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# THE INTERNATIONALIZATION OF THE SOFTWARE MARKET: OPPORTUNITIES AND CHALLENGES FOR BRAZILIAN COMPANIES

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## ABSTRACT

This paper deals with the potential for internationalization of the Brazilian software industry from the perspective of software developers and service providers. The purpose of the study conducted was to better understand the way Brazilian software companies relate to the international software market by comparing the perceptions of entrepreneurs and those of government agency officials responsible for increasing Brazil's participation in the international software market. Data collection took place by means of semi-structured interviews with entrepreneurs and government agency officials. The data gathered was subjected to content analysis. Results show that Brazilian software companies perform poorly with regard to levels of exporting their products and services for a number of reasons, among which the most outstanding is that they still think that the internal market offers enough challenges and opportunities.

**Keywords:** *Internationalization process, software industry, export support agencies, export development, software developers, service providers.*

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## 1. INTRODUCTION

An increased reliance on information technology is one of the main characteristics of a modern society that is evolving towards a knowledge based economy. It is not possible to assess all of the consequences of this increased reliance on Information Technology (IT), and almost impossible to imagine the world without its presence in people's and organizations' daily routines.

Information and knowledge are important economy builders, increasing the contribution of knowledge-intensive services to the Gross National Product (GNP) of different nations. One could even say that the world is experiencing a new revolution based on the influence of these information and knowledge flows that affects the performance of all other economic activities. As Parker (1999, p. 417) stresses, "differently to land, work and capital, which were so important to the economic growth during the Industrial Revolution, the change power that support the technological revolution is intangible: it is knowledge".

The dynamics of the software sector are responsible for its increasing specialization and its spread around the world. In the case of the Brazilian software industry, the current environment comprises a set of differing realities, rather than a single and common identity. It is an expanding industry that is eager to conquer new consumers and markets. Brazilian protectionist international trade policies of the 1980s[i] impaired the IT sector's development for many the years. In spite of that historical legacy, the software industry has gained a new dynamism in recent years. National organizations of different sizes compete with one another in the domestic market and also rival with foreign companies, which began operating in the country after the market was opened up to foreign competition in the early 1990s.

In contrast to the relatively high level of competition with foreign companies in the Brazilian market, the presence of Brazilian companies abroad still lacks vigor. This is partially explained by the fact that the Brazilian software industry was not exposed to foreign competition prior to the 1990's, while still under the strict market protection to which the previous paragraph alluded.

Regardless of what happened prior to the 1990's, Brazil is currently an important market for software and national companies are challenged to become competitive internationally, in a very promising and quickly expanding market that is dominated by the firms of just a few countries.

Assuming that internationalization is an important strategy for any company conducting business in a globalized market and that it is a determining factor of its success, this study aims to answer the following question: What are the main internal and external factors that affect the internationalization of Brazilian software companies from the perspective of entrepreneurial leaders and official agencies supporting the export of Brazilian software?

In order to provide a better understanding of the relevant concepts this study engages, the following section presents a review on the theory on internationalization and the software industry. After that, another section presents the methodology that was

used in the research project. Results are then analyzed and discussed. Finally, some conclusions are drawn and suggestions for future work are presented.

## 2. INTERNATIONALIZATION AND THE SOFTWARE INDUSTRY

In this section, we will discuss issues related to the internationalization of companies and also the software industry, which are considered important to the understanding of the research issue. Attention will also be drawn to the historical evolution of the software industry in the world and in Brazil.

### Internationalization

The globalization process is a challenge currently faced by companies all over the world, from a strategic perspective (DOMINGOS *et al*., 2002). According to Rocha (2002), while this is not a recent process, it is developing at a faster pace in more recent times. For Versiani (1995), the high degree of uncertainty about the configuration of possible scenarios is one of its major characteristics, challenging companies to be more agile. Globalization is a process of world integration across several different industries (BASSI, 1999), which may demand its presence in different markets, productivity increases, cost reductions, quality improvements, changes to people's qualifications and/or investments in new technologies (VERSIANI, 1995). In addition to the economy, other sectors, such as politics, environment, culture and communications may also be impacted by globalization. One strategic possibility available to firms in times of intense globalization is to internationalize their activities. This action may be adopted when one intends to expand business, increase competitiveness or, simply, to become more acquainted with what competitors or potential competitors are doing elsewhere.

