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Relationships and knowledge in the firm internationalization process

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RESUMO

Relacionamentos e conhecimentos no processo de internacionalização da firma

A partir das variáveis relacionamento e conhecimento, o objetivo neste artigo foi analisar como a multinacional seleciona um modo de entrada para operar em um determinado mercado internacional e como essa escolha inicial evoluiu ao longo do tempo. Para tanto, elaborou-se um quadro teórico que combina três abordagens teóricas de internacionalização da firma: o modelo de Uppsala, a abordagem relacional e a literatura de desenvolvimento de subsidiárias. O método de pesquisa utilizado foi o estudo de caso de natureza qualitativa e perspectiva longitudinal do processo de internacionalização de uma multinacional estadunidense no mercado brasileiro. Os resultados mostram que quatro tipos de relacionamentos e três de conhecimentos se fizeram presentes nos eventos que caracterizaram a internacionalização dessa firma. Com base nesses resultados, foram sugeridas cinco novas hipóteses para futuros testes empíricos, as quais versam, em geral, sobre a interação entre relacionamentos e conhecimentos no processo de internacionalização da firma.

Palavras-chave: relacionamento, conhecimento, internacionalização, multinacional.

1. INTRODUCTION

Recent research on the firm internationalization process, in particular of the multinational enterprise (MNE), to a certain degree has looked for bridging theoretical approaches that have traditionally fertilized each other scarcely. For instance, Goerzen and Makinos (2007) use theories of internationalization processes together with those of intrafirm knowledge transfer in their study with

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Japanese trading firms. Johanson and Vahlne (2009) reiterate the assumptions of the relational approach of internationalization, conceptualized as a theoretical improvement of the Uppsala model proposed by them in the late 70s. Salgado (2011) and Vahlne, Ivarsson and Johanson (2011) suggested that new insights are likely to come off as a result of combining the Uppsala model and the subsidiary development literature.

Together, these claims have been grounded on the agreement that our understanding of the firm internationalization process, in particular of the MNE, is unsatisfactory (Doz, 2011, p. 587). Thus, the assertions of Fortanier and Van Tulder (2009, p. 223) and Gao and Pan (2010, p. 1573) stand out from the crowd. Whereas the former states that "[…] only limited attention has been paid to the dynamics change in a firm's overall extent of internationalization", the latter points out that "[…] little research has been devoted to the pace and dynamics of firms' sequential entries".

This article can be viewed as a response to some of these calls. Based on the variables relationship and knowledge, it aimed at analyzing how a MNE selects an entry mode to operate in a particular international market and how this initial choice evolves over time. We devise a rather new theoretical framework to address this research aim by combining three theoretical approaches that have dealt with the firm internationalization: the Uppsala model, the relational approach, and the subsidiary development literature. This has enabled us to focus on four types of relationships and on three others of knowledge, which play their roles in the events that characterize the firm internationalization.

We have chosen a qualitative backward-looking longitudinal case study as the research method. By collecting data from several sources and subsequently carrying out a process-oriented data analysis, both at individual and comparative levels, we show how the interplay of four types of relationships and three ones of knowledge explains the internationalization of firm A in the Brazilian market (our selected case).

Furthermore, this article includes five sections. The first two ones are concerned with theory; whereas the first is the literature review, the second contains our theoretical framework. In the third section, we explain the methodology, followed by the section dedicated to describing and analyzing data. In the sixth, we offer five new hypotheses for future empirical tests. The last section is the concluding remarks, embracing the theoretical implications as well as the limitations of this article.

2. THEORETICAL APPROACHES OF THE FIRM INTERNATIONALIZATION

In this article, we subscribe to the behavioral spokes of the firm internationalization (Aharoni, 1966; Johanson & Vahlne, 1977; Welch & Wiedersheim-Paul, 1980), which over the years have directed our attention to knowledge acquired and/or recombined in intra and/or interfirm relationships in internationalization processes (Lamb & Liesch, 2002; Rezende & Versiani, 2010). Inspired by the works of Goerzen and Makinos (2007), Fortanier and Van Tulder (2009), Salgado (2011) and Vahlne *et al.* (2011), three theoretical approaches were selected for closer examination: the Uppsala model, the relational approach, and the subsidiary development literature.

The Uppsala model (Johanson & Vahlne, 1977; 1990; 1992; 2003a; 2003b), by far the most popular of the three approaches, pioneered the idea that sequences of events, which characterize the firm internationalization process, can be explained by how the firm deals with uncertainties associated with resource commitments in a particular international market (Bjorkman & Forsgren, 2000; Rocha, Mello, Pacheco, & Farias, 2012). According to this model, this was driven by a positive feedback mechanism, on the one hand, of acquisition and accumulation of market knowledge (i.e. knowledge of customer needs and major competitors) by the focal subsidiary and, on the other, of resource commitment in the international market (Johanson & Vahlne, 1977; 1990). More specifically, the acquisition and recombination of market knowledge in intrafirm relationships (Bjorkman & Forsgren, 2000), represented by the headquarters (HQ) and the focal subsidiary, enables the firm to mitigate uncertainties of new investments in the foreign market (Rocha & Almeida, 2006), which, in turn, become a springboard to tap into new market knowledge (Johanson & Vahlne, 2003a). Therefore, market knowledge is suggested to be locally acquired (Johanson & Vahlne, 1977), which implies being experiential and contextually bounded (Penrose, 1959). As a result, barriers are likely to emerge whilst transferring this type of knowledge to other international markets (Kogut & Zander, 1993; Eriksson, Johanson, Majkgard, & Sharma, 1997).

