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The Main Difficulties Faced by Companies of Maringá Technological Incubator

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Executive Summary

This paper aims mainly, to verify the difficulties faced by the technological enterprises, under the entrepreneurs' perspective from the Maringá Technological Incubator at Paraná State Brazil. In order to achieve the aim, after the literature revision on Incubators, technological Companies and its main difficulties, a questionnaire was elaborated, which concerns to characterize the enterprises and entrepreneurs; the investments origins; the evaluation and borrow process criteria for the investments; the product launch process. The results evidenced that the companies have difficulties in the product development stage, since it's necessary a higher technological qualification of the team, moreover, the companies have difficulties in introducing the product into the market caused by the lack of opportunities in demonstrating its products, or services, in specific events, also on the borrow process for financial resources with financial entities to promote the marketing and staff training, mainly to finance the product research and development phase.

Keywords: Difficulties, Technological Incubator, Companies, Entrepreneurs.

1. Introduction

In a world of constant innovations and modernization of the productive systems, the companies need to search and to improve new technologies to be distinguished in the world-wide market and get the competitive differential. This process of modernization is fortified with the commercial opening from the decade of 90. Azevedo and Portugal (1998 apud Maia, 2003)¹, say that for insertion of the Brazilian economy in the world-wide economy had been carried through a deep change in the importation politics. Than Brazilian economy, that was characterized as a closed economy, with many barriers, had that to adapt with the ingression of the international competition.

The technological incubators had appeared in Brazil in 1980, with the proposal to give support to enterprises in the period of conception of its businesses, having made possible better conditions for the consolidation of then and consequently improve Brazilian competition. However, the support offered for the Incubators brightens up the difficulties faced for the rising companies but it does not eliminate them, because many enterprises do not to leave the incubation phase, in function of difficulties of the market structure where they find.

Of this perspective, the main objective of this research consists of identifying the main difficulties faced for the resident companies in the Technological Incubator of Maringá.

To reach the objective of the research a questionnaire will be elaborated that will be applied in all the companies of Technological Incubator of Maringá, aiming to identify the deficiencies of this process of development of the companies, since the beginning of its incubation until the phase of insertion into the market.

Beyond of this introduction the article consisting by others 4 sections. In the second section the concepts of technological incubators and enterprises of technological base will be presented. After that, the difficulties faced for the companies incubated in Brazil are presented. The fourth part of the article relates to the used methodology. The fifth section relate the case study carried through in the Technological Incubator of Maringá, pointing out the perspectives and the difficulty found by incubated companies. Finally the main results will be presented.

2. Companies Incubators and Enterprises of Technological Base

The companies incubators had appeared in the half of century XX in the United States, in the region of the Silicon Valley, with the intention of to offer support for rising

¹ MAIA, Katy. *O Impacto do Comércio Internacional, da Mudança Tecnológica e da Demanda Final na Estrutura de Emprego no Brasil, 1985 - 1995*. Fundação de Estudos Sociais do Paraná - 2003. Disponível em: <<http://sitemason.vanderbilt.edu/files/dhtGEw/Maia%20Katy.pdf>> .

enterprises, giving support in the period of conception of its businesses and making possible better conditions for the consolidation, stimulating the innovation mainly.

In 1982, was installed the first companies incubators of Brazil, located in the city of São Carlos - SP. With the supported of companies incubators, some enterprises had been made possible, generating innovations, job and income. In accordance with the ANPROTEC (2005)², currently exists in Brazil about 339 companies incubators where almost 2,000 companies are installed, e made possible about 1.600 graduated companies, that is, they are in activity in the market.

In accordance with Vedovello (2000)³, companies incubators can be defined as a set of companies who share a physical environment with adequate installations and administrative infrastructure, providing the birth, development and consolidation of new businesses, beyond propitiating the establishment of partnerships.

For Gonçalves and Diniz (1999)⁴, the companies incubators consist in an institutional mechanism where are provide technique and administrative services with reduced costs to the entrepreneurs, beyond the function of intermediation between the incubated companies and public and private institutions of promotion. In this context we can to stand out that the companies who are inserted in the incubators are, in its majority, enterprises of technological base.

The enterprises of technological base had appeared with the development of the information technology and the insertion of the country in the world-wide market. Thus, according to Lastres *et all* (2003)⁵, to follow this new standard the companies develop new practical of production, commercialization and consumption of varied goods and services, being that these new practical ones are intensive in information and knowledge.

