

# Motivation to Innovate among Brazilian Entrepreneurs

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## Executive summary

This paper examined Brazilian entrepreneurs' motivation to innovate after the opening up of the Economy since the 90's. It is guided by the following questions: How have they reacted to the external competition after the opening up of the Brazilian market? What have the main drives or motivations to innovate been? What dimensions were considered important by the entrepreneurs to facilitate the process of promoting innovation in their firms?

The main argument developed in this paper is that entrepreneurs were motivated and reacted in different ways to the opening up of the Brazilian economy. For a group of firms, the opening up of the Brazilian economy in the 90's represented a challenge and an opportunity to learn and implement innovation projects. The entrepreneurs leading those firms have adopted a pro-active attitude to face the external market making efforts to introduce new process or products. Their strategy aimed to increase their market share and profits through an export led production. Another group of firms has responded to the opening up of the Brazilian economy using a strategy, that we here classified as reactive attitude, promoting cosmetic organizational changes to cut costs or simply reduce production to maintain their position in the internal market. Among these two polarized patterns we found intermediate patterns that revealed the diverse motivations and reactions on the entrepreneurs to promote innovation in their firms.

JEL Classification: O32, O33

KeyWords: Innovation, Entrepreneurs, Brazilian firms, reactions to the opening up of the Brazilian Economy.

## Introduction

This paper examines Brazilian entrepreneurs' motivation to innovate after the opening up of the Economy since the 90s. It draws on a survey with a representative sample<sup>109</sup> of Brazilian entrepreneurs which firms are in the forefront of the innovation process. This survey addressed a series of issues designed to tap entrepreneurs, their perception of the role of the innovation process in the development of the firms after the opening up of the economy, the main motivations, constraints and challenges.

The present paper focuses on entrepreneurs' main motivations to introduce new products or processes in the productive process, after the 90's. It is guided by the following questions: How have entrepreneurs reacted to the external competition after the opening up of the Brazilian market? What have the main drives or motivations to innovate been? What dimensions were considered important by the entrepreneurs to facilitate the process of promoting innovation in Brazilian Firms?

The main argument developed in this paper is that entrepreneurs reacted in different ways to the opening up of the Brazilian economy. Some have adopted what we here named as pro-active attitude to face the external market making efforts to introduce new processes or products. Their strategy aimed to increase their market share and profits through and export led production.

Another group of firms has responded to the opening up of the Brazilian economy using a strategy that we here classified as reactive attitude, promoting cosmetic organizational changes to cut costs or simply reduced production to maintain their position in the internal market. Among these two polarized patterns we expect to find intermediate patterns that will be analyzed in the next sections of this article.

The paper is organized in 6 sections, including this introduction. Section two presents the methodological strategy to capture and classify their opinions on a series of issues regarding the effects of the opening up of the economy and their understanding of innovation. In section three, the firms' key characteristics and entrepreneurs' profile are described. Section four examines the main factor that led entrepreneurs to promote innovation in their firms. Additionally, the main factors that entrepreneurs considered relevant to stimulate a successful innovation process in the firm are analyzed in section five. This is followed by the main conclusions that compare entrepreneurs' motivations and conditions to innovate with the strategies adopted by their firms.

## 2. Methodological Strategies

This section presents the methodological strategies to capture entrepreneurs' perception of the main factors that led the firms to promote innovation in their production process.

The study is based on a Survey conducted using a sample of 150 Brazilian firms that, according to the Brazilian Innovation Survey, had innovated in product and process and are nowadays considered the most innovative national firms. This constitutes a representative sample of entrepreneurs of national manufacturing firms considered innovative or with a potential to innovate. It is worthy noticing that the sample is representative in both regional and sectoral terms and that it covers industrial firms that

innovated in products and processes and exported at premium prices during the period 2001-2003.<sup>1</sup>

The research was conducted in two steps. First, a questionnaire designed to capture information regarding the firms' key economic and demographic characteristics was sent to the firms of the sample. This was followed by in depth –semi structured interviews with 109 entrepreneurs that were in the board of direction of those firms. The participants were asked to reply to approximately 30 qualitative questions, such as: What role does innovation play in the success and growth of the firm? How was innovation implemented in the firm? What factors motivated the decision to innovate? When and how did innovation come to be part of the growth strategy of the firm? How does the firm effectively engage to innovation process? What are the main financing mechanisms used by the firm? How have entrepreneurs assessed the role of the State to promote or support innovation process in the firms?

To identify the factors that motivated entrepreneurs to innovate, this study examined more closely three aspects of the interviews:

- i) assessment of the response of entrepreneurs to the opening of the Brazilian economy in the 1990s, with emphasis on initiatives directed towards the technological modernization of products and processes
- ii) analysis of the main factors that determine firm-level technological innovation
- iii) analysis of the main factors that stimulate and facilitate firm-level innovation

Classifying firms by response rate made it possible to reduce the vast amount of information and to categorize the highly diversified observations, opinions and points of view of the entrepreneurs interviewed. The purpose was to facilitate the interpretation of the entrepreneurs' responses. Employing this process and isolating the main cases (i.e. firms), it became possible to direct the analysis to the substantive issues for evaluation and interpretation.

### 3. Firm Characteristics and Entrepreneurs Profile

In this part of the article, the key characteristics of the firms in the sample are described and the demographic profiles of the entrepreneurs traced as a means of contextualizing the perceptions of those interviewed in relation to projects undertaken in collaboration with universities

#### 3.1 The Firms

The firms in the sample are all domestically owned (majority control in Brazilian hands) and most were founded prior to 1970. This means they have over 30 years of experience in the market (20 years or more when referring to those opened between the late 1970s and 1990, few in the sample having been founded thereafter). The great majority (73%) are family firms that continue to be operated by the families that founded them (90%). Family control has not, however, kept these enterprises from promoting structural changes in the

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<sup>1</sup> According to data from the National Innovation Survey (PINTEC) conducted by the Brazilian Geographic and Statistical Institute (IBGE).

last two decades. In fact, approximately 48% claim to have made some type of change—the most common being via acquisitions in the 1990s.

In terms of size, measured by number of employees in 2005, the firms in the sample are distributed as follows: nearly half the sample (45%) is comprised of firms with 500 employees or more, while 35% have 100 to 499 employees and only 21% have fewer than 100 employees. In terms of revenue, approximately 23% earned over US\$ 214 million in 2005, 20% between US\$ 43 and 214 million and 30% from US\$ 21 to 43 million. All these enterprises belong to innovative segments within the domestic industrial framework and, as expected, are mainly in the medium to large range with respect to both size and revenues.

### 3.2 The Entrepreneurs

The entrepreneurs interviewed are in the upper ranks of their respective firms, 50.6% holding the position of president, 33% being directors and 17% managers. This is relevant insofar as it guarantees that the study embraces the opinions of the individuals responsible for setting the agendas and making the investment decisions of the enterprises in question. Those interviewed are predominantly male. Most (73%) are under 55 years of age and only 4% are over 70. The majority have been in the firm for more than 10 years.