In order to be able to discuss internationalization as a strategy, it is first necessary to clarify how the concept itself is understood here because, as Welch and Luostarinen (1988) point out, there remains no consensus about how the term itself it defined. According to these authors, internationalization is the process of being involved in international operations, regardless of whether this involvement relates to imports or exports. For Johanson and Vahlne (1990), internationalization is a set of operations concerning international businesses, whereas Domingos *et al.* (2002) defines it as practices related to foreign activities, i.e. activities that take place beyond the boundaries of the country where a company is originally located. Justifying a broader conceptualization of the term internationalization, Welch and Luostarinen (1988) argue that sub-processes, such as overcoming international barriers, being inserted in a "beyond-boundaries" context; shifting activities, acquiring knowledge, skills and international experience are all factors that comprise the concept of internationalization and that, at the same time, help to better understand it.

Internationalization concerns companies, as it represents a new form of economic competition but the nature of this novelty has not remained the same over time. According to Bartlett (1995), companies move towards foreign markets in the first instance with the goal of obtaining cheaper raw materials and/or labor. In other words, the traditional internationalization process was mainly concerned with providing a more

efficient exploration of resources. In a second stage, however, the objective of companies entering foreign markets was to develop new products or strategies. Today, many companies internationalize with the goal of keeping informed about international movements within their sector, which is viewed as vital for survival in a globalized economy regardless of whether they intend to keep focusing in their original market or not.

According to Caldeira (2002), increased competitiveness and the globalization of the economy are both responsible for a new environment in which business is carried out. More and more companies have begun addressing efforts to be fit to participate in the global market. In order to accomplish this goal, they must adopt competitive strategies that are suitable for their internationalization processes.

*Internationalization and its models.*

According to Andersen (1993), there are basically two approaches to internationalization: one is economically oriented and was mostly developed by the Reading School of thought (Dunning, 1977, 1999, 2001; Buckley & Casson, 1976; Rugman, 1981); another is based on the process of internationalization postulated by the Uppsalian scholars (Johanson & Wiedersheim-Paul, 1975; Johanson & Vahlne, 1977).

The internationalization theory based on an economic view postulates the use of rational decision-making when strategizing about investment abroad. Originally, the Ricardian theory of trade (1817/2001) presented this kind of decision as being based on the comparative advantage of national economies. Rugman views the Ricardian theory as just the tip of the iceberg, however. According to him, international activity takes place “in response to imperfections in the goods and factor market” (1981, p. 38), as Coase (1937) considers in his theory of the firm and Hymer (1976) extends to an international context.

Dunning’s subsequent (1977) eclectic paradigm certainly introduced a “rational” explanation for firms’ decision to invest abroad – at least in terms of international production. He showed that internationalization motives can be summarized into four elements: (1) the search for natural resources, (2) the search for markets; (3) the search for efficiency; and (4) the search for strategic assets. Consequently, internationalization was no longer a decision based in external elements, as proposed by Ricardo. The eclectic paradigm considers this to be part of the firm’s strategic considerations. Its rationale depends on the way the CEO plays with the different possibilities of locations, producing a competence difficult to be imitated by companies possessing limited resources.

By contrast, the Uppsalian approach brings a different point of view, by focusing on the lack of resources and informational gaps resulting from the process of internationalization. The Uppsala model, formulated by Johanson and Vahlne (1977), of Uppsala University in Sweden, views the firm’s steps towards internationalization through a behavioral lens. Studies carried out by Johanson and Wiedersheim-Paul (1975) with Swedish companies showed that the researched companies presented similar characteristics with respect to their internationalization processes. They found out that there was a sequence of internationalization steps based on the "psychic distance" between markets. For these authors, the level of awareness of a specific

market determined the intensity of investments to be made in it.

According to the Uppsala approach, companies first attempt to internationalize their operations in countries that are viewed as psychically closer to the company's original market. This means that they will search for similar characteristics with respect to development level, language, cultural aspects and other similar factors, because this reduces their perception of the level of uncertainty within the process. Hornell *et al*. (*apud* Hilal and Hemais, 2001) ranked several countries with respect to their psychic distance to Sweden and concluded that Swedish companies would find it easier to invest in countries such as Denmark, Norway and Finland, among others, because they presented little psychic distance to Sweden. Only in a very gradual way they would attempt to enter more (psychically) distant markets, however.