It is now well-established that the Uppsala model has advanced our knowledge on the internationalization of the firm considerably (Lamb, Sandberg, & Liesch, 2011), especially when it chose experiential market knowledge as its major explanatory variable (Johanson & Vahlne, 2009). However, according to the proponents of the model, market knowledge is viewed as exclusively acquired and/or recombined in intrafirm relationships represented by the HQ and the focal subsidiary (Johanson & Vahlne, 1990). As a consequence, other relationships that eventually play the role in acquiring and/or recombining market knowledge in the firm internationalization are neglected (Forsgren, 2002; Johanson & Vahlne, 2009). With this regard, the relational approach is conceived to address this flaw (Johanson & Vahlne, 1990), amongst other things. More recently, it has even been viewed as a complement to the Uppsala model (Johanson & Vahlne, 2009; Vahlne *et al.*, 2011) to the extent that it highlights two key issues. Firstly, in addition to market knowledge, this type calls the attention to institutional (i.e. of governmental agencies) and internationalization knowledge (i.e. about how to operate internationally) in the firm internationalization (Eriksson *et al.*, 1997). Secondly, it suggests that knowledge can be acquired and/or recombined in relationships with external actors, in particular foreign buyers and suppliers (Johanson & Mattsson, 1988; Anderson, Forsgren & Holm, 2002).

Although the HQ-focal subsidiary and the focal subsidiary-external actor relationships are evidenced by the Uppsala model and the relational approach respectively, it is worth noting that relationships between sister subsidiaries remain on backstage in both of them (Birkinshaw, 1998). By the same token, technological knowledge (i.e. of how to develop new products and services), developed by the focal subsidiary, has not received due attention (Blomkvist, Kappen, & Zander, 2010). In this sense, scholars from the subsidiary development literature forcefully suggest that only a partial picture of the MNE internationalization is likely to emerge, provided both issues remain neglected (Birkinshaw, 1998). Their critique is based on the fact that the focal subsidiary eventually develops critical technological knowledge, either in-house or with external actors (Birkinshaw, 1998; Holm, Holmstrom, & Sharma, 2005; Blomkvist *et al.*, 2010), which later enables it not only to exert more influence on the distribution of resources within the MNE (Mudambi, & Navarra, 2004), but also to undertake activities beyond the local market (Etemad, 2005). In other words, the accumulation of technological knowledge by a focal subsidiary can influence the internationalization process of the firm through a number of initiatives, such as development of new products (Boehe, 2007), centers of excellence (Birkinshaw, 1998; Holm, & Pedersen, 2000), and world product mandates (Birkinshaw, 1996; Oliveira Júnior, Borini, & Guevara, 2009).

3. RELATIONSHIPS AND KNOWLEDGE IN THE FIRM INTERNATIONALIZATION

Based on the review of the aforementioned theoretical approaches, we advance a framework that highlights the relationships (Halinen, Salmi, & Havila, 1999) and types of knowledge (Eriksson *et al.*, 1997) that play the role in the firm internationalization process. More specifically, we suggest that the firm internationalization is a consequence of acquisition and/or recombination of market (Johanson & Vahlne, 1977; 2009), institutional (Eriksson *et al.*, 1997), and/or technological knowledge (Blomkvist *et al.*, 2010). A number of intra and/or interfirm relationships is exercised in acquiring and/or recombining these types of knowledge (Holm, Johanson, & Thillenius, 1995). The intrafirm relationships are represented by the HQ-focal subsidiary and sister subsidiary relationships (Kogut & Zander, 1993), whereas the interfirm ones are illustrated by the HQ-external actor and the focal subsidiary-external actor relationships (Lamb & Liesch, 2002), as seen in Figure 1.

As our starting point, the internationalization process is decoupled into how the international entry mode is selected, embracing not only the operational mode, but also the process that underlines it, as well as how this event evolves over time (Rocha & Almeida, 2006; Petersen, Welch, & Benito, 2010). Hence, the internationalization process is a dynamic and oriented phenomenon to the extent that it refers to an international trajectory, that is to say, a series of connected changes that can be triggered when an international entry mode is selected (Johanson & Vahlne, 1977). Because future is open, this does not imply linear or unidirectional international trajectories, but pluralism and multiplicity of internationalization processes (Lamb *et al.*, 2011).

Having explained what we mean by internationalization process, we now turn to the next group of variables: type of knowledge, and the first to be explained here is market. According to Eriksson *et al.* (1997), market knowledge is that of foreign buyers, suppliers, and competitors. Following the early Uppsala studies (Johanson & Wiedersheim-Paul, 1975; Johanson & Vahlne, 1977), this is suggested to be acquired locally by current operations of the firm through trial-and-error (Johanson & Vahlne, 2003a). Institutional knowledge, the second one, is associated with principles, standards, laws, rules, and values that govern institutions (Child & Rodrigues, 2005). To authors such as Eriksson *et al.* (1997), Johanson and Vahlne (2009), Lamb *et al.* (2011), and Rodrigues and Child (2012), it plays a similar role of market knowledge in internationalization processes by either propelling or hindering the firm evolution in a particular foreign market. Finally, technological knowledge is that theoretical and empirical, the skills and artifacts that underpin the development of products and services (Lin, 2003). Similarly, Prencipe (2000) conceptualizes it as scientific theories, principles, algorithms, conceptual framework, and empirical data embedded in things and beings. It is interesting to mention that more recently, Blomkvist *et al.* (2010) have advanced the idea that the focal subsidiary is sometimes able to trigger a particular international trajectory, based on technological knowledge developed by it, which is totally new to the MNE.