The age of the entrepreneurs and their time with the firm indicate that this generation was already in control at the end of the 1980s, when subsidies and protectionist measures were being questioned and economic policy was being directed towards opening the market so as to modernize the domestic industrial sector and enhance its competitiveness.

Another characteristic typical of those interviewed is their high educational level. The great majority (89%) hold undergraduate degrees, especially in Engineering (46%), followed by Administration (25%) and Economics (14%). A significant proportion (58%) also have MBAs or Master's degrees—or even PhDs—in other disciplines; of these, 26% are from foreign universities. Most of the executives and managers interviewed also speak another language, with English (93%) and Spanish (43%) being the most common.

The importance of seeking information abroad was also underlined by the majority of those interviewed (86%), who stated their firms participated in industrial fairs and congresses at least once a year. These data suggest that the entrepreneurs linked to the more innovative Brazilian firms perceive the need to insert their firms into the foreign market on a more competitive basis, which was not the case prior to 1980, up to which time protectionist policies shielded the domestic market.

### 4. Motivation to Promote Innovation

According to the Oslo Manual, companies that engage in innovation in order to become more competitive, enter new markets, search for efficiency and quality, among several other goals.<sup>2</sup> In the discussion about researches on innovation in underdeveloped countries, the Manual, in paragraph 504, observed that “it is equally or more important to determine and analyze the efforts carried out by companies and organizations (innovation activities) and their abilities than their results (innovations). The factors that make innovation more difficult or easier are seen as key-indicators in this context”. From this point of view, some

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<sup>2</sup> Oslo Manual, paragraph 44.

answers were investigated in the survey on entrepreneurs that would allow us to answer two basic questions in order to understand why companies begin innovation processes and how these innovations are implemented:

- a) What are the factors that determine innovation? (Or “What is the root or main cause that makes innovation happen?” As one of the executives who was interviewed said.);
- b) What are the conditions that make innovation easier, promote it or direct innovation processes in companies?

When investigating the first question, the most frequent answers allowed us to classify the companies according to four main goals or motivations to implement innovation processes:

- i) increase profit/expand market share**
- ii) reduce costs and improve quality**
- iii) face competition**
- iv) increase exports**

Observe that the classification of the companies in each one of the categories mentioned above is not excluding because some companies were classified in more than one of the four categories; as they had more than one main goal to implement innovations, a result that was already expected since the motivations to innovate can have different origins and are many times intertwined.

Table 1 shows the results of the companies classified in the four categories above, listing the most representative answers of each one, the number of companies classified in each category and the sectors of activity of these companies. This classification allowed us to observe behavior patterns in relation to the motivations and strategies adopted by executives to face international competition.

Table 1: Motivations to Innovate

Motivation	Summary of the answers given (main cases mentioned during the interviews)	No. of companies and sectors
<b>1. Increase profit and expand market share</b>	<i>Increase income by launching new products – expand our participation in the market – open new markets.</i>	19 automation - ceramics pharmaceuticals - paints plastic (2) - car parts (4) electrical (4) - machinery (5)

<b>2. Reduce costs and improve quality</b>	<i>The environment of international competition requires the search for quality – offer the client products that are cheaper, more durable, and that have a better performance.</i>	<p style="text-align: center;">15</p> food - car parts - shoes - computers - medical supplies - packages - wood - cosmetics - machinery - plastic (2) - electrical (4)
<b>3. Face competition</b>	<i>Innovation is encouraged by the highly competitive environment in the market – develop products before your competitors – innovate because of the tough competition with China and India.</i>	<p style="text-align: center;">15</p> automation - airplanes - bicycles - computers - packages - wood - machinery - metal - plastic - textile - food (2) - car parts (3)
<b>4. Increase exports</b>	<i>Innovation as a way to achieve better prices in the international market - exporting as a mechanism to learn about logistics and distribution.</i>	<p style="text-align: center;">12</p> airplanes - food - car parts (2) - pharmaceuticals (2) - wood - chemicals - machinery (2) - plastic - textile

Source: Survey on Entrepreneurs

### Pro-active Attitudes:

In this behavior pattern that we call pro-active, companies that declared they innovate in order to increase their profit and market share, to improve quality or to increase their exports are predominant in the market. These are companies that already considered themselves competitive in the period before they entered the international market in the 1990s. That is, these companies already had or were in search of international quality certifications and/or were favored with public incentives (Suframa), what allowed them to accumulate knowledge so as to face their competitors. In this group we can also find companies that used to control the logistics and distribution network of products in the country and the ones that used national raw materials at lower costs than the international ones.

#### a) Companies that innovated in order to increase their profit and market share

*The expansion of a company's participation in the sales of the market was the most discussed factor as a driving force that induces a company to start and develop the innovation of products and production processes (19 companies). For these companies, innovating means a dynamic factor that makes feasible not only their permanence in the market but also their growth with an increase in their market share or, as shown in a clarifying example of a manufacturer of products for industrial automation: "The company has to have a bigger participation in the market... it wants to grow 20% a year. What does*

*it need? More products. It can grow by selling the same product more, by creating new products or by creating differences in its processes.”*

Companies with this perspective see the expansion of their *market share* not only as a basis to generate higher profit, but as a source of resources for the implementation of innovative activities. A machinery and equipment manufacturer showed us how strategically connected expansion in the market and obtaining resources for innovation are: *“What allows everything is the market... the company that supports itself in the market uses the market to develop technology... And the strategy is, precisely through innovation, offer something unique that allows the company to keep and increase its participation in the market (machinery manufacturer). This is the case of an electrical appliances manufacturer that is trying to expand its participation and for which: “everything comes down to being lucrative. Then, you are able to innovate.”*

In the same direction pointed a computer products manufacturer, for whom obtaining bigger profit margins makes it possible to have resources to continue innovating: *“with bigger margins you have more extra money and you can really develop new products. It is a positive vicious cycle. If you are a company that is doing what other companies are doing or if you are doing it badly, you will simply not have adequate responses / profits. You will not be able to invest in research and development. You end up entering a negative spiral situation. Then, you eventually lose your business.”*

Innovative activities as factors of dynamism and growth are still represented by the companies that set annual goals of increasing their income based on the launching of new products, as stated by the industrial automation company director above. When they base a growing part of their income on new products, companies need to continuously engage in innovative activities, otherwise they risk losing participation in the market in the future. A manufacturer of equipment for buses illustrated this question clearly: *“We currently have, let’s suppose, 40% of our income originating from products classified as innovative. If we do not have new innovative products, the obvious sequence is that, by doing the math, this part of the company’s income will be lost in the next, the second or the third year.”*

An innovation’s capacity to generate income is illustrated below by two companies, which presented some metrics of their innovations:

*“We currently have 65 products with 104 presentations, (which represent) approximately 5% of the company’s income. Nowadays, for example, this vaccine represents 13% of our income, and with a very big margin, that is, it is truly a **response** from innovation.”* (A manufacturer of vaccines for animals.) J8

*Approximately 50% of what we sell was developed in the last two years, and 70% of what we sell was developed in the last 3 years –* (An electronic equipment manufacturer.)

b) Companies that innovated in order to reduce costs and improve quality

According to Lazonick (2005 p. 30), studies on the theory of the company focused on the optimization of productive processes and not on the innovation processes in companies. Optimization aims at increasing profit, given the technology and the conditions of the market. On the other hand, an innovative company tries to “transform the technological and market conditions it faces, whereas a traditional company views them as restrictions”, aiming at obtaining more quality and lower production costs in relation to the previous conditions.

