



REVIEW OF INTERNATIONAL
BUSINESS

v.9, n.3, p.72-87, Sep./Dec. 2014

<http://internext.espm.br>

ISSN 1980-4865

Article

THE INTERNATIONALIZATION OF A BRAZILIAN SOFTWARE SECURITY COMPANY IN LIGHT OF NETWORK THEORIES AND EFFECTUATION

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Abstract: This study explored from the perspective of networks and effectuation theories, how a security software Brazilian company goes international, identifying their motivations and what the competitive advantages that came from this process. The chosen methodology was qualitative, with the use of single case study. The results obtained allow to note that much of the path taken in the international market did not follow the initially planned by managers and that, after the internationalization, the company began to be perceived by domestic customers as more efficient and as having more advanced technological content. In fact, the search for international competitiveness led the company to maintain high technological standards, superior even to those of international competitors. The study aims to contribute to the understanding of the Brazilian software industry internationalization process by identifying the points that have turned this company in a unique case in the segment.

Keywords: internationalization; security software; Brazilian security firms; network theory; effectuation.

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Introduction

In the mid-1990s, Brazil began to remove its international barriers and created an environment where large Brazilian companies were forced to compete with multinational giants, beginning the process of increasing competition and placing some large Brazilian companies' on the global stage (FLORIANI & FLEURY, 2012).

Brazilian companies from various sectors have been seeking to internationalize through different modes of entry in overseas markets, from indirect exports to the establishment of production units in foreign territories (VIANNA & ALMEIDA, 2011). However, growth of the country's exports remains concentrated mainly in commodities, natural resources, energy, and labor to the detriment of products with a higher added value, such as software services (SOUZA, VASCONCELLOS & CORREA, 2012).

The software industry's revenue in the Brazilian economy was 103.6 billion dollars in 2011 (BRASSCOM, 2012). With a specific purpose and a growing demand from companies, mainly due to the integration of systems between departments and the internet's proliferation, the worldwide market for the security software sector has been growing at a solid rates of 7.5% annually over the past five years, and in 2011, was valued at more than 17 billion dollars (IT INSIDE ONLINE, 2012).

This paper aims to fill a research gap related to the internationalization of Brazilian technology companies, and more specifically, security software. Despite the relevance of numbers, most of the research on software internationalization is concentrated in developed countries (DIB, ROCHA & SILVA, 2010), which have very different realities from those of emerging countries.

This work aims to understand the ways and discuss the reasons why a Brazilian producer of security software became a successful and award-winning company that now has offices in the US, Europe and Asia. For this purpose, we examine the process of internationalization of companies, specifically the theory of networks, addressing the aspects that were subsequently introduced into the theoretical concepts of Uppsala (VAHLNE & JOHANSEN, 2013) and the approach of effectuation (SARASVATHY, 2001).

The article is divided into the following parts: besides this introduction, a theoretical framework is developed in section 2, which is divided into two topics: 2.1 discusses network theory, and 2.2 exposes the propositions of effectuation; in section 3, we describe the research methodology; section 4 presents the case of the studied company; section 5 analyzes the case and its relations with the theoretical framework; and in section 6 closing remarks are made.

Theoretical Background

Network theory

The practice of international business has taken place since biblical temples (MTIGWE, 2006). However, it was not until the second half of the twentieth century that a new stage of international studies was established, with the publication of a doctoral thesis

at the Massachusetts Institute of Technology on foreign direct investments (HYMER, 1960/1976). Shortly after in the 1970s at the University of Uppsala in Sweden, a new concept based on firms' behavior argued that they internationalized gradually and in stages. This model became known as the Uppsala model (JOHANSON & VAHLNE, 1977). Analyzing the seminal Uppsala model (JOHANSON & VAHLNE, 1977), which was originally directed only to the firm, one can see that this model currently takes into account connections among market agents; that is, it considers more relational aspects in the business world. In addition to this important amendment that explicitly incorporates principles of network theory, the Uppsala model has recently included entrepreneurial elements in the process of internationalization (SCHWEIZER, VAHLNE, JOHANSON, 2010).

In one of the pioneering works on networks from the perspective of internationalization, Johanson and Mattsson (1986) argue that both the mode of entry and the expansion of the firm abroad involves cooperation strategies in firms and between firms. Internationalization of company networks begins domestically, and after, internationalize (JOHANSON & VAHLNE, 1990). This means developing business relations with networks in other countries (JOHANSON & MATTSSON, 1986) and acquiring what Kyvik, Saris, Bonet, and Felicio (2013, p. 173) call "global mindset".

In this sense, one can see that what has changed is not a devaluation of the importance of experiential knowledge or commitment (which remain central), but the transformation of the approach, mitigating the relevance of firm unit analysis, the influence of business partners (JOHANSON & VAHLNE, 2003), and the character of the entrepreneur in processes of internationalization (SCHWEIZER, VAHLNE, JOHANSON, 2010). This influence and involvement is gradual and incremental in the sense of mutual learning needs, styles of business, strategies, resources, and the business environment itself.

A major contribution of network theory to the studies of company internationalization is that it does not recognize the barriers of countries, believing that they will be removed by the relations built among stakeholders.

In the case of international alliances, there has already been a change in the perception of time. Most of the literature on international alliances suggests that technological alliances close early (MALIK & ZHAO, 2013), which is ratified empirically according to studies showing that about 90% of international alliances end prior to maturity (MAKINO, CHAN, ISOBE & BEAMISH, 2007). In contrast, when referring specifically to small technology-based companies, Lindqvist (1988) states that social networks are expanding faster when following the path of internationalization. Furthermore, Johanson and Vahlne (1990) highlight the recurrence of network endorsements formed by academy colleagues, which contribute positively and decisively to technology companies' success. Similarly, Schweizer (2013) showed that high-tech companies seek to create an extension of their networks in the scientific community to achieve greater credibility in the business environment in which they operate.