According to our framework, these three types of knowledge are usually acquired and/or recombined in intra and/or interfirm relationships, which are exercised in the firm internationalization process (Halinen *et al.*, 1999). Intrafirm relationships comprise the ones between HQ-focal subsidiary and well as

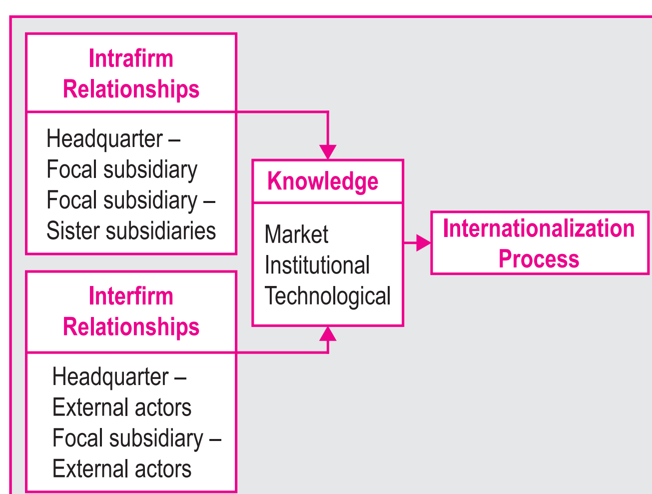

Figure 1: Relationships and Knowledge in the Internationalization of the Firm

between focal subsidiary-sister subsidiaries. Following the Uppsala model, the firm internationalization is a result of hierarchical relationships (Bjorkman, & Forsgren, 2000), which means that the HQ-focal subsidiary is, implicitly or not, considered as the most influential one for operating internationally, the HQ being in charge of the internationalization process. The focal subsidiary is, in turn, responsible for undertaking activities in the foreign market, in particular sales and marketing (Forsgren, 1989; Forsgren, Holm, & Johanson, 1992).

The subsidiary development literature offers an alternative view as it suggests that the focal subsidiary has some voice in its own internationalization process (Birkinshaw, 1994; 1996; 1998) and, as a consequence, it is able to create new and critical knowledge, in particular technological (Blomkvist *et al.*, 2000). If this holds, a reverse transfer of knowledge, i.e. from the focal subsidiary to the HQ is likely to occur in the firm internationalization (Ambos, Ambos, & Schlegelmich, 2006; Ciabuschi, Forsgren, & Martin, 2011). Whereas challenging the role of the HQ in the firm internationalization, the subsidiary development literature brings the relationships between the focal and sister subsidiaries closer to the fore (Birkinshaw, 1998). As affiliates are connected either loosely (Weick, 1979) or tightly (Porter, 1986), interdependencies intrafirm are probably going to emerge (Nachum & Song, 2011). This means that the focal subsidiary is not only able to influence, but it is also liable to be influenced by sister subsidiaries in terms of internationalization (O'Donnell, 2000).

The interfirm relationships refer to those comprising external actors, either by the HQ or the focal subsidiary, in the internationalization process. This was introduced by the relational approach (Johanson & Mattsson, 1988), which proposes that critical market and institutional knowledge are acquired and/or recombined with external actors embedded in a particular foreign market (Johanson & Vahlne, 2009). A strong emphasis is placed upon the focal subsidiary as the actor who establishes relationships with the external ones (Holm *et al.*, 1995). Over the years, this insight has received sound support from empirical studies, such as those by Figueiredo and Brito (2011) and Lamb *et al.* (2011).

4. METHODOLOGY

We constructed a qualitative backward-looking longitudinal case study of the internationalization process of a North-American MNE (herein Firm A) in the Brazilian market, which goes back as far as the early 70s. Following Burgelman (2011), this method has the broad aim of selecting an initial event and tracing the chain of connected events that follows it. Similarly, George and Bennett (2005) advocate its use whenever the researcher is interested in understanding how and why a particular event evolves over time.

Four boundary conditions drove the choice of the case. Firstly, aligned with the theoretical approaches used here, it should be a manufacturing firm in order to avoid potential bias stemming from, for example, services firms. As Carneiro, Rocha and Silva (2008) remind us, the internationalization of services firms is likely to exhibit distinct internationalization patterns than those of manufacturing firms. Secondly, the MNE country of origin should be a developed one so as to avoid potential bias in confronting theory and empirical data from rather distinct contexts, such as those from Newly Industrialized Country (NICs) or emerging countries (Fleury & Fleury, 2007; Rocha *et al.*, 2012). Thirdly, the MNE had to be operating in the Brazilian market for some years through more advanced operational modes in order to enable us to trace the events of its internationalization process. Last but not least, primary and secondary data should be available to the researchers.