In these companies, as Lemos (1998, P. 18)⁶, the technology is the competitiveness differential, that is, the technological innovation is the reason of most of the costs of the company, and is in technology that the majority of the staff works. Therefore, the same if it does not base on physical assets, but in intellectual assets, involving qualified economic

² _____. **Panorama Nacional Anprotec 2005**. ANPROTEC. Disponível em: www.anprotec.org.br

³ VEDOVELLO, Conceição. **Aspectos relevantes de parques tecnológicos e incubadoras de empresas**. Revista do BNDES. Rio de Janeiro, v. 7. n. 14, p. 273-300, dez. 2000.

⁴ GONÇALVES, Eduardo e DINIZ, Clélio Campolina. **Sistema local de pesquisa e desenvolvimento de empresas de base tecnológica em Juiz de Fora**. Nova Economia. Belo Horizonte, v. 9, n. 1, jul. 1999.

⁵ LASTRES, Helena M. M.; CASSIOLATO, José Eduardo. **Novas Políticas na Era do Conhecimento: o foco em arranjos produtivos e inovativos locais**. Revista Parcerias Estratégicas-2003.

⁶ LEMOS, Marcelo Verly de. **O papel das incubadoras de empresas na superação das principais dificuldades das pequenas empresas de base tecnológica**. 1998. 100 f. Dissertação (Mestrado em Engenharia de Produção). Instituto Alberto Luiz Coimbra de Pós-Graduação e Pesquisa de Engenharia. Universidade Federal do Rio de Janeiro, Rio de Janeiro.

agents to spread in an environment where it has technological advance and investments in P&D.

For a company of technological base to keep in the market is necessary a significant quantum of investment for its consolidation, this many times is considered as a barrier, therefore the available resources for this purpose are scarce and without them the entrepreneur is hindered to prosper in the market. As Pinho *et all* (2002)⁷, the financings directed to the development of the product are few, and when they exist are for big companies.

With this difficulties faced by these enterprises, that are in a competitive sector, the support offered for the companies Incubators became basic, objectifying the aiding of innovative enterprises, that are very important to stimulate the development of the country, contributing for the conception of new products, technological services and processes.

Than, the companies incubators function are to support the development of new enterprises and to offer of subsidized form, technician-administrative an adequate infrastructure and services for the accomplishment of its projects, using the scientific and professional knowledge of the entrepreneurs.

In this direction the support offered for the Incubators brightens up the difficulties faced for the rising companies but it does not eliminate them, since many enterprises do not obtain to leave the incubation phase. In this context the next section will go to argue the difficulties faced for the incubated companies.

3. Situation of the Incubated Companies in Brazil

The delayed insertion of Brazil in the world-wide market, brings that the technology developed by some incubators companies are delayed in relation of the international competitors, who are much more the time in the market. For this reason, the majority of the technological base enterprises in the country, present comparative difficulties when compeered with the similar one from the other countries. Another problem is relates to these companies to act only in market niches, not developing “new” technology to surpass the competition of the other countries, but only adopting the developed technologies, for the local market.

In the Brazilian companies, the capital destined to the P&D of new products, is inferior when compared with the one of other countries, that have clear politics of capital fund of risk, specific lines of financing for EBT's^[1] and some tax incentives. Brazil offers some programs in this sphere, however the resources are scarce and the licitations are

⁷ PINHO, Marcelo; CÔRTEZ, Mauro Rocha; FERNANDES, Ana Cristina. *A Fragilidade das Empresas de Base Tecnológica em Economias Periféricas: uma interpretação baseada na experiência brasileira*. Ensaio FEE, 2002. Disponível em: www.umc.br. Acesso em 2006.

very complicated, with this precarious structure the companies whom request resources, possessing deficient management systems, therefore they do not pass at least of the initial evaluation. Storey and Tether (1998)⁸ affirm that “the available instruments of financial support in Brazil always are come back the consisting companies already, requiring, in varied degrees, certain level of consolidation of its activities”.

Analyzing the financing institutions, as Finep and BNDES, it was verified that the resources offered for these institutions of promotion are for big companies, not remaining much alternative for small enterprises, not to be its enterprising and innovative capacity, therefore they are activities who if dedicate the introduction of new technologies, that many times had not been tested in the market, characterizing investment of high risk.

In U.S.A., this kind of investments are considered *venture capital*, or risk capital, considered as the investment that also helps the development of companies who act in the technology, very common in countries of the European Union. But in Brazil, this activity still at the beginning, not presenting still, results. Other forms of investments, known as *angels capitalists*, they are characterized by the participation of people, who finance academic projects or innovative companies.

In accordance with the research made for Torkomian (1992)⁹, the main problems found in EBT `s relate “the scarcity of capital, precariousness of the marketing, macroeconomic instability and the lack of managerial qualification”.