It can be noted that many decisions of internationalization are based on the search for opportunities to increase and protect the position of the firm in the market (CHIAVEGATTI & TUROLLA, 2011). Therefore, if it is not concluded that a partnership is bringing expansion of knowledge, mutual confidence, better opportunities, and mitigating risk, advances will not occur (FLORIANI & FLEURY, 2012). Because of this,

changes of direction resulting from changes in the attitudes of company managers would bring a new knowledge base from outside the organization (CALIXTO, SOUZA, VASCONCELLOS & GARRIDO, 2011).

Theory of effectuation

It is important to note that the critical developments in the field of administration have become stronger in recent decades (WAHRLICH, 2013). However, Sarasvathy (2001) states that most of these theories indicate elements that entrepreneurs take as a basis for their business analysis and judgments that are purely rational. These theories suggest that the entrepreneurial agent performs cause and effect analysis to make their own decisions based on rational and concrete assumptions.

A series of rhetorical questions about the difficulty of new companies and businesses to define aspects, such as pricing, marketing, and talent attraction policy were made by Sarasvathy (2001), and triggered the development of what was coined as the theory of effectuation. These, among many other uncertainties, eventually started the need to develop a different theory to understand and explain the way in which new ventures take many of their strategic decisions.

Effectuation theory has not evolved as quickly as it could have for two main reasons: first it challenged the existing knowledge model, and second, because it is difficult to validate consistently via empirical methods (PERRY, CHANDLER, & MARKOVA, 2012). Perhaps for this reason many areas are still poorly understood, requiring better answers or more studies, even if they go in different directions (WILTBANK & SARASVATHY, 2010)

New firms tend to follow the logic reported by effectuation theory in the early stages of their life cycles, as the uncertainties of business are much greater than any efficient methodologies that forecast short to medium term issues (SARASVATHY, 2001). Much has been studied about business lifecycles and different theories have been developed to characterize them (COOPER, 1979; GALBRAITH, 1982; ADIZES, 1996; MACHADO-DA-SILVA, VIEIRA, & DELLAGNELO, 1998, among others). A life cycle was developed by Hanks, Watson, Jansen, and Chandler (1993) for technology companies that was composed sequentially by: start-ups, expansion, maturity, and decline. This model empirically developed after studying 275 technology-based companies and is relevant according to the authors, since it is not unusual for technology companies to move from the start-up stage to mature organization in just a few years. Moreover, the models of life cycle stages available hitherto tended to suggest a sequence of economic stages of growth.

Sarasvathy (2001) focuses observations on organizations in the first phase of the life cycle, characterized by Hanks et al (1993) as start-ups, and sees entrepreneurial behavior guided by four principles: (1) the financial loss that the entrepreneur can face, instead of measuring expected returns for new business; (2) strategic alliances, instead of competitive market analysis; (3) operating contingencies, adapting to the reality imposed by the complex scenario of the market, rather than rely on a pre-existing knowledge that is not always reliable. And finally, (4) to deal with an unpredictable future, rather than trying to develop predictions of the future. Thus, it is observed that the effectuation theory diametrically opposes rational causal theory, since the assumptions of the decision-making

process and its approach are different from those used in classic rational logic (SARASVATHY, 2001b).

With regard to the approach of the customer, Wiltbank and Sarasvathy (2010) review and compare two different points: (1) the classical model of marketing books and (2) the assumptions of the theory of effectuation used by experienced entrepreneurs (figure 1). In this sense, the classical approach of marketing books define the strategic decision making of enterprises in the opposite manner to effectuation theory. The former decides the marketing issues based on predictive rationality; i.e., formalizes in advance what will be done and how to act, and then apply this planning to the corporate environment. Already effectuation theory deals with more practical issues such as, "Who am I? What do I know? Who Do I Know?". From these issues, start the deployment activities that culminate in the possibilities for action, the definition of possible markets, clients and segments to be reached, and the establishment of possible strategic partnerships.