According to the Uppsala approach, internationalization, then, happens in four gradual steps:

1) Irregular export activities, i.e. sporadic exports;

2) Export activities by means of a representative in the foreign market;

3) Export activities by means of sales branches in the foreign market;

4) Implantation of manufacturing plants in the foreign market.

It is important to highlight the Uppsala's incremental pattern approaches. When defining their internationalization processes, from this view, companies are expected to take two variables into account in decision-making. The first would be their knowledge of the target market, i.e. the identification of a precise market to target. The second would be their level of commitment, i.e. the amount of resources they would be willing to invest in a specific market. Such a process is gradual, however. Only after acquiring experience with a new market would companies increase their level of investment and, consequently, their international activity.

A lot of criticism has been raised against the Uppsala approach, due to the impossibility of generalizing its application, considering specific characteristics of different organizations that could interfere with the way they internationalized their activities. According to Parker (1999), for example, there is evidence that there are organizations that are more aggressive in their international investments from the outset, which makes the use of an approach premised on incremental internationalization steps less meaningful. However, for Forte and Sette Junior (2005), regardless of the criticism against the Uppsala school, the approach remains very useful for understanding internationalization in several cases. For instance, companies lacking resources, such as small and medium-sized ones, may adopt this model in order to reduce uncertainty, which is present in any internationalization process.

## Software Industry

The term “software” is used to designate a set of logical instructions that make a computer perform specific tasks that are grouped in an organized way as computer programs (SOUSA, 2004). The software industry includes a group of companies that have the necessary skills to provide services related to software development. This

definition is based upon the traditional definition of “services” as activities which are not directly related to the production of something tangible. Following that reasoning, Teixeira and Guerra (2002) consider the software industry in order to include companies whose main activities involve exchanging software development services with the market (TEIXEIRA and GUERRA, 2002). According to Castells (2006), the information technology industry produces software, services and hardware. These three sub-industries are viewed as inseparable because neither hardware nor software can operate on its own and services are many times required to adjust and fine tune software and hardware to work according to the user's needs. Software and hardware are, thus, inexorably linked to one another (SHAPIRO and VARIAN, 1999). For the purposes of this study, no distinction will be made between companies that develop software and those that provide software services, as the authors consider that they all would have similar reasons, opportunities and challenges when internationalizing their businesses.

The history of software started in the early 1960's, a time when software was considered part of hardware and was not sold separately. Price was fixed per set: hardware + software. However, at a given stage, it became clear to the market that the development of software involved costs that were of the same magnitude, or even higher, than the costs related to manufacturing the hardware. This realization was an important step for a movement to be started towards the appropriation of business value by software proprietors. From the 1970's on, the software industry began changing at a faster pace as did the possibility of internationalizing software services (Heeks, *apud* SOUSA, 2004).

In Brazil, the development of the software industry was also, originally, connected to the trajectory of the hardware industry. Prior to the beginning of the 1990's, the IT market was still reserved for national enterprises and software production was not a priority. Any existing official incentive was provided to hardware manufacturers. Only after protectionist policies were abolished in 1992 did software developers begin to receive some attention from governmental agencies and policy makers (SOFTEX, 2002).

Silva Filho (2003) reminds us that the potential market for Brazilian software companies abroad remains unknown, but the heated international demand for software development suggests a positive outlook for the industry’s potential for internationalization.

## International Software Market

Very few industries have shown such a fast and sustainable growth year-over-year as the IT sector and particularly in the software and services segment (OECD, 2002). The world's software market was US$ 90 billion in 1997 and was expected to reach US$ 900 billion in 2008, according to the Organization for Economic Co-operation and Development (OECD). In spite of the international economic crisis of 2007/2008, according to Abes (2009), the actual figure for 2008 was rather close to the expected target (US$ 872.80 billion), further confirming the rapid development of the global software industry.

When one analyzes the international software market, one notices that the United States' participation is remarkable. This single country is responsible for 38.9% of the world's market, which is almost five times higher than the Japanese share, the second ranked country in terms of global market share, as Table 1 below shows.