Pinho *et all* (2002)¹⁰ it affirms that the difficulties with the attainment of financial resources and deficiencies in the managerial qualification of the entrepreneurs are the main problems faced for these companies.

Lemos (1998)¹¹ also evidenced that the main obstacle is the captation of resources, in its research, 75% of the searched companies presented financing difficulties. On the other hand, 86% of the companies considered that the incubators helps for the overcoming of the difficulties of financing being intermediate between the governmental agents and institutions. However, its research also verified other problems of equal importance as “lack of qualified staff”, “infrastructure lack”, “lack of resources for training” and “difficulties in establishing partnerships for the development of technologies”.

⁸ STOREY, D. J. e TETHER, B. S. (1998). *Public policy measures to support new technology-based firms in the Europe Union*. Research Policy, nº 26, p. 1037-1057.

⁹ TORKOMIAN, Ana Lúcia (1992). *Estrutura de Pólos Tecnológicos: um estudo de caso*. Dissertação de mestrado, São Paulo: FEA - USP.

¹⁰ PINHO, Marcelo; CÔRTEZ, Mauro Rocha; FERNANDES, Ana Cristina. *A Fragilidade das Empresas de Base Tecnológica em Economias Periféricas: uma interpretação baseada na experiência brasileira*. Ensaios FEE, 2002. Disponível em: www.umc.br. Acesso em 2006.

¹¹ LEMOS, Marcelo Verly de. *O papel das incubadoras de empresas na superação das principais dificuldades das pequenas empresas de base tecnológica*. 1998. 100 f. Dissertação (Mestrado em Engenharia de Produção). Instituto Alberto Luiz Coimbra de Pós-Graduação e Pesquisa de Engenharia. Universidade Federal do Rio de Janeiro, Rio de Janeiro.

In this context, the financial problem is the main factor that must be surpassed by the incubated companies, that to develop, they need capital necessarily to invest in new sources of P&D, beyond that these agents of the technological change are important for the development of the regions where they are installed, therefore to the measure that if improve increase the level of activities of the region, and consequently, generating more jobs and income.

4. Methodology

To reach the considered objectives, a literature revision was made, based on articles, books and other sources of research for better definition of companies' incubators, enterprises of technological base and the difficulties faced for the same ones.

A questionnaire was elaborated to characterize the resident companies in the Technological Incubator of Maringá and to identify the problems faced for these companies. The questionnaire was constituted, in its majority, for closed questions and with multiple answers, beyond some opened questions, being this divided in four parts, in which the first one was limited in analyzing the profile of the enterprises. In the second part, the excellent financial questions of the companies had been boarded. After that, in the third part of the questionnaire, they had been boarded questions directed to the development of the enterprise in the market. Finally, the fourth part was directed to the qualification of human resources.

The research was elaborated for the 13 resident companies in the Technological Incubator of Maringá, amongst which 10 companies had collaborated for the gotten results. Considering that they represent 77%, it can be concluded that it is a good sample for analysis of data.

5. Description and Analysis of the Data

This section has the objective to detect the main difficulties, through the questionnaire application, related to the incubated companies.

5.1. Profile of the Enterprise

The results evidence that the majority of the companies has less of one year of incubation, being that 10% are in the age between 1 and 2 years, 30% of the enterprises if they find in the final phase of incubation, as can be observed in figura1.

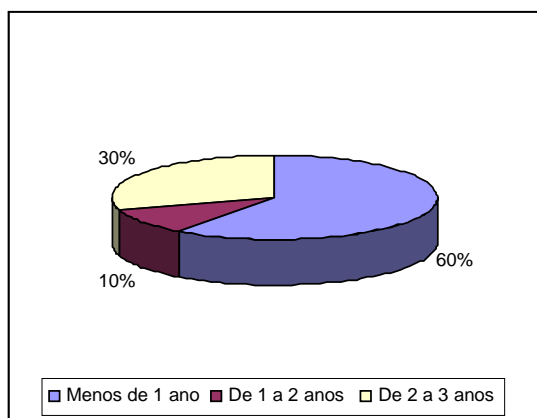


Figure 1 - Age of the Enterprise

Source: GAE - Proper elaboration

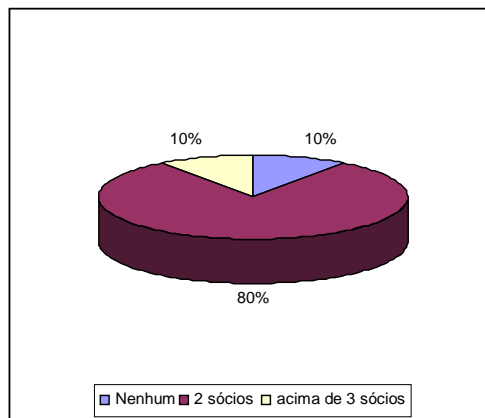


Figure 2 - Number of Partners

Source: GAE - Proper elaboration

The number of partners, in figure 2, pointed that 80% of the companies are constituted by 2 partners, being that 10% they do not possess partners and 10% of the remains possess above of 3 partners.