In the same line of thought as above, fifteen companies in the Paedi research reported that the motor or objective of innovation is the reduction of production costs, as part of a process that is strongly associated to the conditions of the competition: *“Everything is tried in order to... make a part of equal quality at a lower cost so that we can stay in the market (electronic equipment manufacturer) F8. Some companies gave concrete examples of substantial reductions in production costs as a result of researches and the development of new materials, as a manufacturer of pharmaceutical products who stated how an internal research allowed them to develop a product used in chemotherapy: “The same 10 pills, the same 4 mg, whose price (of the imported ones) started at 270 Reais... went down to 150, we are now selling it at 20 Reais. Nowadays, we are entering other markets, we are going to Europe.”*

In competitive markets reductions of costs are not enough to guarantee a company’s success in the market because the process is simultaneous for all competitors, especially, in markets with foreign supply. In these cases, the constant search for reductions of production costs is, many times, associated also to the increase of the quality of products. Several companies showed this concern, involving costs and quality as intrinsic factors and as goals they are trying to achieve in their innovation processes. A manufacturer of electrical engines defended, during his interview, the need for quality to be uniform and *“that it should cover a reasonable quantity of equipment. It is with this concept that you can try to achieve the elimination of costs... simplifications, create other products. But the basic foundation really is quality.”*

In the same way, a car parts manufacturer showed how the environment of international competition demands the search of quality: *“...innovation and technology are fundamental, and the question of quality, why is quality fundamental, so if you do not have this well organized, well done, you are out, it is a market of technology, it is a super competitive market, I compete against international giants.”*

The connection between reductions of costs and innovation can be observed in companies that, in order to compete, invest in up-dated, high technology equipment, according to what a manufacturer of food products said: *“Innovate in order to have the same level of technology that they have and have the equipment to be able to do it. At the same time, when you talk about reduction of costs, it is obvious that you already innovate trying to have something more automated, with bigger control, whatever brings us safety, hence the company has many programs of food safety that are linked to innovation, so that they can be safer.”*

The line of reasoning that reinforces the question developed above, can be found in the researches carried out at Ipea, comparing the companies that compete through price (reduction of costs) or by the uniqueness of their products.<sup>3</sup> The results found showed that companies that innovate and make their products unique obtain higher prices in the market, as a result of the bigger value aggregated to their products and the distinctiveness that they present in relation to similar products from their competitors. That is, innovative companies compete via unique products and not via lower production costs. Two interviews below illustrate the type of company that obtains higher prices with innovative products:

*“Innovation is constantly trying to distinguish the company from its competitor: if you have the same product as your competitor, with the same performance, your product will become a commodity. If you have the ability to differentiate your product, you will gain a bigger margin for that, because the value will be seen by the client. He will say: ‘Look. Company X has a solution that is different from that other one. And this solution has a bigger value for me.’ This will, consequently, give you a larger margin.”*

*“Do you think I export a bicycle that costs 200 Reais at Casas Bahia to the USA? No. The bicycle that I sell to the USA costs around 300, 350 dollars; it was made with another type of technology.”*

The analyses of the interviews show that the reductions of costs associated to innovation, as listed in this section, are more related to incremental innovations, that is, innovations that happen in the short and medium run. And which are continually carried out by companies, due to the competition in the market that requires fast responses in the performances of products. This conclusion does not stop us, however, from considering that innovative companies with new products or products with a bigger aggregated value (as is the case of several companies interviewed in the Paedi, and which reported having obtained higher prices) do not try to reduce their production costs. Nevertheless, the significant difference is that in its condition as a producer of unique goods, it is not pressured to reduce costs as a way of continuing in the market.

## Companies that innovated in order to export

When evaluating the performance of companies in Brazil, according to their competitive strategies, studies from IPEA concluded that companies that innovate and differentiate their products manage to obtain higher prices when exporting.<sup>4</sup> Besides higher prices, these companies obtain gains in competitiveness after their entrance in the international market, as a result of scale gains and access to modern production technologies. Thus, companies that compete through the uniqueness of their products and not through lower prices benefit from better opportunities in the international market.

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<sup>3</sup> See De Negri, J. A. and Salerno, M. S., org., Innovations, technological patterns and performance of Brazilian industrial companies, Ipea, 2005.

<sup>4</sup> De Negri, J. A and Salerno, M. S (2005), and De Negri and Araújo (2007).

Several interviews in the Paedi that discussed exports reported the difficulties faced in order to reach the international market, resulting from a variety of factors when taken all at once, such as the low scale of production, protectionism in some importing countries in the form of normative requirements, deficient transportation logistics in Brazil, the need to adapt products to the requirements and characteristics of the consumers in each country, and, in an important way, due to the large number of companies, low profits because of high exchange rates. In terms of technology, a big motor manufacturer manager remembered that: *“The name Brazil connected to high technology products does not help a lot”*, which means that for companies that begin exporting there is a need to show the value the brand has so that they can obtain the importer’s trust, in view of the competitors that have already established themselves: *“This requires that your standards of quality be excellent, otherwise, you will export once but never again.”*

Given the high level of competition in the international market and the bigger requirements regarding quality and the performance of products, developing innovative, unique and high quality products is seen by the executives interviewed as a needed strategy to increase exports because it avoids direct competition with manufacturers of similar products, allows companies to charge higher prices and contributes to consolidate the company’s brand abroad. This was reflected in the analyses of the reactions to their grand opening in Section 2, during which companies promoted intense acquisitions of technology and knowledge so as to face international competition and start exporting.

In the sector of aircraft manufacturers, to continuously innovate products and maintain high productivity levels are basic conditions that define a company’s capacity of being successful in the market. Since tariffs on airplanes are not charged by the competing manufacturing countries and since, in addition to this, the concession of disguised subsidies is a common practice, competition, besides competitive prices, happens in the uniqueness of the operational characteristics valued in the product, such as performance, economy, safety, flight autonomy and comfort. Given also that the biggest part of all airplane production is exported, the connections between innovation and exporting are evident, there is always the need to *“renovate and innovate”*, besides predictability and planning because *“it takes four, five, six years to launch a product in the market, its prediction has chances of not materializing itself as the company thought it would. The market can change.”*

Technological improvements are also important to overcome the restrictions resulting from highly valued currencies, because they allow the company to increase the prices of the goods exported, as informed by a car parts manufacturer:

*“At this moment of currency exchange difficulty, in which it is very difficult to export and whoever manufactures products in Brazil is going through difficult times, you have to export technology. Fortunately we have an interesting product that few people can make, the whole world is researching it, we are approached the whole time, people trying to take our professionals away so that they can acquire the knowledge we have; we have a strong attack on our professionals.”*

The automation of the productive process represented a factor that allowed companies to improve the quality of their production and technological processes, making it easier for a manufacturer of plastic to export: *“We had a factory in 96 that didn’t have... any output devices, that is, it didn’t have any robots, any computer technology processes, any computerized processes so that you could create the productivity of each machine. Without state-of-the-art machinery for you to be able to make molds. Therefore, what gave us this leverage was exactly this that I call technology, that is, the automation of the process - with this we began having a better product and we were able to aggregate this into the products that were going to be exported and, because of this, the company has grown a lot since that time.”*

### Reactive Attitudes:

In a second pattern here classified as reactive, we found a segment of companies that responded to the opening of the market by guiding their efforts in order to attain quality certifications for their products and processes, besides carrying out changes in management aiming at reducing costs with waste, material and personnel. For these executives the opening of the economy to foreign competition was the main motive to search for innovations.