Table 1: Top software and software services players in the world market

| **Country** | **Volume (US$ billion)** | **Share (%)** |
|---|---|---|
| United States | 339.6 | 38.9 |
| Japan | 71.7 | 8.21 |
| United Kingdom | 67.1 | 7.69 |
| Germany | 62.6 | 7.17 |
| France | 49.8 | 5.71 |
| Canada | 24.8 | 2.84 |
| Italy | 24.1 | 2.76 |
| Spain | 19.8 | 2.27 |
| Holland | 18.2 | 2.08 |
| Australia | 15.6 | 1.79 |
| China | 15.2 | 1.74 |
| Brazil | 14.67 | 1.68 |
| Other countries | 149.65 | 13.6 |
| **Total** | **872.8** | **100** |

Source: Abes (2009)

## Brazilian Software Industry

According to Taurion (2004), the Brazilian software industry is one of the most promising among the developing countries. He also confirms that the industry has grown fast over the last few years in Brazil with significant improvement in quality, capability and competitiveness.

Since the 1990's, the IT industry has become market oriented (SOFTEX, 2002). Global competition forced Brazil to abandon its previous policy that only privileged hardware and treated software as a byproduct of hardware sales. Act 8.248/91[ii] and the creation of Softex in 1996, a non-governmental office with the purpose of coordinating the Softex 2000[iii] program, achieved very positive results with respect to the promotion, development and export of Brazilian software. However, the volume of resources assigned to the Softex program was not sufficient to generate scale gains or to involve a large number of companies – factors which would have been required for its goals to be accomplished (SOFTEX, 2002).

According to Abes (2006; 2009), the Brazilian software (and software services) market is the 12th largest in the world. The industry generated US$ 7.23 billion for the country in 2005 or 0.95% of its GNP. Leaving services aside and only considering software development, the figure was US$ 2.72 billion or representing 1.2% of the world's market and 41% of the Latin American market, in which Brazil ranked first. This already represents a major improvement in the Brazilian software industry's position when compared to OECD data for 2004, as shown in Figure 1 (OECD, 2006). At that time Brazil placed 26th in the ranking, accounting for approximately 1% of the world's market. More recent data (ABES, 2009) shows that the Brazilian software industry now represents 1.99% of the world market and 48.0% of Latin America's market, generating US$ 29.3 billion in 2008.

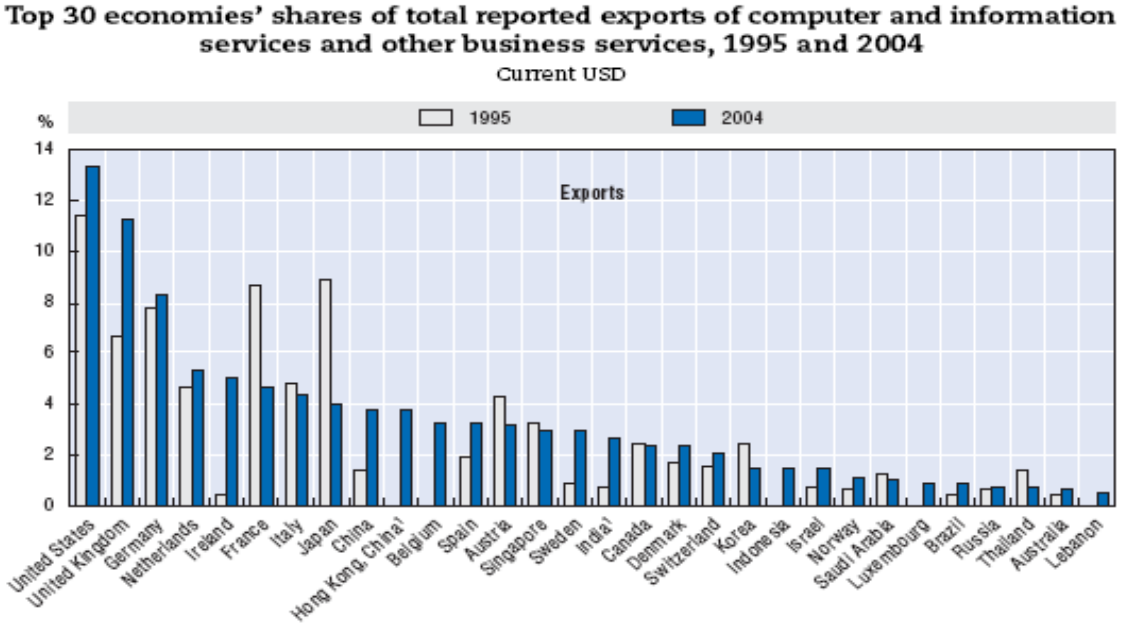


Figure 1: Top 30 economies' share of total reported exports of computer and information services

Source: OECD, 2006

The Brazilian market involved some 7,760 companies that developed, manufactured and distributed software and services in 2005. Amongst those, 1,850 companies were involved with software development and production; 4,190 companies distributed and resold software and 1,720 companies provided software services (ABES, 2006). In 2009, the number of companies within this market was over 8,500 of which ca. 94% were small enterprises.