Referring to the employees, 70% of the enterprises have between 1 and 3 employees or trainees, being that 30% of the companies not possess, that is, in this case the partners assume all the managerial and operational functions of the company. However, in this same perspective, was questioned the companies if they intend to contract more employee in the next the 6 months. The result demonstrated that 80% of the companies intend to contract more. The main reason concerning this result is the fact that the enterprises intend to improve the process of development.

5.2. Financial information

To analyze the development enterprises process, becomes necessary to analyze the managerial capacity, as well as, knowing the structure and origin of the resources of each enterprise. On basis of these aspects, were verified that the resources of all the companies are of proper capital, none, therefore it carried through financing, personal loan or it got a lost found for the constitution of the company.

Analyzing the monthly invoicing, in accordance with figure 3, evidenced that 30% of the total of companies got a maximum invoicing of R\$ 2,000. On the other hand, a significant part of the companies (40%) getting monthly invoicing above of R\$ 5,000 showing that the enterprises have great potential of growth.

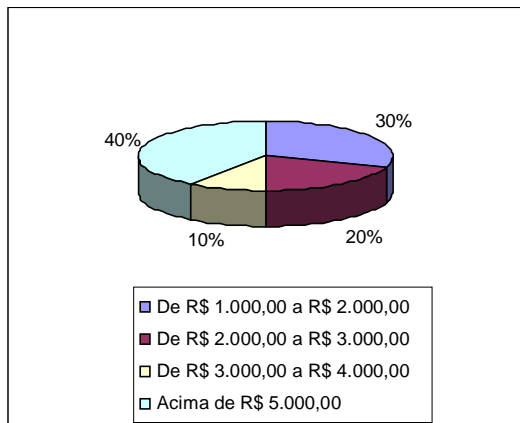


Figure 3 - Average of the Monthly Invoicing. Source: GAE - Proper elaboration

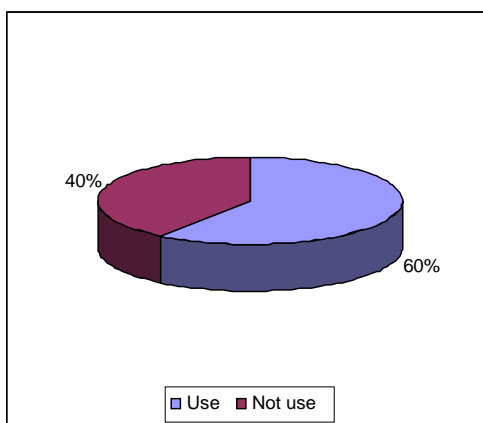


Figure 4 - Provision for capital turn Source: GAE - Proper elaboration

In figure 4, it can be observed that 60% of the entrepreneurs make provision for turn capital, being that the remains do not make it. In this in case that, the importance in carrying through the provision of capital turn is to assure the maintenance of the solvency of the company preventing other incidental costs not foreseen.

In relation to the future investments, all the companies intend to invest in next the 6 months, presenting as investment priority the following order: Material of spreading, Exposition of the products in fairs, advising and Marketing, P&D, Training, Legal advising, Investment in Equipment. In accordance with the research, the total volume of resources that all the companies intend to invest is of approximately R\$ 57,800.

5.3. Market

The market analysis is very important to direct action, where each entrepreneur can develop marketing strategy, politics of sale that they can classify the products or services in accordance with the real capacities of absorption of the market. In this perspective, the ten enterprises that had participated of the research possess well diversified public, including institutions of education, area of engineering, hospitals, commerce and industries in generality, until creators of ornamental and wild birds.

How much to the insertion of the products of the entrepreneurs in the market, figure 5, presents that about 50% of the entrepreneurs they had affirmed to have difficulties to insert itself in the market, due the marketing questions and of technology, where the competitors, that are more the time in the market, get to compete with lower prices and bigger amounts.