### Innovation motivated by competition

According to what was observed by Fagerberg (2005 p.15), Schumpeter considered technological competition (i.e. innovation) as the driving force of development. A company that innovates is rewarded with high profits and it emits a signal to other companies (those that imitate it) for them to join the industry or sector aiming at taking part in the benefits. Schumpeter expands this argument later on to say that these imitators can become successful if they improve the original innovation, also becoming innovative, because one innovation facilitates others. Innovation develops the scenario for another series of innovations through the diffusion process and not only through passive adjustments or accommodations.

Several interviews showed that trying to create products before your competitors represents a strong motive for innovation and, moreover, that a company’s innovation speed has to be higher, because competitors create copies quickly. In these cases, the company’s leader develops a standard of leadership that tends to be copied by its competitors. Being known by clients as a leader is a condition that reinforces the name of a company in the market, according to what a manufacturer of integrated systems for automation said, referring to his own company: *“I already recognize this company as a leader, a company that thinks. It is not a company that waits for an Englishman, an American, or a German to launch a product. In this we were very successful; several innovations in the products we launched before our competitors and only afterwards were they adopted by them.”*

With competition, innovation enters a continuous mode, making companies innovate constantly or make technological improvements, as a manufacturer of medical products

said: *“We are the fourth company in the world, ahead of us there are three billion-dollar companies and their centers of research invest millions of dollars a year. If I do not follow up their technological development, the creation of new products, I will stay out of the market”*.

The pressure of competition in the implementation of innovations was well illustrated by a manufacturer of alarms, for whom ideas are born with more intensity during situations of crisis or resulting from the threat of new competitors, who can present new technologies that surpass the products of the company: *“When do we use this? Whenever there is a crisis; with threats; we react to threats, adrenaline... A competitor, here comes a new competitor, a competitor, a new technology, a new threat.”*

In the tough competition of the market, for one of the companies researched, one of the differences in relation to national and international competitors can be found in intellectual property, which allows the company to obtain higher productivity and a bigger productive scale: *“We bought Italian and Swiss machinery, but throughout these thirty years of existence we have improved this equipment; we don’t even allow our supplier to assemble the machine, when it arrives it’s disassembled, but we ourselves assemble and speed it up, which starts being our own property technology, in the field of thermoplastic injection.”*

On the other hand, the effects that a low scale of production causes in the innovation capacity of national companies was mentioned in several interviews. For a food manufacturer, after the commercial opening, small and medium-sized companies that had some success were those that looked for their niches and found some space among big multinational companies: *“I think that that’s the right way to go, competing against Nestlé, Garoto, or Crafter makes no sense for a company like ours, small. But the idea is to look for niches where these big companies are not totally focused.”* A6. And in the case of a tool manufacturer, what allows competition is the flexibility of a smaller company in relation to very big companies: *“Here, we are always kidding, because we compete against Siemens, General Electric and Brown Boveri. In what way are we different from them and in what way are we better? Their size harms them, many times, because a very big company is just a little flexible.”*

The same problem of scale of production in a national company that competes against multinationals in the area of computers was strongly revealed in the following comment: *“But in the end, what are you trying to achieve with innovation? It’s to try in every possible way to take a bigger step in order to have competitiveness and profitability, in the sector here the struggle is hard. Since you have Intel, IBM, HP, you have a world of international companies. They are monsters, with whom we are competing, our company is in a very difficult world.”*

A variation can be found in companies that consider innovation to be a survival condition, given the high competition in the market, as was stated by several companies. The following examples illustrate these cases:

*“When you talk about innovation, each area is a commitment with the company’s survival in the long run. ...it has to reinvent itself every single day, each day inventing new alternatives in order for it to perpetuate itself, be it internally or abroad.”* (A manufacturer of car parts).

*“...competitiveness, staying in the market and a company’s growth. I think the growth of our intellectual capital is one of our goals, I mean, or even a necessity. ...create and improve intellectual capital even for a company’s survival, for the competition.”*  
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Finally, an innovative copy was a factor that was highlighted by a company that competes in the same sector as multinational companies (industrial automation): *“Our competitors are simply the best. Siemens is one of them. General Electric is another one. They are companies that have techniques that are totally advanced, they innovate, have products. Therefore, we have to always analyze their products, do benchmarking and create new things.”*

## 2. Conditions that make the implementation of innovation processes in companies easier

After the evaluation of the factors that determine innovations, the conditions that direct innovation processes were identified during the interviews, or, in other words, the factors which facilitate and contribute for innovative processes in a company. We tried to, with the evaluation of this question, reflect on the internal decisions and behaviors of these companies, independently from the other factors associated to public policies or to support instruments that favor innovation. In this question, six main answers were found regarding the most important factors and conditions that help innovation processes. We observed that the answers are not exclusive since some companies indicated more than one answer, as we had expected:

- i) follow up the trends in the domestic market and the demands of consumers**
- ii) develop cooperation with companies, universities and centers of research**
- iii) encourage the participation and creativity of your staff - have qualified personnel**
- iv) follow up international innovative trends**
- v) spread the culture of innovation and integration in the company**
- vi) count on an entrepreneurial board of directors**

Table 2, below identifies the factors found and summarizes of the most illustrative answers

Table 2: Factors to Facilitate Innovation in companies

Factors	A summary of the answers given (main cases mentioned during the interviews)	No. of companies and sectors
<b>1. Follow up the trends of the market</b>	<i>Innovations are guided by the demands and needs of consumers – try to pick up, before your competitors do it, the signs of the market – reference-clients contribute for the development of innovations.</i>	25 Plastic (3) - car parts (2) food - bicycles - paints computers - machinery (7) airplanes - cosmetics - metals textile - paints - automotive toy - shoes - electrical
<b>2. Develop cooperation with companies, universities and centers of research</b>	<i>Nowadays, you have 8, 9, 10 technologies inserted in the same product... which force the develop partnerships and strategies with companies that specialize in these segments – our supplier, of our productive chain, is the person who promotes innovation of materials, of the components we use.</i>	22 Automation - paints - electrical - machinery (4) - car parts 3 - electronic equipment - food - pharmaceuticals (4) - medical equip. - computers (2) electrical - textile - metallurgy
<b>3. Encourage participation and creativity - have qualified personnel – have a motivated team</b>	<i>...the most important is creativity, the capacity to identify new nuances of what already exists... so the core of the question is in creativity, in creation – there is a vibration when people have a new idea, start a product.</i>	21 Automation (2) - electrical - electronic equip. (2) - car parts (3) - computers - paints - food (3) - plastic - textile - car parts - machinery (3) - prods. Wood - chemicals
<b>4. Follow up international innovative trends</b>	<i>Bring ideas from fairs, from contacts and from international visits – follow up what is happening abroad.</i>	20 Plastic (3) - ceramics (2) - paints - computers - wood (3) - electronic equipment - films - photo equip. - packages - machinery - car parts - food - machinery - electrical - pharmaceuticals
<b>5. Spread the culture of innovation in the company – innovation as an</b>	<i>Innovation cannot be restricted to one department, it has to go throughout several areas and be inserted in the general productive process of the company – innovation must be a part of the general strategy of the company</i>	14 Electronic equip. (2) - medical supplies - cosmetics - machinery (3) - plastic (2) - textiles - food - car parts (2) -