## Brazilian Software Exports

The world's software market, like the Brazilian one, is growing fast. But when one analyzes Brazilian software exports, one notices that they are still unimpressive. According to Furlan (2003), Brazilian software is of good quality, but the country's share in the international market is far below its potential. Furlan also considers that, in order to continue growing, Brazilian software companies should pay more attention to

the opportunities for exporting their good quality products. Stefanuto (2004) reminds us that the Brazilian software industry developed itself in the shadow of the hardware industry and that this has affected the way the industry evolved. According to this author, the Brazilian software industry lacks an integrative culture, capable of developing cooperative loops among different companies and is very fragmented along regional lines. In addition, there has been little external influence due to the history of the market reserve. For Gomel (2005), Brazilian software companies tend not to even consider the possibility of exporting their products. That opinion is shared by Sampaio (2006), who says that, unlike other countries whose software industries are focused on the international market, Brazilian companies are favored by high internal demand, which encourages an anti-export culture. Despite this current bias, the Brazilian software industry presents some promising features, as Roselino (2006) has previously underscored.

Indeed, the Brazilian industry's low export rate has been identified as one of its frailties, when compared with other countries that have a much higher international market penetration in that segment (SOFTEX, 2002). Efforts have been made to increase the country's share in the world's software market, but the country is still far from reaching a preeminent position. Brazil exported US$ 178 million in software and software services, in 2005 (US$ 35.6 million, or ca. 20%, in software and the remaining US$ 142.4 million in services). It has been estimated that India will be exporting over US$ 50 billion annually when 2008 is tabulated (TAURION, 2004). Clearly, even with a high increase in exports it would be difficult for Brazil to reach figures that are even close to those achieved by countries that have taken software export as a priority – at least, in the short run.

Many researchers believe that it is possible for Brazil to improve its export records significantly, however, considering that the country has already matured and can now define more efficient policies for the software area and, also, because it already has some success stories to tell in software development, such as those concerning e-business, ERP, bank automation, automated elections, among others (SOFTEX, 2002; TAURION, 2004). However, a focus on the external market seems to be missing, according to experts, as does the needed effort to eliminate a few bureaucratic barriers that continue to impair the Brazilian economy (STEFANUTO, 2004; GOMEL, 2005).

## Method

This study consists of exploratory research with descriptive intentions – an approach that was considered the most suitable way to achieve its proposed objectives. A qualitative approach was chosen, because the authors intended to achieve a better understanding of the phenomenon as a whole, taking all its complexity into account. Qualitative methods are usually indicated when the problem one is studying is little known and the chosen perspective is an exploratory one (GODOY, 1995).

The authors believed that data about the past could also be important for the comprehension of the phenomenon. Therefore, data collection was made by means of single semi-structured interviews with each participant, which involved questions that tried to capture the evolution of the discussed issues over time. So, in spite of the study's

cross-sectional characteristics, it provided some information for longitudinal analysis, as well.

The interviews, which were carried out with software sector entrepreneurs and officials working for government agencies and other organizations interested in increasing Brazil's software exports (Abes, Softex, BNDES, TECPAR, MDIC, MCT and Apex[iv]), were based on pre-established scripts, in order to prevent dispersion.

Participants were selected based on their ability to provide answers that could contribute to the solution of the research problem, following Creswell's (2003) recommendation. They were interviewed in June, 2007, by one of the authors of this paper, who was then involved in the preparation of his Master's dissertation concerning the internationalization of software companies.

In the case of officials working within governmental agencies, these were selected based upon their direct involvement in projects supporting the internationalization of Brazilian companies. In the case of entrepreneurs, participation was, in part, based upon the researchers' convenience, at least in the beginning, as the first interviewed entrepreneurs were people the researchers had contact with in the field. Participants were then asked to name other entrepreneurs that they thought could provide insight into the study. A snow-ball technique was then applied, with these new leads being contacted and interviewed, as they agreed. The researchers only stopped contacting new entrepreneurs when they felt that new interviews were not adding relevant additional information. This occurred following approximately twenty interviews up to the point the researchers agreed to interrupt the data collection process. Ultimately, 24 entrepreneurs were interviewed for this study.

