location for the purpose of correcting or avoiding such problems. In addition, because it is a commodity, distribution costs must remain low so that profitability is not affected. Thus, downstream integration decision is due to location and cost reasons. Studies such as de Brennan et al. (2015) and Manning et al. (2008) point to internationalization strategies in search of knowledge talents, so more knowledge intensive sectors should be investigated to test this driver.

The investigation was carried out in only two multinational companies of the sector of commodities in Brazil, limiting the generalization of the results. However, it is known that these organizations, because of their size and complexity, are difficult to access, especially for strategic and operational information. Studies with the same companies, but in other countries in a comparative to Brazilian units would allow understanding of the global strategy of the companies, that is, if all subsidiaries act in the same way as they operate in Brazil. This would allow advances in the understanding of global strategies and production networks. Moreover, the categories and relations proposed here can serve as a basis for quantitative studies on this topic.

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