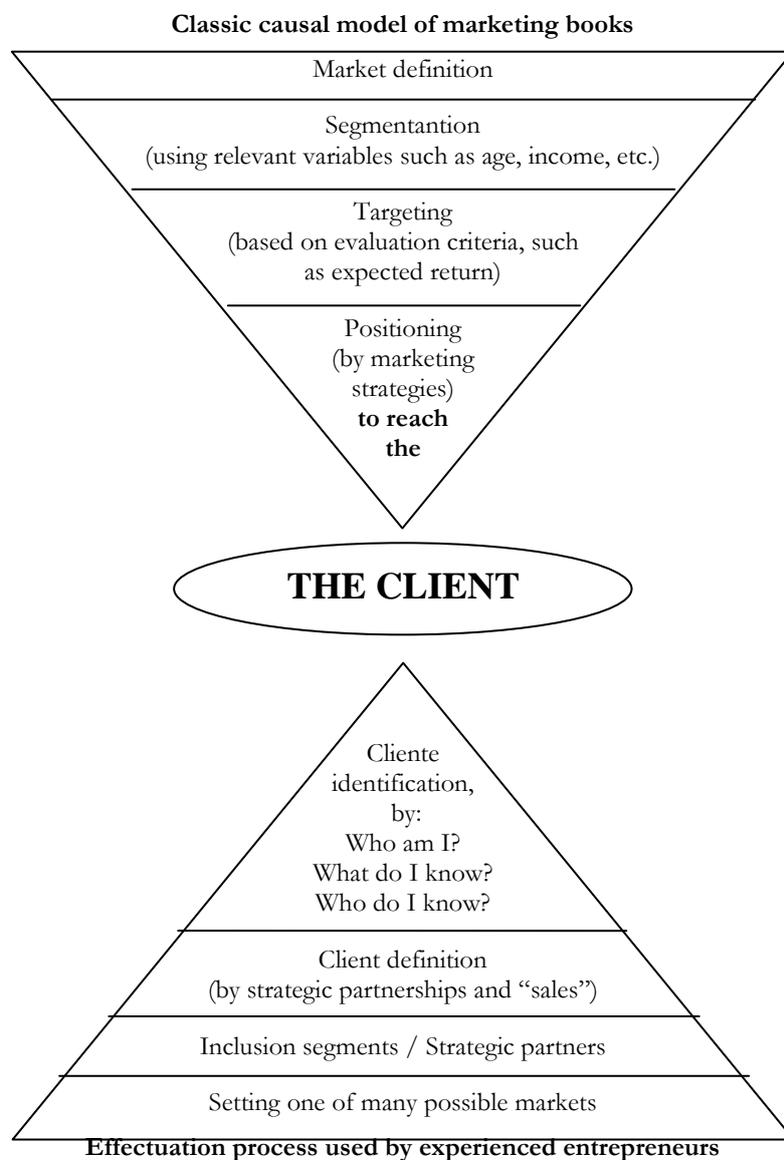


Figure 1: Comparison between classical model of books and effectuation theory.
Source: Adapted from Wiltbank and Sarasvathy (2010)

When one assigns the aspect of business relations to the success of the process of internationalization of a company, one might think that these are always planned, which may or may not correspond to reality. Relations can be initiated as a result of specific events, such as an unplanned meeting or a search for new partners or suppliers. This contact can evolve and culminate into the establishment of a new partnership, which can gradually solidify and bring positive results for both parties, creating a long-term business relationship (JOHANSON & VAHLNE, 2006).

Thus, one can see that the effectuation theory does not exclude the theory of networks, and moreover, it becomes an outdated model. Heuven, Semrau, Kraaijenbrink, and Sigmund (2011) make it clear that, although previous researchers of this theory have focused on the entrepreneurs' network relations, this view was static and not dynamic. This therefore does not invalidate the importance of networks as contributing to the success of international business. Effectuation preaches the dynamic nature of relations, which mitigates the importance of possible planning and prior selection of these relations. This emphasizes the adaptive nature of the construction of non-rational causal relations which are more chameleonic and mold to the situation that the company might eventually experience.

Research Methodology

As this work is of an exploratory nature, we opted for a qualitative methodology that uses a case study. This study followed the three steps recommended by Dellagnelo and Silva (2005) and is based on Bardin (1994): First there was a pre-analysis corresponding to the preparation process that defined the respondents, held and transcribed interviews, and organized the *corpus* of work. Secondly, the work explored and analyzed materials, categorized the topics to be addressed in the process of analysis, defined these categories as elements or aspects with common characteristics, and the possible relations with one another. Finally, we proceeded to interpret and make inferences that are grounded in the *corpus* of the work and theoretical framework, seeking to establish relations, verify contradictions, and understand the phenomenon.

Data collection was initiated through information provided by the company's website (<http://www.modulo.com.br>), as well as technical articles, magazines, and newspapers on the company and its products, a total 25 documents. In the second phase, interviews were conducted between May and June 2013 with two managers from the company's international area (a founding partner and marketing manager), and a 5-year-company employee, responsible for global strategies from the group communication. With a total of 2 hours and 45 minutes, the two interviews were recorded and transcribed for further analysis. A semi-structured interview guide sought information about the company, the context, its history, its process of internationalization, perceptions of managers in relation to developed competitive advantages, and the reasons the company moved abroad. The variety of information sources allowed a critical broader view and triangulation of information that validated the methodology and assisted the analytical process.

Considering the extent to which relationships in international networks are difficult phenomena to observe by external agents (JOHANSON & VAHLNE, 1990), this study sought to capture the internal perception of the company through its main actors. This meant that we could understand the factors that influenced the growth of a small domestic software company into a sizable international company.

The choice of a single case study was due to the peculiarities that the analyzed company has (YIN, 2005) in relation to various aspects, such as the involvement profile with large projects (2007 Rio Pan-American Games, Formula 1, Formula Indiana, Rio + 20, the London Olympics), the number of employees, and the existence of time to market, which was much larger than the average national company of the same niche. Within the 65,000 software companies in Brazil, 96% of them have up to 19 employees (SOFTEX, 2012), while the analyzed company had more than 300. As for longevity, the analyzed company has been in existence for 28 years, and survived the average mortality rate of 50% in three years that new Brazilian enterprises suffer (IBGE, 2012). On software, Sakamoto, Barguil, and Vasconcellos (2009) state that, although there are no specific studies on the mortality rate of Brazilian companies in the information technology industry, we believe that this percentage is higher than companies in other industries, because of the intense market challenges and major changes that happen in a short time. In regards to the size of the company, although it does not disclose data on its gross sales, it is estimated to be large based on the criterion of staff numbers indicated by SEBRAE (2013) that defines large companies, such as those belonging to the trade sector or services, as having more than 100 employees. As reported earlier, the company has more than 300 employees. This is exactly the event rarity (YIN, 2005) that sought us to understanding factors that led to this difference.