As soon as we got the consent of the president from the Firm A Brazilian subsidiary, we started the data collection by gathering information from a number of sources. In terms of secondary data, we collected annual reports, contracts, and internal reports. News about Firm A and its buyers and suppliers published in newspapers, magazines, and at a number of sites were also achieved. All these data were later coded and compiled resulting in nearly 800 pages of double-space text.

Having read this material carefully, we sketched an interview protocol composed of two groups of questions about the internationalization process of Firm A in the Brazilian market with particular emphasis upon the variables **relationships** and **knowledge**. The first group aimed at obtaining general information of how the company selected the Brazilian market to operate and how this initial choice evolved over time. Questions, such as "could you please tell us how the Brazilian market was chosen?" and "in our opinion, which factors or actors influenced this initial choice?", are illustrative. The second group intended to delve into the internationalization process of Firm A in the Brazilian market. Provided the informants' knowledge was uneven due to their background, we formulated a number of specific questions to address the critical events and the relationships that were more familiar to them (Halinen *et al.*, 1999). This was feasible because at that time we already had much knowledge about the Firm A internationalization in Brazil as well as we were aware who the informants would be.

We were able to interview 12 individuals, comprising senior executives, engineers and former executives of the Brazilian subsidiary as well as of individuals from some of Firm A first-tier buyers and suppliers. The interviews were carried out in Belo Horizonte and São Paulo, between April and July 2008. Each of them lasted 49 minutes on average, was digitally recorded and subsequently transcribed verbatim, producing 240 pages of double-spaced text.

Although data collection and analysis to a certain degree overlapped (Eisenhardt, 1989), the first step of data analysis meant merging secondary and primary data texts. It was done by selecting the information that initially interested us most, such as that about the Firm A internationalization in Brazil. This reduced the length of the text to 141 double-spaced pages, which became our major source for carrying the data analysis forward.

Following the procedures outlined by Langley (1999) and George and Bennett (2005), we carried out what has been termed process tracing, which is a historical analysis of causally connected events of a particular trajectory. Initially, we selected a number of empirical critical events of the trajectory that could be subsumed under a particular theoretical category. In terms of the firm internationalization, we followed Jarillo and Martinez (1991), who have suggested picking up changes in the operational mode illustrated by the dimensions of externalization, localization, and integration of activities across borders. By doing this, we were able to identify ten changes in the operational mode, which, altogether, became the first sketch of the internationalization process of Firm A in Brazil.

We further developed the data analysis by re-writing the case and, at this time, probing into plausible connections between each of these operational modes to shed some light on why and how they were selected and changed (George & Bennett, 2005). This back-and-forth analysis, by its turn, became the bedrock for identifying the types of knowledge and the relationships exercised in each operational mode.

In terms of types of knowledge, we had in mind Kogut and Zander (1993) and King and Zeithaml's (2003) concept of knowledge as referring to a particular capability or skill of an actor embedded in daily practices and/or routines of the firm. In addition, we followed King and Zeithaml (2003), who stated that knowledge is hold by multiple actors, can be generic (knowledge of marketing) or specific (knowledge about how to serve a particular group of clients), and is contextually-embedded. Also, according to them, knowledge can be captured by language.

By alternating induction and deduction (Eisenhardt, 1989), we elaborated a preliminary list of what we viewed as kinds of knowledge and later categorized them into three types: market, institutional, and technological knowledge. Due to space constraint, we provide here a single comment to illustrate one type of knowledge, in this particular case the technological:

> So we developed a backup module, which was responsible for the automatic switch between two CPUs, through a high speed communication network. With this module, it was possible to switch the two CPUs and the power supply. In other words, you had two CPUs and the interconnection among the racks. This module controls the switch between the input and the output racks. This was an internal development. The redundant power supply was also a Brazilian development.

After being identified and categorized the types of knowledge, we associated them with the ten events of the Firm A internationalization process in Brazil. Our next step was to pinpoint which relationships were exercised in acquiring and/or recombining them. Once again, the alternation of induction and deduction proved to be very useful and, as a result, four types of relationships were identified. In terms of intrafirm ones, we had HQ-focal and focal subsidiary-sister subsidiaries; whereas the interfirm ones were composed by HQ-external and focal subsidiary-external actors. The following comment illustrates the relationships between the HQ and focal subsidiary:

> As the Brazilian market was relatively closed, you had a space to grow in a number of areas. Firm A was focused on manufacturing, and here we had big investments in the area of industrial processes. So, we had the initial sales in the area of industrial processes, and this area wanted redundancy. As the USA market did not care about it, the HQ did not have it over there. However, the HQ gave us some support for developing it here. Therefore, we developed all the redundancy here in Brazil and sold it. We sold tons of it. We sold a lot of it. To chemicals, petrochemicals, oil, gas. We sold it to every market. And then the HQ sensed a local demand for it. And then they wanted to buy it from us. And then it became a global product. This PLC redundancy.

Our last step involved constructing a number of tables in order to carry out a comparative analysis of the events (Miles & Huberman, 1994). Initially, we chose events and types of knowledge with the aim of getting some insight of their temporal context (Gao & Pan, 2010). Subsequently, we replaced types of knowledge by relationships. Timing was, once again, our primary interest here. Finally, all the three variables were taken into consideration together in order to get the big picture of the internationalization process of Firm A in Brazil in terms of relationships and knowledge.