Interview scripts were distinct for the entrepreneurs and agency officials, since some questions that were asked to the entrepreneurs would not make sense to agency officials and vice-versa. In spite of the differences in script, the average time spent with each of the participants in the interview was approximately one hour.

In general, the study attempted to understand the software sector and the participation of Brazilian companies in the international market. For this reason, the research did not restrict itself to a specific software segment. Any company that developed software or software services was a potential participant.

Another issue that needs to be highlighted here is that there was no discrimination based on the company's size. The authors expected that by interviewing the owners or main executives of companies of different sizes, they would be able to develop a better understanding of the importance of size as an internationalization factor. The convenience sample ended up containing less small companies than the population, according to Abes' (2006) data.

As said before, 24 owners or executives of software companies were interviewed. Two of those interviews were carried out by telephone, because these companies were located in different cities.

At the beginning of each interview, the interviewer requested authorization to record the interview, which was given by 12 participants. Interviews that could be recorded were then transcribed in order to facilitate analysis. Where permission was not given to

record the interview, and also in the case of interviews that occurred via telephone, the interviewer took as many notes as possible while talking to the participant. To improve accuracy and in order to retain as much as possible of the participants' impressions, the interviewer reviewed the notes and complemented them right at the completion of each interview.

Only one of the interviews with an official from a governmental agency was face-to-face. All the other interviews of this kind took place by telephone since most agencies were located in other parts of the country. All agencies that develop any activity aimed at stimulating foreign trade participated in the study. At the beginning of each interview the participant was requested to explain how his/her agency helped the internationalization of Brazilian businesses.

After data was collected, the next stage was to analyze the information, following the guidelines proposed by Bardin (2000) for content analysis.

## Data Analysis and Interpretation

The analysis of the content of the interviews and other information that was gathered during the study (secondary data) allowed some important findings to be made, which are reported in this section.

The software industry is very dynamic and is growing at a fast pace worldwide, presenting new opportunities for players in this market, all the time.

The participation of Brazilian companies in the global market is, however, muted. There is no significant export effort in this area. Smaller and less developed countries have been able to take better advantage of the opportunities in the international market than has Brazil.

Analyzing the answers provided by the entrepreneurs, the view is that the difficulties concerning Brazilian software export are the government's fault.

Excessive taxation was mentioned by 15 of the 24 interviewed company owners or executives; lack of government support was mentioned by 11 of them and bureaucracy was raised as a major problem by 9. The entrepreneurs think that the government should be more active in improving the situation. One of them said: “Government action is weak. There is no financing and the Brazilian entrepreneur is unable to suitably invest in his/her own business”.

Agency officials agree with the entrepreneurs with respect to bureaucracy and taxation. They say that bureaucracy imposes difficulties and prevents companies from being able to use the support that is actually available. “The Brazilian entrepreneur forgoes government support because too many guarantees are requested in order to finance a venture or its expansion”. They also acknowledge that governmental agencies are slow in their processes, which they say also does not help. However, they note that the entrepreneurs' complaint about the lack of support is unfounded. “Resources are available, but many entrepreneurs do not know where to look for them and many times those resources remain untouched in an official bank”.

This comment was confirmed by further analysis. Most entrepreneurs do not seem

to actually know what support they can get from governmental agencies. Furthermore, as the internal market has heated, there seems to be little concern about finding out which resources the government makes available to support the development of external markets for Brazilian products. As a result, entrepreneurs do not investigate support for the development, promotion and availability of their products in foreign markets as a general rule.

It seems that there is a communication problem. On the one hand, there are resources that are not being used and, on the other, there is lack of knowledge and interest in these resources. As a consequence, there is a continuous effect of opportunities being wasted.

Some agency officials also agree that the country's high taxation reduces companies' competitiveness, which interferes with the performance of Brazilian software companies abroad.