As Zikmund (2006) states in relation to the limitations of the study, exploratory research does not provide conclusive evidence necessary for general determination of concrete actions, but is aims only at broadening knowledge on the subject and thus allowing the formulation of questions and hypotheses.

The case of Módulo

In 1985, a group of young IT students from the Federal University of Rio de Janeiro created Módulo Security Solutions to facilitate the integration of companies' operations through technology. The first product developed was a file transfer program. Although it had reasonable sales volumes, the software began to be pirated, which led Módulo to create an anti-piracy software to prevent this from happening again. This anti-piracy software started to gain attention from companies and became a much bigger product than the original transmission files. After some good sales results with products developed specifically for the security area, the company concentrated their efforts and financial resources on developing their first bestseller, Bullfinch.

In the early 1990s, Brazil began a phase of democratic consultation in which electronic voting machines were used, first, with a referendum, and then with elections themselves. Módulo already had experience with security information and won several bids for plebiscites, 11 of which were held in Rio de Janeiro. "Suddenly, the company almost became a company solely for elections. I think it made a mark on us as a security company" said Alvaro Lima, director and founding partner of the company.

Although it lost a public bid in 1998 to Microsoft to control the first fully computerized Brazilian general election, the company was responsible for security and security architecture of the election process. From there, Módulo was no longer providing just software, but rather, a variety of security services related to the software.

Since 1990, the partners sought to export the software they sold in Brazil. The reasons were always linked to the large potential market of the world, mainly in North American. The entrepreneurs believed that the US market could be very rewarding, as Brazil had but a few large companies as customers. The belief was based on the perception that a large company would have more chances of acquiring new software for its head offices and not by the subsidiary. However, it was the beginning of the Internet and the software, previously sold in Brazil, was noticed by the partners themselves as something common in the US. Módulo believed that a new and different software would be needed to enter this market.

In 1997, Módulo classified for an incentive program for the internationalization of Brazilian software companies held by the Financier for Studies and Projects (FSP). Eager for internationalization, Álvaro did not wait for the FSP's process to finish and sold his house to finance a contract and moved to the US with his family, aiming at a rapid international expansion. Before Módulo received the promised contribution, the FSP demanded that he did an MBA course to better manage resources.

During the MBA course, despite the small amount of time dedicated to the commercial side of the business, Módulo closed its first international contract. However, Alvaro Lima said: "the product was actually very interesting, but far ahead of its time. The product offered more than companies believed they needed and the company failed to convince the market of its advantages, leading to only modest sales. The company eventually decided to return to Brazil, ending this cycle of internationalization. Módulo started working with the provision of consultancy services, education, and training, as domestic companies needed to learn how to live in a computerized world where the Internet permeated their activities.

In 2007, amid the crisis Brazilian beef exports because of some foot and mouth disease (FMD) outbreaks in Brazil, a customer who was being sought by Módulo questioned whether the same model for IT risk management software could be adapted to manage the risks of FMD in Brazil. Presented with this opportunity, the company changed its processes and expanded its operations, becoming too a firm of operational risk management and thus opening a new market.

With these new expertise, in 2008, Módulo decided to return to the US market and opened an office in New York. The choice of partners was not only due to the fact that Boston (the next city) was considered a center of technological excellence, but Módulo believed that it could receive a client profile similar to that already acquired in Brazil of large banks, brokers, insurance companies, and other large companies. The rationality of the decision was supported by such factors as the ease of travel within the US, the small time difference, and the physical proximity of Brazil, which had shorter flights compared with North American's west coast. In addition, Módulo already incorporated a global company profile, seeing the world as its consumer market.

The company did not direct its sales efforts to a specific sector, and although gaining some customers, the results fell short of that which company expected. Added to this, the fact that the customer gains were geographically dispersed throughout the United States meant the person installed in New York was unnecessary. Another critical aspect in the process was the labor. Taking Brazilian skilled professionals that already dominated the software sector in Brazil to live in the US proved to be expensive and overly bureaucratic.

In 2010, Módulo moved its headquarters in the USA from New York to Atlanta, Georgia, due to considerations related to the milder climate, housing prices, easier access to all parts of the USA (and the world), and the fact that a trip from Rio to Atlanta is an hour less than a flight to New York. In addition, the company also began to hire American employees, believing that, in the same way that the Brazilians could learn English, Americans could learn about software.

In the same year, the company made its first foray into the European market. It was through a consultant who had worked for the Association for the Promotion of Brazilian Software Excellence (Softex). This consultant visited Módulo and offered to represent the company based in the UK. Although he was a representative, he presented himself as an affiliate of Módulo, which they believed gave him more credibility during sales pitches.

Despite a modest start in sales term, the European operation (unlike the North American) had low costs, producing a more favorable financial situation. It was the existence of this operation that provided a bridge to a representative in India, who sought Módulo and proposed the same model of partnership that had been done initially in the UK. After some time, an Indian partner began to represent the company, and shortly after, his office had been transformed into Módulo's Indian branch. In addition, both the representative in the United Kingdom and India were appointed as directors of Europe, the Middle East, Africa, Asia, and the Pacific.

An important legacy of Módulo's process of internationalization, as perceived by their managers, was the need to constantly update the software to survive in such a competitive North American market. Módulo executives believed that, if instead of choosing the US they had chosen South America or Asia to begin the process of internationalization, probably, the company would no longer exist, as it would have accommodated and consequently lost.