5. DATA DESCRIPTION AND ANALYSIS

5.1. Firm A internationalization in the Brazilian market

Firm A history begins in the early 1900s by producing a carbon pile rheostat, which controlled the speed of electrical motors. Since then, it has developed a series of high-tech products, including the rheostat for automobile dashboards and radios, and the miniature carbon resistor, which, in a way, triggered a technological revolution in the electronic industry. The entry of Firm A into the automation industry happened in the 1930s. Nearly 40 years later, it launched the first digital computer, also known as programmable logic controller (PLC), which has been extensively used in the automation of electromechanical processes. This was considered as the first step of Firm A towards the leadership in the U.S. market for products for industrial automation. In 1969, Firm A opened its first subsidiary outside North America, specifically in England.

In terms of the Brazilian market, the internationalization of Firm A has its roots in the 1970s, and comprises ten events: the first is exportation; the second refers to the opening of a sales subsidiary; the third is the establishment of a production subsidiary; the fourth is associated with the formation of a joint venture with a local firm; the fifth refers to local technological development; the sixth concerns exporting technology developed by the Brazilian subsidiary; the seventh is the set up of local distributors; the eighth is illustrated by the collaboration and deployment of a technological training center in a local university; the ninth describes the certification program for service providers; and the tenth is represented by product development together with external actors.

The first event of Firm A internationalization in Brazil, the entry into this market, dates back to early 70s. A package of modes, represented by direct exports and exporting via foreign actors — firms also known as Original Equipment Manufacturers (OEM) — was selected. The former means that Firm A exported PLCs directly to a number of American firms affiliates, including the Brazilian subsidiaries, which had global supplying agreements. The latter means that foreign machinery manufacturers had agreements with Firm A to embed PLCs in their machines so they could be exported already automated to a number of international markets, such as the Brazilian. Therefore, the first step in Brazil was triggered by external actors, who were, in fact, the actors with knowledge about this market. In this sense, it can be stated that this type of knowledge flew, although imperfectly, to Firm A head office through the relationships it had with external actors, represented by both American and international buyers.

The second event refers to the opening of a sales subsidiary, which happened soon afterwards its entry to Brazil. As its international buyers flocked to the Brazilian market by establishing and subsequently automating their plants, Firm A increased considerably its exports to Brazil. However, these production subsidiaries began to demand spare parts and local technical services, which was unsatisfactorily met by Firm A HQ. As a result, in the second half of the 1970s, Firm A was compelled to increase the localization degree of activities in the Brazilian market by opening a sales subsidiary, thereafter Firm A-Brazil, in São Paulo, whose major goal was to stock spare parts, sell products, and offer local support. As in the previous event, this was started by external actors represented by international buyers. At that time, Firm A still had minimal knowledge about the Brazilian market and, as a result, was strongly dependent on market knowledge of external actors.

The third event is the set-up of a production subsidiary and is influenced by the superior performance of Firm A-Brazil, which, in turn, reflected a strong market demand for electronic equipment as well as lack of local suppliers. This decision was done in the context for which the Brazilian government took the first measures to protect the national market of information technology from international players. Initially, this embraced a stringent regulation for importing high-tech equipments, such as PLCs. Thus, the relationships between Firm A-Brazil and external actors, represented by local buyers and Brazilian affiliates of international buyers, enabled the former to access first-hand market and institutional knowledge. Once internalized, this was used by the HQ to make the decision to invest more resources in Brazil.

The fourth event, the formation of a joint venture, occurred in the early 80s. At that time, Firm A-Brazil noticed that the measures to protect the local informatics industry would become even more stringent. Given that, Firm A faced two alternatives: it would either leave the Brazilian market or associate with a local firm to continue the production activities. Firm A opted for the latter and allowed the Brazilian affiliate to look for potential indigenous partners. In 1982, it formed a joint venture with a local firm, herein Firm L, which manufactured sinter products and had a technological development center. In fact, the joint venture consisted of three firms. The first was dedicated to commercializing electric panels with embedded electronics. The second was responsible for manufacturing PLCs and a number of electronic devices under license from Firm A-Brazil. The third was in charge of marketing the products of the two other firms. Interestingly enough, all products stamped the brand of Firm L. In this event, Firm A increased the degree of externalization of activities in Brazil, as the production activities started to be carried out with an external actor. The joint venture was characterized by an intense exchange of institutional and market knowledge between the Brazilian subsidiary and Firm L.

The fifth event, a local technology development, is a consequence of knowledge sharing and enhancing between the technical teams from both Firm A-Brazil and Firm L. More specifically, at that time, a number of local firms, such as those from mining and petrochemical industries, required redundant control systems for preventing disruption in their plants during operations. As these systems were neither offered by Firm A nor Firm A-Brazil, the joint venture succeeded in coming up with a new technology that met the needs of those firms. Therefore, this event means an increase of localization degree of activities in Brazil, since those of technological development, restricted to the HQ until then, started to be carried out locally. In this event, sharing and enhancing technological and market knowledge between the Brazilian subsidiary and external actors came into play.