The paucity of actions and strategies relating to the international market became very clear. 14 of 24 interviewed entrepreneurs said that they do not develop any actions and/or strategies for the external market. That shows that internationalization is not considered important by those companies that still do not have an international presence. Clearly, one of the factors that is responsible for the poor Brazilian performance in the international software market is that the internal demand is very high. 12 participants considered this factor most important when considering the relationship of Brazilian software companies with the external market. After all, new markets are sought out when they are needed. If there is no need, considering that a company may already operate close to its maximum capacity, the search for new markets becomes a secondary concern. Although the entrepreneurs consider that the external market is a promising one, they prefer to focus on the internal market because so many unexplored opportunities there remain.

Also, many entrepreneurs do not know the internationalization process, i.e. they do not know *how* to export. Where this is they case, a vicious circle may have formed in which they do not know the process because they do not export and they do not export because they do not know the process.

Another finding of the study is with respect to "Brazil’s image" in the software industry, at the world level. With the exception of a few isolated cases of success, Brazil is not viewed abroad, according to the interviewed entrepreneurs, as a country with a solid image when it comes to producing quality software. Segments like bank automation, ERP and electronic elections are exceptions but they are not sufficient to make the country be seen as a reliable quality software provider. The country's image is not strong and, according to the entrepreneurs, little is being done to change that. Furthermore, there is no systematic effort to expand the international market for Brazilian software. Again, there seems to be a vicious circle: the small share in the international market does not contribute to the development of a good image of the country as a supplier but the lack of a good image also does not help to improve the country’s global market share.

Among the 24 companies that had their owners or main executives interviewed, 18 were small companies. Only 3 of those export or have already exported. In contrast, the

3 large companies in the sample have a presence in the international market. It seems that small companies tend to have smaller penetration in other markets than larger ones. There may be several reasons for that. One is a structural and managerial issue. While large companies have departments (or at least, people) assigned to different functions, small companies concentrate several tasks in the hands of few, many times, the owners themselves. Having too many things to worry about, people in small companies are likely to prioritize tactical and contingency business issues, relegating to second priority some strategic issues, such as prospecting new markets.

One of the entrepreneurs summarized this observation by saying: “I think that the greatest difficulty in exporting is for small companies, because large companies have specific people for each function, including foreign trade. That makes things easier. In small companies, it is not rare that the president has to do it all”.

In addition to management difficulties, due to the accumulation of functions, small companies are also faced with difficulty in financing their production and exports. The excessive guarantees that are demanded and the lack of time to get informed about financial incentives made available by governmental agencies represent important limiting factors to the expansion of Brazilian software exports, in the opinion of entrepreneurs.

There are many bureaucratic barriers, which interfere with the export performance of Brazilian companies. Entrepreneurs complain that the government does not provide support and that it does not make resources available to the software industry. In their opinion, some of the governmental agencies should be more active in promoting the sector. One of them said that embassies and other diplomatic representations should not be just places "where the Brazilian flag is displayed". Showing their cynicism about the government's role, they also commented that most government officials are not well prepared for the analysis of financing requests and, as a consequence, little help is provided. They consider that the software industry is not one of the government's priorities and that the government is more interested in exporting commodities than technology.

One entrepreneur said something that illustrates the general feeling about the relationship well: “Exporting software is not a priority for Brazilian officials. Only commodities are in the government's agenda, which does not include discussing software export. Because of that, results are disappointing. When they happen, they result from isolated efforts made by specific companies. There is no project and there will probably be none if government policies are not specifically developed for that”.

Government agency officials, for their part, say that entrepreneurs have to be more organized. According to them, there are resources available, which are not being used. The government has financing projects that are aimed at supporting exports. However, the entrepreneurs do not make an effort to comply with the demands for the concession of such benefits. As mentioned earlier, the money ends up not being used.

Entrepreneurs emphasize the quality of the Brazilian software and also the quality of the country's labor. For them, the flexibility and creativity of Brazilian professionals are great competitive advantages. They highlight, however, that Brazilian software needs to be certified, in order to have better insertion potential in the international market.

Although this opinion is shared by agency officials, no initiative towards certification seems to exist. The entrepreneurs seem generally pleased with the favorable conditions of the internal market, while the government also seems not to consider export markets a priority.

Another realization was that there is no cooperation among the entrepreneurs. Good practices are not shared and this affects the performance of the Brazilian software industry as a whole in the international market.