The company developed so much technology to face the international market, eventually creating what Alvaro Lima called a "side effect", i.e., a defense barrier in Brazil, whereas today the company is perceived by the national market as being a high-tech company, even superior when compared to international competitors. In 2011, Módulo entered another moment in terms of business maturity comparable to the dreamy beginning of its operations. For the first time since its founding, the members left the main command position and hired an experienced executive from the investment field to the position of chief executive officer.

In 2013, Módulo was present in 34 countries and had offices in the USA, UK, and India. While overseas sales still represented little more than 5% of company revenues, the reduced costs of European and Asian operations were "worth the work", says Alvaro Lima. However, in the US market, where the cost of operations and personnel is much higher, the operation individually had not yet reached a point of financial security.

In 2013 Módulo had the Brazilian army's aid to potentially expand its international operations. In order to be partners in the development of the risk analysis intelligence of the Control and Security Center, a large national project led by the army and the governments of different countries that exchanges information and provides mutual aid, Módulo would eventually be endorsed in terms of quality by governments of other countries, which could facilitate expansion of international activities.

Because of the variety of international frontiers, overall coordination of marketing and communication efforts made in Brazil by Módulo's marketing management were subordinated to the company's president. Although the company generally centralizes marketing processes in Brazil, Rodrigo Palo, the executive, claims that autonomy is delegated to subsidiaries so that they produce their own promotional materials peculiar to the characteristics of each country, adding that this is the best way to evaluate local operators. The marketing company works with an annual budget model and is endowed with approximately 2% of the gross sales of the company. The executive said that each country develops its own annual action plan that is sanctioned quarterly in conjunction with the headquarters. Palo said that many opportunities are not included in the annual planning, but arise during the process, and that the company seeks to take maximum advantage of them.

Analysis

For small and medium enterprises, internationalization is still seen as something distant, probably because of the fact that Brazil has a huge market of almost 200 million consumers. Even when accounting for official institutions, such as the National Bank of Economic and Social Development (BNDES) that have aided programs for internationalization since 2006, small and medium-sized companies still need to seek differentiation strategies and increase competitiveness to work abroad (FLORIANI & FLEURY, 2012). In this sense, it was observed that Módulo not only sought to take the opportunity of government funding that facilitated internationalization, but also realized that their software (hitherto based on conventional technology model of "client / server") was not sufficiently developed to empower the company to confront competitors in the international market. The focus on quality enabled the company to build and develop a high performance product that, despite being beyond the needs of the market, was the key driver of constructing an image of a high-tech company, even in the domestic market.

Another aspect to highlight is related to addressing the learning process (JOHANSON & VAHLNE, 2003), since the company ultimately concluded that sending employees from the parent company in Brazil abroad brought more disadvantages than advantages. Calixto, Souza, Vasconcellos, and Garrido (2011) state that the reorientation step, i.e., when a company changes its management practices according to the changes in managers' attitude, are impacted by external aspects that are sometimes beyond the control of business. These are fruits that Johanson and Vahlne (2003) call 'experimental living'. Through their experiences in the US market, Módulo was confronted with several problems when taking Brazilians abroad, and leaders came to the conclusion that the original model was not ideal and should be changed.

Johanson and Vahlne (1990) see a company's process of internationalization as the result of mixing strategic thinking and strategic action on one side, and development and recognition of chances and emerging opportunities on the other. This view summarizes the path followed by Módulo, reflecting the sum of both planned actions in the course of their growth. The company also seized opportunities by participating in the FSP sponsored contest, where it identified an international opportunity to launch internationally without the need for large investments (i.e., with low risk). Also, at various times Módulo was formally planned and structured to define a path, and included moves such as choosing headquarters and contracting teams. These attitudes are prescribed in effectuation theory

(SARASVATHY, 2001) and permeate the entire business life cycle of the company, especially at the beginning.

Módulo's internationalization process also did not recorded influence or endorsement by academia, contrary to the arguments of Johanson and Vahlne (1990), nor did it receive positive influences from the scientific community. This opposes Schweizer's (2013) argument which states that technology companies seek support in the scientific community to enhance their corporate images. Although, when considering the company founders' profiles (four university colleagues who were connected with pioneering research in the information technology area), this in theory could multiply the strength of their relations with academic networks. The members of Módulo were confined to professional market relations as they did not take advantage of possible networks of relations with academia. Even when the partner, Alvaro, studied in the US, the course did not generate dividends in terms of network relationships that could have been used later.

The rapid 300% growth in international sales in the first three years of the company's international operations and the significant growth rate of 15% annually over the subsequent two years, is aligned with Lindqvist's (1988) observation that small high-tech enterprises expand more rapidly abroad. These rates may denote that (due to the peculiarity and specialization of services) the international market of software buyer recognized Módulo as a supplier, who added value due to their cutting-edge technology.

Choosing a local commercial representative as head of the company in the destination country is a frequently discussed subject in the literature. Although Johanson and Vahlne (1977) state that when a company is market-oriented, as in the case of Módulo, this option is faster and less costly for firms, but emphasizes that this is not always easy. The transformation of outsourced business management through the use of commercial representatives to a model of direct performance of the company can cause delays in the process. However, Johanson and Vahlne (1977) believe that these delays can be minimized if there was the incorporation of a representative agent framework into the company. This was exactly the decision taken by Módulo for its subsidiary in the UK and for the branch in India. Two commercial representative models existed, but noticing that there were no commercial advances, Módulo believed that it was more important to ensure the quality of services provided and control processes. These former representatives were therefore invited to join the workforce of the company and gave them the status of international directors.