The sixth event is represented by exporting the redundancy technology for PLCs to Firm A. As aforementioned, this technology was developed by the Brazilian subsidiary and, interestingly, at the outset, it did not catch the attention of Firm A. However, the demand for it increased rapidly in the USA, which, in a way, compelled Firm A not only to import it from the Brazilian subsidiary, but also to incorporate it into its global product portfolio. Soon afterwards, Firm A-Brazil began to export it to sister subsidiaries and, in terms of Latin America, became a center of excellence in redundancy technology. Therefore, this event points out to an increase in the degree of integration of activities, represented by a greater interdependence among the Brazilian subsidiary, the HQ, and the sister subsidiaries. The role of the Brazilian subsidiary was to serve as a source of technological knowledge, which, by that time, was regarded as idiosyncratic in Firm A.

The seventh change is illustrated by the set-up of local distributors. It took place in the second half of the 80s and is rooted in a strong demand for Firm A-Brazil products. As the Brazilian affiliate was unable to meet all placed orders, it was compelled to focus on serving the largest buyers. This means that orders from small and medium-sized firms were not usually filled properly, although they had increased at that time considerably. This led Firm A-Brazil to set up independent local distributors, whose aim was to meet the specific needs of these firms. This means a change in the degree of externalization of activities as those of market prospection, sales and after sales for small and medium-sized firms was started to be carried out by an external actor. With this respect, the Brazilian subsidiary provided market knowledge about how to service them.

The eight event is represented by the collaboration between Firm A-Brazil and a local university for the establishment of a technological center. At the outset, this collaboration was limited to professional experience exchange and recruitment source of engineers. As it far surpassed the initial expectations, a technological training center was established in the university campus. Teams composed of faculty, students, and Firm A-Brazil's engineers were responsible for research and development (R&D) projects that reflected common interest of the university and the Brazilian subsidiary. This is a change in the degree of externalization of activities since R&D activities started to be carried out together with an external actor. In this event, market knowledge from the Brazilian subsidiary and technological knowledge from the university were combined in order to develop new products that later were introduced into the market by Firm A-Brazil.

The ninth event is the certification program for service providers. At Firm A-Brazil, services are necessarily embedded into products and embrace the activities of problem solving, equipment installation, start-up, and after sales. At that time, some of these services were performed by third- parties without any formal process of quality certification. Therefore, the implementation of a certification program was associated with the need of qualifying the service providers to guarantee the level of services quality provided to Firm A's buyers. It is noteworthy that these actors play an important role in the sales strategy of the Brazilian subsidiary, once their extensive business networks are usually source of sales. Thus, this event is characterized by a change in the externalization degree of activities from the Brazilian subsidiary, since a series of services were transferred to service providers through a certification program conceived by Firm A-Brazil. In this event, technological and market knowledge came into presence. The former refers to the regular technological upgrades made by both Firm A-Brazil and service providers, whereas the latter is related to knowledge of prospective customers directly targeted by the service providers.

The last event in the Firm A internationalization in the Brazilian market is the collaboration between the Brazilian subsidiary and a machine manufacturing firm, with the aim of automating drilling machines. It was initially triggered by a large mining firm in Brazil that needed to increase the productivity and reliability of drilling machines, and also to improve security for operators. This event characterized a change in the externalization and localization degree of activities from the Brazilian subsidiary as the activities of product development and sales not previously carried out locally started to be held together with an external actor. Market and technological knowledge of both firms were considered as complementary and critical for the project completion.

5.2. Comparative analysis of events

This is a temporally-embedded analysis of the internationalization process of Firm A in Brazil. It is summarized in Chart 1, which highlights the types of knowledge as well as the relationships in these events.

Initially, it can be stated that market knowledge was mainly acquired and/or recombined either through HQ-external actor (events 1 and 2) or focal subsidiary-external actor relationships (events 3, 4, 5, 7, 8, 9, and 10). In the case of Firm A internationalization, this result shows that market knowledge is to a certain degree associated with locally-embedded external actors. In addition, it calls the attention that these relationships are mutually exclusively whilst acquiring and/or recombining market knowledge. From event three onwards, the HQ transferred to the Brazilian subsidiary the responsibility of acquiring and recombining market knowledge with external actors. Otherwise, state differently, once implanted, the Brazilian affiliate became the actor in charge for recombining market knowledge with external actors.

Secondly, institutional knowledge was acquired and/or recombined together with market knowledge through focal subsidiary-external actor relationships (events 3 and 4). In the case of Firm A internationalization process, this result brings three issues to the fore: once again, the presence of external actors was required in order to enable the multinational to tap into local knowledge; the institutional knowledge was complementary to market knowledge and vice-versa; the institutional knowledge required for advancing the internationalization of Firm A seemed to be tapped into one-off.

Thirdly, technological knowledge was mostly acquired and/or recombined in the relationships between the focal subsidiary and external actors. Similar to institutional knowledge, this was somewhat complementary to market knowledge and vice-versa. Different from the institutional knowledge, the technological one followed a distinct rhythm, as it was acquired and/or recombined gradually and this extended over a long time span.

Fourthly, in the relationships between the focal subsidiary and external actors, market and institutional knowledge came first in relation to technological knowledge. More specifically, in the internationalization process of Firm A in Brazil, there are precedence relations of knowledge types, illustrated by the following order: market knowledge (events 1 and 2), market/institutional knowledge (events 3 and 4), market/technological knowledge (events 5, 8, 9 and 10), and technological knowledge (event 6).