<b>integrated process</b>		metallurgy
<b>6. A board of directors with entrepreneurial initiatives</b>	<i>...a driving force for this rupture, and this is called a leadership that is focused on innovation - the big problem in Brazil, even today, is the management education and the entrepreneurial attitude... because in order to innovate we have to take risks.</i>	8 Automation - cosmetics - car parts - computers - machinery - food (2) - metallurgy

Source: Entrepreneurs Interviews

## 2.1. Follow up the trends of the market

An assessment **of** the market and consumers was the most important point mentioned by the companies regarding the factors that direct their innovation processes. Assessments of the market allow companies to anticipate the needs of consumers and avoid beginning innovations that will not have any demand in the future. Some companies move forward in their prospection processes trying to anticipate trends in the long run, which allow companies to plan the development of new products for future sales.

The Oslo Manual talks about this when it observes that companies face the challenge of having to adapt their products to demand, due to the fact that consumers and salespeople are heterogeneous; given this condition, the differentiation of products as a way to capture the demand can be as important as the development of new products (MO, par. 88). In this line of thought, Pavitt (2005, p.101) comments that, given the uncertainty of innovation processes, managers find it difficult to decide about innovations, this is why it is essential to receive continuous feedback from the market, from past experience and from experiments.

In the process of filtering trends in the market and translating consumer's needs into innovative products, the companies interviewed informed that they use the commercialization department and information supplied by commercial representatives to identify opportunities for innovative products to be developed or for incremental improvements that consumers are demanding. Another process involves the departments of engineering and development that research markets, clients and suppliers, and forward their needs to the engineering department for their creation. In this process, a machinery manufacturer thinks that *"the whole company has to be technological, because, for example, if the commercial area doesn't have a clear perception of the market, of its trends, of what is possible and of what isn't possible to do, it won't be possible to feed the development department. ...The context of the market tells the commercial department what to do."*

One of the companies considered that interaction with clients for innovation represents a critical factor for any business, it's an essential competence of the company. A manufacturer of plastic products emphasizes the topic when he says that they adopted as an objective to **listen to / cater to** the consumer *"from the top to the bottom of the company"*: *... You have to find the need,... translate it... the way the consumer needs it and not the way you want it, and the way the market wants you to do it."*

Other companies informed that the process of development of a new product can be based on “reference-clients” and that, from the history of relationship and importance of the sales for the company, they constitute sources of information on innovation. The process based on reference-clients can begin with a client asking for some kind of unique equipment, as a machinery manufacturer declared: *“we have a partnership with the client... Then we choose a specific department of engineering, an engineer and a technician, and we decide to make this machine. Then the work begins with a design, we do some research, collect data, develop the project, do more research, collect more data, and see what the market has, and see other machines and requests, and we manufacture a machine to be tested as a prototype, this is the company’s policy.”*

After the contacts with the consumer, in some companies, the process of decision regarding routes of innovation goes through, before going to the development department, a committee, that can encompass several areas or be highly specialized, and that indicates the lines of innovation mentioned below. In one of the companies, the executives on the technology committee evaluate the trends for the market in the next years so as to evaluate the future possibilities of the product and *“what is it going to substitute, and how are we going to work with these technologies, so maybe this is one of the biggest focuses of the company”* (A car parts manufacturer).

The opposite also happens when a company tries to generate demand for a new product, that still does not exist: *“...create a need, generate a demand and you will really be able to be assisted by the consumer, ....; the difference in being innovative is this: generating demand is helping the consumer who knows what he wants, but he still doesn’t know what he needs”* (From a company of food products).

## 2.2. Develop cooperation with companies, universities and centers of research

We know that innovation is a systemic process, with several agents taking part in it, it involves different actors and organizations, such as companies, universities, government agencies, networks of knowledge among others (Fagerberg, p. 4). This approach indicates the importance of trying to understand how interactions in a company can favor innovation processes. According to the Oslo Manual, researches on innovation can obtain information on how relations, in a company, with other actors in the process such as universities, laboratories, policy departments, regulators, competitors, suppliers and consumers have influence over its innovation activities (Manual, par. 50 and 51).

According to Fagerberg (2005, p. 20) “a central point in the literature about innovation is that a company does not innovate by itself, but it depends on abundant interaction with the environment in which it operates”. In the evaluation of the interviews that we constantly used in this paper, several companies that reported the development of partnerships in their innovation processes and the importance of cooperation with university centers of technology were identified. A brief review of the literature shows that the theme has a central position in the discussions about innovation and also indicates a strong dependence of companies in relation to external sources of knowledge in the implementation of innovative activities (Fagerberg, 2005, p. 12).

According to Mowery and Sampat (2005), in developed countries, governments have been promoting since the 1970s, mechanisms to facilitate the transfer, to industries, of knowledge resulting from researches at universities, aiming at accelerating the absorption of new technologies and thus increase industrial growth. The transfer of knowledge can happen in the way of scientific information, equipment, human capital and prototypes of new products and processes.

Pavitt (2005, p. 93) points out the following main interactions between companies and universities: on one side there is the so called linear model, in which the practical importance of a discovery, resulting from fundamental research by a scientist at the university is recognized by a company, which can cooperate with the scientist, so that it can exploit it commercially. This happens more frequently in industries based on science, as for instance in the chemical, biotechnological and pharmaceutical sectors. On the other side, we find the supply of trained researchers to the companies that are developing innovations.