Another aspect that can explain the growth of Módulo is how the company saw and understood the international market. A recent study (KYVIK, SARIS, BONET & FELÍCIO, 2013) identified that, among the factors that can compose a global mindset (education, decision-maker characteristics, professional experience, domestic performance of the company, global orientation, and early stages, some were more important than others. The factors that had the greatest positive impact for Módulo were the professional experience and characteristics of the decision-maker. The broad professional experience of one of its founding executives (Álvaro Lima, who extensively travelled abroad) and the fact that his personal characteristics fitted international culture (given that he did not hesitate to sell his own property to move to the United States with his family), was integral to implement Módulo's international project.

It can be observed that four principles of effectuation theory (SARASVATHY, 2001) that guide entrepreneurial behavior were present throughout the business life of

Módulo, as shown in table 1. There is also the preponderance of these principles in the stages of formation and expansion of the company's life cycle model, as defined by Hanks et al. (1993):

Events	Effectuation theory's assumption	Business life cycle
Development of Bullfinch software - product to combat pirated copies of its product.	Operating contingencies	Constitution
Won several bids for plebiscites, transforming the public perception of the company into that of a security expert.	Operating contingencies	Constitution
Having lost bidding to Microsoft, went on to provide services that were not only for software.	Operating contingencies	Constitution
After winning the FSP contest, executive sells property and goes to the US to start the process of internationalization	Possible losses	Constitution
Modest sales to large companies and, therefore, decides to return to Brazil.	Living with unpredictable future	Expansion
Because of the foot and mouth crisis in Brazil, customers demanded the development of a risk management model.	Operating contingencies	Expansion
Upon returning to the US, does not direct sales efforts to a specific sector.	Living with an unpredictable future	Expansion
European representative appointment.	Living with an unpredictable future	Maturity
Appointment of Asian representative.	Living with an unpredictable future	Maturity
Amendment of marketing planning throughout the year	Operating contingencies	Maturity

Table 1: Relation facts / assumptions / life cycle stage

Source: Authors (2013).

Final Considerations

Módulo is an atypical company in the Brazilian software industry because of its size and longevity, having existed for almost 20 years. Its success internationally is due to several aspects of which few are tangible.

What we see in the structure of Módulo is a philosophy of providing quality services regardless of market demand. The company also prized the excellence of its services, which were often ahead of the market itself.

With regard to overseas activities, regardless of revenues from international subsidiaries, the competitive advantages gained by Módulo were striking. There are two important aspects to be highlighted in the summary of its positive results. Firstly, the issue of perception, which is perhaps related to cultural reasons, as the Brazilian corporate market still perceives international companies as having more high-tech products and better qualified personnel for the provision of their services. This in itself would make it worthwhile for Módulo to create and maintain international subsidiaries. The second aspect, related to the tougher competition faced by Módulo abroad, was guided in a solid

and steady manner, and directed the company towards greater innovation and development of its products and services.

It is also reasonable to infer that the chameleonic character of the company is largely responsible for its success. Módulo knew how to reinvent itself over the years, especially in the first half of his life, adapting to contingencies and business circumstances in an environment where most companies in the same industry have failed. Effectuation theory (SARASVATHY, 2001) has a broad explanatory power for this case, allowing one to see the manifestation of its propositions in the processes of creation, growth in the domestic market, and international market exploration.

The results leave room for future research, which should intend to quantitatively cross-check the issues identified in the exploratory part of this present study that are mainly related to those that align with the theory of effectuation in the early stages of the business life cycle (SARASVATHY, 2001).

In addition, qualitative studies of a longitudinal character could observe the preponderance of the explanatory power of effectuation theory (SARASVATHY, 2001) and network theory in Brazilian software companies that have reached advanced life cycle stages.

Research has major limitations as it used qualitative methods with one case study, which does not permit generalizations and extrapolation to other cases. Just as a single experiment or a particular sample of a much larger universe does not allow researchers to generalize their observations, the case study does not allow conclusions to be made about results obtained from other companies in the same country or industry (YIN, 2005; GIL, 1996). This being its main limitation, the case study can alternatively be understood as searching to expand theories.

This limitation however does not invalidate the use of the single case study method in this work, since it is not intended to assess how often given phenomenon occur. The research sought to discover relationships and analyze the form of processes that may prompt a more systematic observation of certain aspects.

It is believed that this work could incrementally contribute to the systematization of knowledge about the process of internationalization of Brazilian companies in the software industry, and help unveil issues related to the paucity of large Brazilian companies in this sector in contrast with what is observed in developed countries.