Finally, it is important to note that language also poses a barrier to the internationalization of Brazilian software companies. 7 of the participants mentioned that they considered that Brazil was at a disadvantage in the international software industry and losing a significant part of its potential market share due to the low penetration of the Portuguese language in different markets around the world. According to them, countries that have English as their official language are at an advantage, since it is easier for them to understand the requirements of customers, to provide technical support, and, of course, to carry out the sale itself. The software service sector is the most affected by this obstacle. For entrepreneurs in this sub-sector, speaking English was once a recommended skill in the IT area but it has now become absolutely essential for those who work or intend to work in the international market.

## 3. CONCLUSION

Previous studies had already discussed the low level of insertion of Brazilian software companies in the international market. These studies have highlighted its low export inclination. Some also referred to the existence of an anti-export trend and to the country's poor results in the international software market (FURLAN, 2003; STEFANUTO, 2004; GOMEL, 2005; SAMPAIO, 2006; ROSELINO, 2006). All of that was confirmed in this study. In addition, this study confirmed that Brazilian companies are not developing actions and strategies that can better position the country in the international software market in the future.

The Brazilian software industry presents a set of different realities, rather than a single identity. It is a promising sector, but the country has not been able to develop its global image as a reliable supplier of quality software products, thus far. This means that, not being a traditional player in the international software market, Brazil will first have to prove its competence. This lack of a good image is a challenge and, according to a few of the participants, a difficult one to overcome without investing heavily in marketing while also in remaining a consistent and reliable supplier in the global market place.

There are opportunities to be explored and a few factors, such as the quality of labor, the country's strong technological base, government action, and the improvement of managerial systems, among others, may leverage the Brazilian software industry and help to create this positive image, externally, and improve performance in the international market.

In brief, this paper presented findings about the Brazilian software sector and its

export performance. Further studies may broaden the comprehension of the reasons for the country's poor performance in the international software market, although it has become clear that Brazilian firms are not interested in going abroad, as they think that there is still a lot to be done within the country.

Specific software market niches could be explored in further studies, bringing revealing results, considering that there is high internal diversity in the sector. Quantitative studies, with larger samples, could also be useful to increase the level of information, allowing for the use of statistical tools in the analysis, whose results could be compared with those obtained here.

Another opportunity still for further study is exploring some other possible reasons for the low penetration of Brazilian software companies in the international market that were not pointed out by the interviewers, but could be listed by specialists and then submitted for the entrepreneurs' consideration by means of a follow-up survey or a more structured interview. A few of these likely possibilities are difficulties related to performing software localization; providing specialized support in the foreign markets (professionals capable of servicing the company's software abroad); international sales/foreign commerce; development of software with a certified maturity level, and others.

Any scientific study has its limitations and they often result from the methodological approach used. Although qualitative research is considered suitable for research in the social sciences (GODOY, 1995), allowing for theoretical-empirical knowledge to be obtained and assigning "scientificity" to the study (VIEIRA, 2004), the interpretation of the data and inferences are dependent on the researchers' perspective and may, involuntarily, bias the study, by introducing preconceived ideas into the analysis. Although the authors of this paper were conscious of this and have made an effort to avoid it, they acknowledge the possibility of bias.

Finally, the study has shown opportunities and challenges for the Brazilian software industry, which need to be considered. Internationalization may become an important part of the strategy of any company in the software industry, but it has to be taken as a long term commitment. The advantages of internationalizing seem to already be understood by most Brazilian companies. They now need to understand that changes will not happen on their own. It is necessary to plan in advance but also to convert plans into action!

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[i] Informatics Act – Act # 7232, issued in October 1984, settling policies for information technology in Brazil and determining that the Brazilian market would be a reserve to companies established in the country.

[ii] Legislation that determined exemptions for hardware companies if they committed themselves to keeping high levels of national content in their products and/or developed content and R&D efforts locally. This act was replaced by Act #10.176/01, which had the same scope but demanded companies to invest the incentives they received from the government in specific areas of the country (North, North-east and Center-west).

[iii] National Program for Software Export created by the Ministry of Science and Technology to stimulate the development of the Brazilian software industry by focusing on exports.

[iv] Abes is the Brazilian Association of Software Enterprises; Softex is the Brazilian Society for the Promotion of Software Exportation; BNDES is the National Bank for Economic and Social Development; Tecpar is the Technological Institute of the State of Paraná; MDIC is the Ministry for Development, Industry and Foreign Trade; MCT is the Ministry of Science and Technology; and Apex is the Agency for the Promotion of Exports and Investment.