Besides the knowledge generated at universities, companies depend on other external sources to acquire knowledge for their innovation activities, due to the growing complexity of the bases of knowledge necessary for innovation (Fagerberg, p. 11) as well as because innovation processes are systemic, that is, companies do not innovate by themselves, but in collaboration and interdependence with other organizations, which can be other companies, universities and public organizations (Edquist, 2005, P. 182). Companies follow up the movement of other companies in the market, looking for new ideas, input and examples. The more they learn from this cooperation with external sources, the more pressured they are to follow the example of the best, the greatest companies. This is important for big companies as well as for small ones; in the case of the latter, because they can make up for the lack of resources through the interaction with the market.<sup>5</sup>

The research registered twenty-two companies that reported the development of partnerships with universities, suppliers and other organizations. An example of inter-sectorial interaction to innovate can be found in the relation between machinery manufacturers and suppliers of components for electronic equipment. According to what a machinery manufacturer explained *“much of the evolution that has occurred is due to electronics. Electronics was the new component that inserted itself in the context of machines and that transformed them radically. As also in a certain way happened to automobiles and many other areas. But I would say that in industrial machines the effect of electronics and software was of huge importance, and I believe that 80% of this innovation happened in this field of electronics and software.”*

The same happens in the industry of car parts, in which several suppliers develop separate parts, each with their own technologies, to compose the final product to be inserted in the vehicle. A manufacturer of car parts gave an example of the type of cooperation in this area: *“Nowadays, you have 8, 9, 10 technologies inserted in the same product, so you have technologies such as sensors, adhesion technologies, rubber, technologies for the treatment of surfaces, things that sometimes are not part of our core, but that made us develop partnerships and strategies with companies that specialize in these segments”*.

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<sup>5</sup> Granstand, Patel and Pavitt; Powel and Grodal; Narula and Zanfei, as mentioned by Fagerberg, 2005, p. 11.

An interesting example of a successful partnership between two companies and between these and a public technology institute was given by a big manufacturer of cosmetics, in the solution of a problem - packages for their cosmetics that kept on breaking: *“We suddenly found a ceramics company from São Carlos. ...They wanted a chance to apply their knowledge in another area and we needed their knowledge. We created with them, with the staff from IPT, a group that did all the work... we renovated the whole line based on this knowledge. And currently we have absolutely no problems with our packages. Therefore, it is an innovative way to solve problems. We just needed to leave our little ‘box’ / world, use the knowledge of a Brazilian university and of other areas to solve our problems”*.

Other companies transfer the responsibility of innovation to the supplier, when they transmit the needs involved in the respective productive process and the technological specifications of the component. Below are some examples:

*“Our supplier, the one in our productive chain, is the person who promotes the innovation of the materials and components that we use. They are the ones who do the research, we only show them a need we have: a lighter sole, a sole that has specific requirements concerning abrasion or wear, do tests regarding flexibility; they cannot break nor wear.”* (A shoe manufacturer.)

*“So this is what we do, we develop with our suppliers: if he needs to produce a certain part, a part that he has no conditions to make, you go there, train people, sometimes ask the university to help and institutes of research to train the supplier. And this is innovation, in any place in the world except here.”* (An electronic equipment manufacturer).

### 2.3. Encourage participation and creativity - have qualified personnel

According to what is shown in Table 3, twenty-one companies stated that one of the essential factors for the promotion of innovation resides in having highly qualified and creative employees. The interviews of some of those companies offered several examples that reflect the importance that companies give to an internal environment that is cooperative, and also to the role played by the incentive to the participation of people with ideas and suggestions on innovations.

Because it was focused on creativity a company in the canned food sector remembered that the most important is to find people who get involved and become an integral part of your innovation processes: *“For me, the most important is creativity in itself, the ability to identify new nuances of what already exists, I think that’s the biggest question, because if you have a good project, even money, resources, you can find... so I think that the greatest difficulty... the core of the question is creativity, someone’s educational background.”*

Productive resources for innovation represented by creative human capital was confronted by a company with the other technical resources available: *“The most important, I think,*

*are the people, people's creativity. If you don't have creative people, techniques won't be enough, there won't be innovation, because innovation goes through this, it passes through people's creativity."*

An executive of the food industry considered that formal education can improve a person's capacity to innovate: *"We would need to start training more people with innovative minds and this passes through an educational process. Because human beings are capable of learning, so they need to be encouraged to create innovation, and there are techniques for this, and I think that schools don't focus on this correctly."*

The connections between the creative process of employees in companies, the flexibility of the innovative process and the work environment were well exemplified by a machinery manufacturer, when he said that innovation can also happen spontaneously, since *"it is much more associated to creativity, inspiration, the work environment, and even to specific people's talent."*

Another manufacturer of industrial equipment exemplified how the process of participation of employees in new ideas to be explored can create a cooperative environment which is favorable to innovation: *"...there is a vibration when people come up with a new idea, start a new product, start walking, producing; people like this. They also belong, for them it is interesting to be in a company that is recognized as technological."*

#### 2.4 Follow up international innovative trends in a globalized market

Twenty companies answered that an important factor that guides innovation processes is the follow-up of international innovative trends. Reasons for this are the intense interactions that exist between the global markets of supply and demand, and the fact that international products are abundantly available for local consumers, forcing companies to follow up the movements of international innovations.

Companies that are not up-dated on international trends lose their competition capacity quickly, they lose it to international exporters of the same product, as stated a food company that adapts foreign products to the domestic market: *"Totally aware that all competitors are here or at least paying attention to Brazil", companies should "look abroad and recognize processes, practices, benchmarking, customization, implementation and standardization."*

Companies were, on the whole, emphatic in their manifestations during the interviews about the need to follow up the innovation processes that happen in other countries, as a way to update their lines of products and to aggregate value to their production: *"We travel, we go abroad trying to find something to bring back, the only way for you to create something new is by traveling abroad,... we have people here inside the company who... go to Europe, to the United States, to China, now that we entered the Chamber of Commerce in China, search for technology overseas, anything that we can do... (A manufacturer of products made of wood).*

The statement below does not leave any doubts regarding the role of the evaluation of the market trends for a manufacturer of bicycles: *“We have a subsidiary in the USA, which is the one that imports directly from China. If you ask me “Is it worth having it economically speaking?” Yes, but its biggest value is as a market antenna, it sees trends and has a very important role, that’s why it answers for our marketing department, that is, it creates our products.”*

An example of a global way of thinking and manufacturing goods by focusing on the international market was given by a computer company: *“and always working with high technology, at least equal or better, and always thinking about a global product and nothing for Porto Alegre and Rio Grande do Sul. And always participating in international fairs... everybody tries to launch whatever is innovative, look at what’s happening in the world.”*

The low price of the dollar has also been making companies seek ideas abroad so as to innovate, as mentioned during an interview with a machinery manufacturer: *“Our company’s policy is to always try to develop something new... Be it developing machinery in partnership with clients, be it abroad looking for something new... Nowadays, because the dollar is very low in relation to the Real, it is starting to become feasible to import equipment. And this, obviously, for the companies in the domestic market, forces us to work and move faster. Look for new technologies.”*

Many companies recognize that when they research international markets they are looking for ways to copy products and adapt them to their local conditions / markets. Regarding the role of copies in the innovation process, Schumpeter considered that imitators can improve the original innovation, becoming innovative also and successful, because one innovation facilitates the creation of others. That is, innovation develops the scenario for another series of innovations (Fagerberg, 2005, p. 14). The same idea is commented on by Hall (2005, p. 460) when talking about the importance of dissemination as a way in which innovations become useful to the population, being an intrinsic part of the innovation process, as are learning, imitation / copying and the effects of the feedback that arises during the dissemination of a new technology; they improve the original innovation.