References

- ADIZES, I. Os Ciclos de Vida das Organizações. São Paulo: Pioneira, 1996.
- BARDIN, L. **Análise de Conteúdo**. Lisboa: Edições 70, 1994.
- BRASSCOM - Associação Brasileira das Empresas de Tecnologia da Informação e Comunicação, retirado de <http://www.mlilas.com.br/bits-2012-destaca-a-importancia-do-mercado-brasileiro-de-software-em-30-de-junho-de-2013>.
- CALIXTO, C. V.; SOUZA, Y. Z.; VASCONCELLOS, S.L.; GARRIDO, I.L. Uma Análise sobre o Conceito de Aprendizagem na Perspectiva de Internacionalização. **Internext – Revista Eletrônica de Negócios Internacionais da ESPM**, v. 6, n. 1, p. 1-20, Jan./Jun. 2011.
- CHIAVEGATTI, D.; TUROLLA, F.A. Risco no Modelo de Internacionalização de Uppsala. **Revista Organizações em Contexto-online**, v. 7, n. 13, p. 129-156, 2011.
- COOPER, A.C. Strategy Management: New Venture and Small Business. In: SCHENDEL, D. E.; HOFER, C. W. (ed.). **Strategic Management**, Boston: Little, Brown and Company, p. 316-327, 1979.
- DELLAGNELO, E. H. L.; SILVA, R. C. **Análise de Conteúdo e Sua Aplicação em Pesquisa na Administração**. In: VIEIRA, M.M.F.; ZOUAIN, D.M. (orgs.). **Pesquisa Qualitativa em Administração**. Rio de Janeiro: Editora, FGV, 2005.
- DIB, L. A.; ROCHA, A.; SILVA, J. F. The Internationalization Process of Brazilian Software Firms and the Born Global Phenomenon: Examining Firm, Network, and Entrepreneur Variables. **Journal of International Entrepreneurship**, v. 8, n. 3, p. 233-253, 2010. DOI: <http://EconPapers.repec.org/RePEc:kap:jinten:v:8:y:2010:i:3:p:233-253>
- FLORIANI, D. E.; FLEURY, M. T. O Efeito do Grau de Internacionalização nas Competências Internacionais e no Desempenho Financeiro da PME Brasileira. **Revista de Administração Contemporânea**, v. 16, n. 3, p. 438-458, Maio/Jun. 2012. DOI: <http://dx.doi.org/10.1590/S1415-6552012000300007>
- GALBRAITH, J. The Stages of Growth. **Journal of Business Strategy**, Englewood, v. 3, n. 1, p.70-79, summer, 1982.
- GIL, A.C. Como Elaborar Projetos de Pesquisa. São Paulo: Atlas, 1996.
- HANKS, S. H.; WATSON, C. J.; JANSEN, E.; CHANDLER, G. N. Tightening the Lifecycle Construct: a Taxonomic Study of Growth Stage Configurations in High-Technology Organizations. **Entrepreneurship: Theory and Practice**, Waco, v. 18, n. 2, p. 5-25, winter, 1993.
- HEUVEN, J.; SEMRAU, T.; KRAAIJENBRINK, J.; SIGMUND, S. Causal and Effectual Network Strategies and New Venture Performance: a Study of German Entrepreneurs, **Frontiers of Entrepreneurship Research**, v. 31, n. 7, article1, 2011.
- HEUVEN, J.; SEMRAU, T.; KRAAIJENBRINK, J.; SIGMUND, S. Causal and Effectual Network Strategies and New Venture Performance: a Study of German Entrepreneurs (Summary), *Frontiers of Entrepreneurship Research*: Vol. 31, n. 7, Article 1, 2011 Disponível em: <http://digitalknowledge.babson.edu/fer/vol31/iss7/1>.
- HYMER, S. **The international operations of national firms: A study of direct foreign investment**. Cambridge, MA: MIT press, 1976.
- IBGE - Instituto Brasileiro de Geografia e Estatística - Estatísticas do Cadastro Central de Empresas, 2012.
- JOHANSON, J.; VAHLNE, J. Internationalization Process of Firm - Model of Knowledge Development and Increasing Foreign Market Commitments. **Journal of International Business Studies**. v. 8, n. 1, p. 23-32, 1977. DOI: 10.1057/palgrave.jibs.8490676
- JOHANSON, J.; VAHLNE, J. E. The mechanism of internationalisation. **International Marketing Review**, v. 7, n. 4, 1990. DOI: <http://dx.doi.org/10.1108/02651339010137414>
- _____ Business relationship learning and commitment in the internationalization process. **Journal of International Entrepreneurship**, v. 1, n. 1, p. 83-101, 2003.
- _____ Commitment and Opportunity