Chart 1: Comparative Analysis of Events

Relationships	Type of Knowledge	Events									
		1	2	3	4	5	6	7	8	9	10
HQ – external actors	Market	✓	✓								
	Institutional										
	Technological										
HQ – focal subsidiary	Market			✓							
	Institutional			✓							
	Technological						✓				
Focal subsidiary –sister subsidiaries	Market										
	Institutional										
	Technological						✓				
Focal subsidiary –external actors	Market			✓	✓	✓		✓	✓	✓	✓
	Institutional			✓	✓						
	Technological					✓			✓	✓	✓

Finally, the relationships that played a role in the Firm A internationalization in Brazil were also subject to time. Specifically, the HQ-external actor relationships were present in the initial phases of Firm A internationalization process, and those between subsidiaries are nearly inexistent. They were exercised in the middle of the internationalization process and were empirically represented by exporting technology from the Brazilian subsidiary to sister subsidiaries. In a similar way, the HQ-focal subsidiary relationships were performed only in event 3 by the transfer of market and institutional knowledge from the Brazilian subsidiary to the HQ. By contrast, the relationships between the Brazilian subsidiary and external actors are pervasive. Out of ten events, they were exercised in seven, which means that in the case of the internationalization of Firm A in the Brazilian market, the relationships between the focal subsidiary and external actors played the major role.

6. HYPOTHESES

The comparative analysis of the events of Firm A internationalization in the Brazilian market paved the way for proposing five new hypotheses that can be used in future empirical tests.

Beginning with the interplay between HQ-external and focal subsidiary-external actor relationships in acquiring/recombining market knowledge, our first result shows that these relationships are mutually exclusive. In terms of acquiring and/or recombining market knowledge, the presence of the former implies the absence of the latter and vice-versa. The HQ-external actor relationships seem to be more critical in earlier events of the internationalization process (Birkinshaw, 1998), whereas those between the focal subsidiary and external actors replace them in later events of the internationalization process (Forsgren, 1989).

This finding leads us to put forward a contingent approach about the role of the HQ in internationalization processes (Birkinshaw, 1998). By developing relationships with external actors for tapping into market knowledge, the head office is suggested to play a more critical role in the beginning of the firm internationalization, that is to say, its role is contingent on the phases of the internationalization process. The first hypothesis is based on the following reasoning:

- **H1** – *Ceteris paribus*, the HQ-external actor and focal subsidiary-external actor relationships in acquiring and/or recombining market knowledge are contingent on the phases of the internationalization process. The former is more likely to be exercised in earlier events, whilst the latter is more likely to be exercised in later events.

By singling types of knowledge out, we found that both institutional and technological knowledge are complementary to that of market. This result calls our attention to the fact that these types of knowledge in the internationalization process can be acquired and/or recombined in bunches. Interestingly enough, they are not independent of each other because the acquisition and/or recombination of a particular one is to a certain degree connected to that of another type. As this interdependence does not seem to happen at random, we have the following pairs of knowledge types: market and institutional knowledge, and market and technological knowledge. In addition, as market knowledge is usually present in the acquisition and/or recombination of both institutional and technological knowledge, it can be viewed as necessary so as these two can be acquired and/or recombined. Hypotheses 2a and 2b are inspired by this discussion.

- **H2a** – *Ceteris paribus*, types of knowledge are acquired and/or recombined in bunches in the internationalization process.
- **H2b** – *Ceteris paribus*, market knowledge is a necessary knowledge for acquiring/recombining both institutional and technological knowledge in the internationalization process.

We have also found that these types of knowledge in the internationalization process are acquired and/or recombined in different rhythms (Vermeulen, & Barkema, 2002). The acquisition and/or recombination of market and institutional knowledge take place in a limited number of events. As they are tapped into in particular phases of the internationalization process, they tend to follow a more punctuated rhythm. By contrast, the acquisition and/or recombination of market and technological knowledge embrace more events continuously, thus covering a longer time span. This is close to the idea of gradualism in terms of knowledge development (Rezende, 2002). The following hypothesis formalizes this discussion:

- **H3** – *Ceteris paribus*, the pairs of market and institutional knowledge, and market and technological knowledge evolve in different rhythms in the internationalization process. The former follows a more punctuated rhythm whereas the latter follows a more gradual rhythm.

These types of knowledge are not only subject to different rhythms, but also to distinct orders. As our result shows, there are precedence relations between them. Market knowledge comes first, followed by the pairs of market and institutional knowledge, and market and technological knowledge. Hypothesis four formalizes this order effect in the internationalization process[(*)].

- **H4** – *Ceteris paribus*, types of knowledge evolve in different orders in the internationalization process. Market knowledge comes first, followed by the pairs of market and institutional knowledge, and market and technological knowledge.

After singling types of relationships out, we have discovered that relationships with external actors are pervasive in the internationalization process. This is in line with the relational approach and can be viewed as a somewhat trivial result at the present stage of theory development in the firm internationalization (Lamb *et al.*, 2011). Because our results do not allow us to go beyond this point in terms of types of relationships and the internationalization process, we refrain from offering any hypothesis concerning this issue.

7. CONCLUSION

By combining three theoretical approaches of the firm internationalization, we have been able to analyze the internationalization process of a North-American MNE in the Brazilian market, comprising not only how the entry mode was chosen, but also how this initial choice evolved over time. In doing so, we have placed particular emphasis on the variables relationship and knowledge.