Thus, by means of copies the innovation process of a manufacturer of bodies for buses was developed, according to what he said during an interview: *“We certainly started copying, we’d go and look at what the world had developed and try to make the same here. It used to be like this. But this was in the cradle, in the basis of our technological process, of research, of development, of innovation, of looking at what existed out there and trying to make it better here, or equal.”*

A toy company that uses copying as a strategy for launching products recognized in the interview that it is not innovative because it never created its own product: *“In our line of products, we try to see what exists in the world, mainly in China, in the USA and in Europe, and we adjust it to the Brazilian reality. If I have to look for a product that was created and that we developed: no! In fact, we get products that already exist and that are commodities in the market and we adapt them to our own.”*

In the same way, a machinery manufacturer pointed out that the cost reductions obtained when a company makes copies: *“...engineers go to exhibitions, fairs, they see machinery, photograph it, and reproduce it at a cost that is 80% lower than here in the Country, taking advantage of ideas and improving them. Because Japanese people... made the same things others made, but improved them, with better quality, perfecting them. In this world nothing is created, everything is copied, but when you copy it and improve its quality, at a lower cost, it is different.”*

## 2.5. Spread the culture of innovation and integrate innovation into the whole company

According to Lazonick (2005, p. 34), a factor that promotes the implementation of innovation processes in companies is the integration among departments, in order to get the whole company involved in these innovation processes: *“the essence of an innovative company is the organizational integration of a base of abilities to involve in collective and cumulative learning”*. For several companies, among the fourteen that informed and commented on the importance that they attribute to the dissemination of the culture of innovation and integration of the several areas of the company regarding the efforts for innovation, in order for a company to have chances of being successful in the development of innovations, it must integrate its commercial and industrial departments with the research and development ones, so that it can unite the technical competences and the correct perception of the market’s potential. Both examples below, of manufacturers of electronic equipment and cosmetics, respectively, reproduced this view of integration:

*“One of the things that we are trying to do is the very difficult integration of R&D and the industrial department, it’s not enough to create a good product, you have to create a good product that is easy and cheap to produce, it’s developed according to what we produce.”*

*“We have conditions to develop really unique, innovative products, from the moment we implement an absolutely well structured management system of innovation focusing on all of these aspects that were, that are relevant in our case. The network, the environment, the knowledge, involves people, involves freedom, freedom to experiment.”*

A food company said that it always begins the innovation process in the marketing department, which assesses the commercial feasibility of the new product, after that we go to the development department, which materializes the idea into a final product, and, afterwards, it goes back to the marketing dept. so that the product can be launched, under the supervision of only one leader. Concerned about developing leaderships, the company adopted *“specific programs of payment, so, the profits that the project makes will be divided a little among the people who took part in the process, for the project, for the time. Therefore, that is the whole question, it’s not linear and not departmental, the R&D department only materializes something; it is simply the development of products.”*

Being it a collective and collaborative process, the implementation of innovations requires the dissemination of accumulated knowledge in the company, as mentioned by one of the companies in the chemical sector, when explaining in the interview how they managed to arrive at a new product: *“I must control the knowledge ...transfer the knowledge to my creators, to my line operators, everything is an integrated process. It’s no use having the knowledge in the researcher’s head, or the industrial director’s head, he has to transfer this to his other research colleagues and develop all this new technology together.”*

Concerning internal integration and the freedom to create, a big manufacturer of cosmetics emphasized the importance of these processes in the innovation from the moment it implements a structured management system of innovation, with *“freedom to experiment”* for everyone. B1 Another example of this freedom of creation within a company’s environment to promote innovation was given by a manufacturer of electronic alarms, with the company promoting periodical meetings for the collective discussion of new ideas, *“in an uninhibited way... provoking themes”* or when specific demands arise from clients that require special solutions.

In this same line, manufacturers of electrical products and machinery showed how they motivate environments of cooperation for innovation:

*“I encourage informal meetings; innovation comes up in these meetings. Let’s innovate..., how can we innovate? Promote innovation in an uninhibited way... provoking themes. I gather all the staff... and they begin discussing,... They start discussing and analyzing new things, alternatives... Totally encouraged and then... new alternatives arise.”*

*“It is part of the technology development culture, there is a vibration when people present a new idea, start a new product, start walking, producing, people like this. They also are a part of it, for them it’s interesting to be in a company that is recognized as technological.”*

Another important factor in the diffusion of the innovation culture is represented by the participation of managers of innovative companies in the future courses of the company and how their salaries depend on the success of the innovation (Lazonick, 2005, p. 50). One of the examples given by a paint manufacturer, in which he shows that there was a rupture in the direction of innovation when they managed to motivate their executives in this direction: *“that innovation permeated the company and it was a strategy of the corporation, and all the executives felt how important it is... This rupture was important in the professionalization of the company... there was a very strong process of communication... at this moment, in the company, this culture of importance of innovation was implemented, and the company breathes this, not only the innovation of products, but innovation in the entire business.”*

The examples above, about the integration of people in the innovation processes are in accordance with the positions defended by Lazonick (2005, p.30) when he states that “the innovation process is collective when learning cannot be carried out by only one individual.

Learning requires the collaboration of different people with different abilities. Investments in collective learning require the integration of these people's work in the organization". In the same way, they align themselves to the positions of Van de Ven (1999)<sup>6</sup> that talks about the need for "innovative companies to allow groups of people within the organization to have enough freedom to experiment new solutions".

The dissemination of this culture, the culture of innovation, and innovation as an integral part of the strategy of a company were factors pointed out by some executives as basic conditions for the company as a whole to get involved in innovation processes. An example can be found below, from a car parts manufacturer: *"first you have to define this as a company philosophy, because if this isn't really handled by the company's top directors, systematically, with a fixed agenda, as something truly valuable for the company, it's not worth it. Later on, the question: alone nobody can accomplish anything."*

Another field of research on innovations tries to understand if organizations can overcome their inertia and promote adaptations due to the fast changes in the environment and in terms of technologies. In this context, innovation is considered to be the capacity to respond to changes in the international environment, influence and mold them (Lam, 2005), and the company should "establish internal standards of interaction that allow the mobilization of all kinds of knowledge when confronted with new challenges" (Fagerberg, 2005, p. 11). We repeat here an example of reaction of a company when faced with a crisis; it was already mentioned in the section that discusses competition as one of the factors that explain innovation, stated by the manufacturer of alarms mentioned in this section for whom ideas are born with more intensity in situations resulting from threats of new competitors; that can present new technologies that surpass the products of a company: *"When do we use this? It's when a crisis comes; with threats, we react to threats, adrenaline... A competitor, a new competitor comes, a competitor, a new technology, a new threat."*

## 2.6. Innovation boosted by the entrepreneurial spirit of the board of directors

Although the idea that innovative activities constitute a phenomenon that happens in the context of an organization as a whole and that it is well consolidated in the more recent literature on this topic, (Fagerberg, 2005, p. 20), the first studies by Schumpeter emphasized the role of the individual, more than of the organizations, in innovation processes. In this theoretical perspective, the focus is pointed at the character and determination of extraordinary people in the development of innovations. This view was substituted by studies that overcame this individualistic obliquity and guided the focus to the exam of "a vast group of organizational factors, as well as the abilities and experiences of a large number of individuals who participated in each invention", in the promotion of innovations in companies (Pavitt, 2005, p. 87).