- Development in the Internationalization Process: a Note on the Uppsala Internationalization Process Model. **Management International Review**, v. 46, n. 2, p. 165-178, 2006.
- JOHANSON, J.; MATTSON, L. International Marketing and Internationalization Processes – a Network Approach. In: PALIWODA, S.; TURNBULL, P.W. (ed.) **Research in International Marketing**. London: Croom Helm, 1986.
 - JOHANSON, J.; WIEDERSHEIM-PAUL, F. The Internationalization of the Firm: Four Swedish Cases. **Journal of Management Studies**, v. 12, n. 3, p. 305–323, Out. 1975. DOI: 10.1111/j.1467-6486.1975.tb00514.x
 - KYVIK, O.; SARIS, W.; BONET, E.; FELÍCIO, J. A. The Internationalization of Small Firms: the Relationship Between the Global Mindset and Firms, Internationalization Behavior. **Journal of International Entrepreneurship**, v. 11, n. 2, p. 172-195, Jun. 2013. DOI: 10.1007/s10843-013-0105-1
 - LINDQVIST, M. **Internationalization of small technology based firms: Three illustrative case studies on Swedish firms**. Institute of International Business, Stockholm School of Economics, v. 88, n. 15, 1988.
 - MACHADO-DA-SILVA, C. L.; VIEIRA, M. M. F.; DELLAGNELL, E. H. L. Ciclo de Vida, Controle e Tecnologia: um Modelo para Análise das Organizações. **Organização & Sociedade**, v. 5, n. 11, p. 77-104, Jan./Abr, 1998.
 - MAKINO, S.; CHAN, C.; ISOBE, T.; BEAMISH, P.W. Intended and Unintended Termination of International Joint Ventures. **Strategic Management Journal**, v. 28, n. 11, p. 1113–1132, 2007.
 - MALIK T. H.; ZHAO, Y. Cultural Distance and its Implication for the Duration of the International Alliance in a High Technology Sector. **International Business Review**, v. 22, n. 4, p. 699–712, 2013.
 - MTIGWE, B. Theoretical Milestones in International Business: the Journey to International Entrepreneurship Theory. **Journal of International Entrepreneurship**, v. 4, n. 1, p. 5-25, 2006. DOI: 10.1007/s10843-006-5872-5
 - PERRY, J. T.; CHANDLER, G. N.; MARKOVA, G. Entrepreneurial Effectuation: A Review and Suggestions for Future Research. **Entrepreneurship Theory and Practice**, v. 36, n. 4, p. 837-861, Jul/2012. DOI: 10.1111/j.1540-6520.2010.00435.x
 - SAKAMOTO, A. R.; BARGUIL, F. E.; VASCONCELLOS, M. A. Empresas de Software: Cadeia de Valor e as Redes Colaborativas Impactando as Inovações. In: Enanpad, 33º, 2009, São Paulo. **Anais**. São Paulo: Anpad, 2009.
 - SARASVATHY, S. D. Causation and Effectuation: Towards a theoretical shift from economic inevitability to entrepreneurial contingency. **Academy of Management Review**, v. 26, n. 2, p. 243-288. 2001
 - ———. Effectual Reasoning in Entrepreneurial Decision Making: Existence and Bounds. In: **Academy of Management Proceedings**. Academy of Management, n. 1, p. D1-D6, 2001.
 - SCHWEIZER R.; VAHLNE, J.; JOHANSON, J. Internationalization as an Entrepreneurial Process. **Journal of International Entrepreneurship**, v. 8, n. 4, p. 343–370, 2010. DOI: 10.1007/s10843-010-0064-8
 - SCHWEIZER, R. SMEs and Networks: Overcoming the Liability of Outsidership. **Journal of International Entrepreneurship**, v. 11, n. 1, p. 80-103, 2013. DOI: 10.1007/s10843-012-0097-2
 - SEBRAE - Serviço Brasileiro de Apoio às Micro e Pequenas Empresas, Critério de Classificação das Empresas, retirado de <http://www.sebrae-sc.com.br/leis/default.asp?vcdtexto=4154>, em 15 de dezembro de 2013.
 - SOFTEX - Associação para Promoção da Excelência do Software Brasileiro. **Relatório Software e Serviços de TI: A Indústria Brasileira em Perspectiva**, maio 2012.
 - SOUZA, A. E.; VASCONCELLOS, E. P. G.; CORRÊA, H. L. O Processo de Internacionalização de Empresas de Software: o Caso Audaces. **Internext – Revista Eletrônica de Negócios Internacionais da ESPM**, v. 7, n. 2, p. 1-25, Jul./Dez. 2012.
 - TI INSIDE ONLINE. Disponível em <<http://convergecom.com.br/tiinside/26/04/2012/mercado-mundial-de-software-de-seguranca-cresce-75-e-movimenta-177-bi-em-2011/>> Acesso em: 30/06/13.
 - VAHLNE, J.E.; JOHANSON, J. The Uppsala Model on Evolution of the Multinational Business Enterprise – From Internalization to Coordination of Networks. **Journal of Marketing Review**, v. 30, n. 3, p. 189-210, 2013. DOI: <http://dx.doi.org/10.1108/02651331311321963>
 - VIANNA, N. W. H.; ALMEIDA, S. R. A Decisão de Internacionalizar **Internext – Revista Eletrônica de Negócios Internacionais da ESPM**, v. 6, n. 2, p. 1-21, Jul./Dez. 2011.
 - WAHRLICH, B.M. Evolução das Ciências Administrativas na América Latina. **Revista de Administração Pública**, v. 13, n. 1, p. 31-68, 2013.

- WILTBANK, R.E.; SARASVATHY, S.D. What Effectuation is Not: Further Development of an Alternative to Rational Choice, **Academy of Management Conference**, Batten Institute at the Darden Graduate School of Business, Virginia, EUA, 2010.
- YIN, R.K. **Estudo de caso: Planejamento e Métodos**. 3ª. ed. Porto Alegre: Bookman, 2005.
- ZIKMUND, W.G. **Princípios da Pesquisa de Marketing**. São Paulo: Pioneira Thomson Learning, 2006.

A INTERNACIONALIZAÇÃO DE UMA EMPRESA BRASILEIRA DE *SOFTWARE* DE SEGURANÇA À LUZ DAS TEORIAS DE REDES E *EFFECTUATION*

Resumo: O presente estudo visa explorar, sob a ótica das teorias de redes e *effectuation*, a forma como uma empresa brasileira de *software* de segurança internacionaliza-se, identificando suas motivações e quais as vantagens competitivas que advêm deste processo. A metodologia escolhida foi a qualitativa, com a utilização de estudo de caso único. Os resultados obtidos permitem observar que, grande parte do caminho trilhado no mercado internacional não seguiu o inicialmente planejado pelos gestores e que, após a internacionalização, a empresa analisada passou a ser percebida pelos clientes no mercado doméstico como mais eficiente e detentora de conteúdo tecnológico mais avançado. De fato, a busca por competitividade internacional fez com que a empresa mantivesse alto padrão tecnológico, superior, inclusive, aos dos concorrentes internacionais. O estudo pretende contribuir para a compreensão do processo de internacionalização da indústria de *software* brasileira, identificando os pontos que transformaram essa empresa em um caso singular no segmento.

Palavras-chave: Internacionalização; *Software* de Segurança; Empresas Brasileiras de Segurança; Teoria de Redes; *Effectuation*.

Submitted on 09/05/2013

Accepted for publication on 03/06/2014