The results of this research seem to present some contributions for the extant literature on the firm internationalization process. First, we have established a conversation between the Uppsala model, the relational approach, and the subsidiary development literature. In this sense, this research can be viewed as a response to calls for combining theoretical approaches of the firm internationalization that have been developing quite independently of each other over the years (Goerzen & Makinos, 2007; Vahlne *et al.*, 2011).

We also offer five new hypotheses for future empirical tests. The first one has to do with the role of the head office in acquiring and/or recombining market knowledge. It suggests that it is contingent on the phases of the internationalization process. To some degree, this insight can be regarded as an avenue to reconcile the long-standing divergences over the importance of the HQ in the firm internationalization (Holm *et al.*, 1995; Ambos & Mahkne, 2010; Ciabuschi *et al.*, 2011).

The second suggestion proposes that knowledge in the internationalization process is acquired and/or recombined in bunches, such as market and institutional knowledge and/or market and technological knowledge. This means that the firm internationalization process is driven not only by a single type of knowledge, such as of market (Johanson & Vahlne, 1977), but also by groups of types of knowledge (Eriksson *et al.*, 1997). These are comprised of specific pairs of knowledge: market and institutional knowledge, and market and technological knowledge.

Furthermore, this investigation indicates that there are different, yet coexistent, rhythms in terms of knowledge development (Vermeuleun & Barkema, 2002). According to hypothesis three, the pair of market and institutional knowledge follows a more punctuated rhythm, whereas the pair of market and technological knowledge is acquired and/or recombined more gradually. Yet, there seems to be an order effect in relation to knowledge acquisition and/or recombination. As suggested by hypothesis four, market knowledge comes first, followed by the pairs of market and institutional knowledge, and market and technological knowledge. Altogether, hypothesis three and four make explicit the temporal dimension of internationalization processes (Gao & Pan, 2010), thus revealing that the acquisition and/or recombination of knowledge in the firm internationalization is more complex and intricate than portrayed in the literature.

Due to the fact that this research is essentially exploratory, based on a single case study, a number of limitations should be bore in mind. Besides of those related to the research method itself, biases stemming from industry and geographical context such as country of origin and of destiny should not be discarded. We also have to take into account that the types of knowledge considered here are not exhaustive. For example, although suggested by Eriksson *et al.* (1997), we did not take internationalization knowledge into account. In addition, there are limitations derived from the interplay between knowledge and relationships. Even though our data do not allow us to go beyond the interplay between market knowledge and HQ-external actor and focal subsidiary-external actor relationships, we do believe that interesting results are likely to emerge provided other interplays are considered.

[(*)] As we have weaker evidence about technological knowledge, we leave it out hypothesis four.

Hence, we are unable to offer hypotheses concerning types of relationships and internationalization process. The order of technological knowledge in the internationalization process is also not included in any hypothesis. The fact that we have not been able to split knowledge development into two distinct processes, acquisition and recombination, is also a limitation of our research. As our hypotheses are inductively (and not deductively) formulated, they can sometimes be regarded as built on sand, this position being dependent on the researcher's epistemological background (Eisenhardt, 1989; Welch, Piekkari, Plakayiannaki, & Paavilainen-Mantymaki, 2011). Last but not least, the five hypotheses provided here are concerned about **how** relationships and knowledge are orchestrated in internationalization processes. The reasons **why** they are exercised in the way suggested here is beyond the scope of this article. Notwithstanding, future research must address this issue as an avenue for furthering our understanding about the firm internationalization process. ◆

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ABSTRACT

Relationships and knowledge in the firm internationalization process

Based on the variables relationship and knowledge, this article aimed at analyzing how a multinational enterprise selects an entry mode to operate in a particular international market and how this initial choice evolves over time. We devised a rather new theoretical framework to address it by combining three theoretical approaches that have dealt with the firm internationalization: the Uppsala model, the relational approach, and the subsidiary development literature. We constructed a qualitative backward-looking longitudinal case study of the internationalization process of a North-American multinational enterprise in the Brazilian market. Results show that four types of relationships and three types of knowledge played the role in the events that characterized the internationalization of this firm. Based on these results, five new hypotheses concerning the interplay between relationships and knowledge in the internationalization process of the firm are suggested for future empirical tests.

Keywords**:** relationship, knowledge, internationalization, multinational.

RESUMEN

Relacionamentos y conocimientos en lo proceso de internacionalización de la firma

Desde las variables relacionamiento y conocimiento, el objetivo de este trabajo fue analizar como la multinacional elige un modo de entrada para actuar en un mercado internacional y como esta elección inicial evoluciona a lo largo del tiempo. Por lo tanto, elaboramos un cuadro teórico que combina tres enfoques teóricos de internacionalización de la firma: el de Uppsala, el relacional y la literatura de desarrollo de subsidiarias. El método de investigación usado fue el estudio de caso de naturaleza cualitativa y perspectiva longitudinal del proceso de internacionalización de una multinacional estadunidense en el mercado brasileño. Los resultados muestran que cuatro tipos de relacionamientos y tres de conocimientos se hicieron presentes en los eventos que caracterizan la internacionalización de tal firma. Con base a los resultados obtenidos, fueron sugeridas cinco nuevas hipótesis para futuros testes empíricos, las cuales, en general, tratan acerca de la interacción entre los relacionamientos y conocimientos en el proceso de internacionalización de la firma.

Palabras clave**:** relacionamiento, conocimiento, internacionalización, multinacional.