Other authors such as Penrose, in *The Theory of Firm Growth*, of 1959, consolidated this trend based on the argument that "the modern corporation is an organization that manages

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<sup>6</sup> According to what was mentioned by Fagerberg (2005, p. 11)

the human and physical resources it has. People contribute with work for the company not only as individuals but also as members of teams that engage themselves in learning processes on how to make better use of the productive resources the company has, including their own”.<sup>7</sup>

There are nuances, however, to be considered, principally resulting from the sizes of companies. Although Pavitt (2005, p. 96) has observed that “the dominant force in the technical changes of the 20<sup>th</sup> century, and up until today, is the big industrial company exploiting different fields of specialized knowledge, with their own laboratories and a large number of small companies providing specialized production goods”, in the question of leadership to innovate he said that innovation processes differ between small and big companies given that in these the process involves a large number of people with specialized jobs and identifiable procedures; on the other hand, in small companies the coordination of functions more probably reflects the competence of its senior managers.

The Paedi research found some signs (eight companies) that highlighted the role played by the company leader in the conduction of innovation processes. The first quote below, from a businessman in a food company, illustrates this view well: *“It is obvious that innovation is a process of rupture from current situations and that you really need to have a driving force for this rupture and this is called a leadership who focuses on innovation. Because if you don’t have this force making everything change, organizations, as well as people, don’t have this force, they need somebody to help, to boost them with their leadership, culture and adequate environment for innovation.”*

In the case of a national cosmetics company which is strongly innovative and that presented remarkable growth in Brazil, starting when it was very small, its founder had an essential role in its innovation process when he: *“instilled in the company as a whole characteristics that are very much his own, entrepreneurial and innovation characteristics. Instilled this culture into the organization as a whole; so much so that the company innovates its line of products, processes, communication systems and everything else. I think that this is a result, this growth is a result of this.”*

Below, another person interviewed connected leadership factors, education for innovation and the risks involved in innovation, aiming at finding flaws in the “entrepreneurial education” in Brazil and their consequences:

*“The difficulty that I think exists when innovating is the managerial attitude. And this attitude comes from the management education in Brazil. I guess that the big problem that we have in Brazil, even today, is the management education and entrepreneurial attitudes, because in order for a guy to innovate he must take risks. Anything that is new is a change of what already exists. Resistance to change is a very serious thing. I don’t know where we get this attitude from in our culture, in Brazil. But it is amazing the comfort that people feel when they always do the same things. And the desperation they feel whenever something is about to change.”*

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<sup>7</sup> Mentioned by Lazonick (2005, p. 32).

The examples mentioned above suggest that in some companies an individual leadership represented the driving force to start and afterwards maintain access to the innovation process. Nonetheless, the development of innovations depends more and more on the collective efforts and on the technical abilities of the several departments in a company, in smaller companies and in those in which the founding executive played a leadership role in the company's management towards innovation, the leader continues to represent, in the business community's point of view, a factor of cohesion and maintenance of the company's course.

## 5. Final Considerations

In this article, we reasoned that Brazilian entrepreneurs responded in varied ways to the opening of the market to foreign trade. The guiding hypothesis of our analysis was that the reaction of the executives and the practices they adopted throughout the 1990s depended not only on the size or capacity of their companies, but also on the condition of competitiveness in which they found themselves when the opening happened.

When analyzing the statements of these executives, we identified some behavior patterns or reactions to the impacts of foreign competition. In a first group that we call pro-active executives, the opening of the economy was seen as an opportunity to learn from their international competitors and as a challenge in terms of capacity to select the most efficient. The responses of these companies to the opening of the economy were aimed at increasing investment in R&D (internal and external) and forming partnerships with centers of research. In this group of executives, the need to search for international competitiveness seems to walk hand in hand with terms, as for example: "offer new products"; "search for more efficient ways to produce with higher quality"; and "new niches in the market".

In this behavior pattern called pro-active, companies that already considered themselves competitive in the period of their commercial opening prevail. That is, they already exported with standards of international quality and/or benefited from public incentives (Suframa), which allowed them to accumulate knowledge so as to face their competitors. In this group we can also find companies that controlled the logistics and distribution network of products in the country and those that used national raw materials at lower costs than the international ones.

A second behavior pattern, classified as reactive, was observed in executives that saw the opening as an opportunity to import machinery and equipment, and through this strategy incorporate new technologies into their productive processes. For these executives, the opening seems to have led them to a higher level of awareness of the need to invest in R&D, although this is still not a frequent practice in this group. In this group, we can find executives of companies in sectors such as pharmaceuticals and electronic equipment that needed to import equipment and raw materials that did not exist here, or whose products' cost and quality were little competitive.

Still classified as reactive (positive) we found a segment of executives that responded to the opening of the market by guiding their efforts in order to get quality certifications for their products and processes, in addition to carrying out changes in management aiming at reducing costs with waste, material and personnel. These are executives who run less competitive companies. For this group, the opening represented an awakening of the need to innovate, although they are still in the phase of “having continuous improvement of their products and processes”.

A third pattern of answers was predominant in the segment of executives whose permanence in the market was guaranteed by the reserve of the market and were not prepared to compete in terms of quality. The survival strategy of this segment regarding the opening of the market has been to compete through price, deactivating production lines and reducing jobs. In this segment, where we find companies of the toy, food and computer technology sectors, the impacts of the opening were evaluated by the executives in a negative way. The theme of innovation appears, in most cases, jointly with an explanation of how impossible it is to invest in the necessary research in order to follow the trends of the international market.

This scenario is complemented by the motivations to innovate presented by the executives interviewed. In a segment of executives with more pro-active attitudes, innovation is seen as a growth strategy through the opening of new markets, as well as a way to increase their market share. In this same segment, innovation seems also to be a way to achieve better prices in the international market and to increase exports. In the latter, the motivation to innovate in order to increase exports is well connected to the motivation to learn the logistics of distribution.

A behavior herein classified as reactive can be found in the segment in which innovation is motivated, predominantly, by the need to face the competition with countries such as China and India in the production of low cost goods. This reactive strategy is much more an incremental innovation of processes and products than the challenge of new products. In this segment we can find executives from the shoes, bicycles and textile sectors.

The analysis of the interviews with the executives shows the several facets that innovation and the reaction to the policy of opening the market represented: opportunity as well as challenges and, at the same time, it threatens Brazilian businesspeople. The capacity that companies have to innovate and to present a pro-active behavior, learning from these challenges that arose with the opening of the economy, depended not only on the size and sector of the company, but on its capacity to accumulate knowledge and foresee the demands of the market.

In the case of more reactive companies or companies that only adjust themselves to the needs of immediate survival, the challenge given the creators of public policies is the establishment of an institutional environment that would allow corporations to invest in research and development for the innovation of products and processes. This seems to be the way for the opening of the market to international competition to become less threatening, and for having opportunities to learn and to search for new products.

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