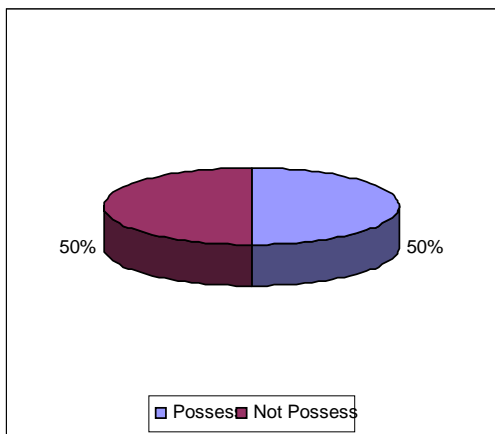


Figure 5 - Difficulty to insert itself in the Market
 Source: GAE - Proper elaboration

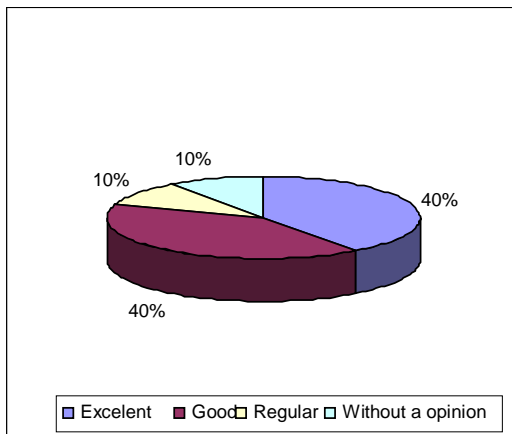


Figure 6 - Relationship with its customers
 Source: GAE - Proper elaboration

Considering the importance of the relationship with the customers, the research showed that majority of the companies classifies the relationship with its customers as excellent and good, only one affirms to have a regular relation.

In relation to the partnerships established between the entrepreneurs and its suppliers, figure 7 presents that 60% of the enterprises possess partnership with suppliers or customers. This kind of partnership is important for the company, therefore it can reduce the costs with inputs and take care better of the consumer.

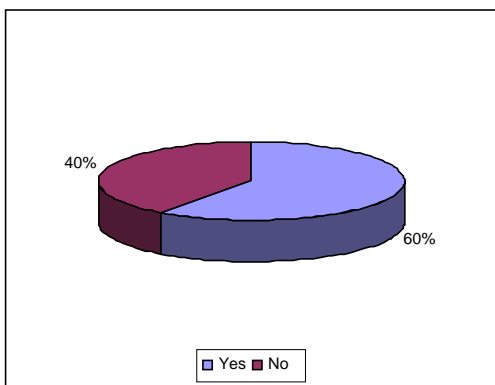


Figure 7 - Partnership or agreement with suppliers
 Source: GAE - Proper elaboration

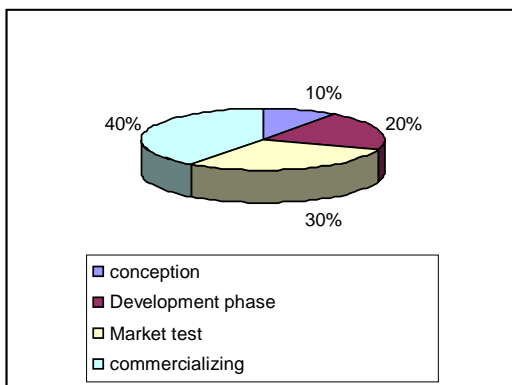


Figure 8 - Phase of development of the product
 Source: GAE - Proper elaboration

In the phase of product development, can be verified that only 10% are in the phase of conception of the product, 20% of then find in the development phase, 30% are making market test and 40% of the enterprises are already commercializing its products, in accordance with figure 8. Showing that even with difficulties for getting resources for research and development, the companies possess great potential in the generation of new products and technological processes.

5.4. Qualification

The qualification of the companies can be demonstrated by the level of formation of the partners. As illustrated in figure 9, about 70% of the partners they possess complete superior level, being the remains encloses specialization level, master degree and PhD.

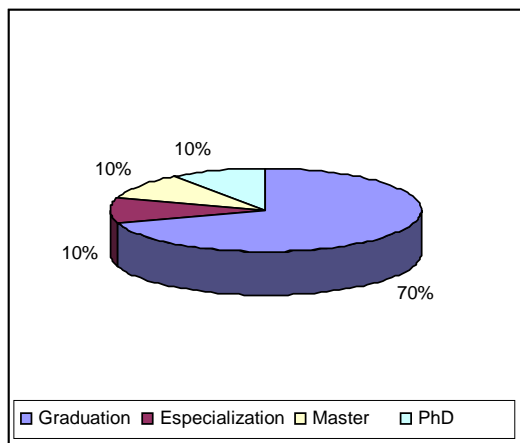


Figure 9 - Professional formation of the partners
Source: GAE - Proper elaboration

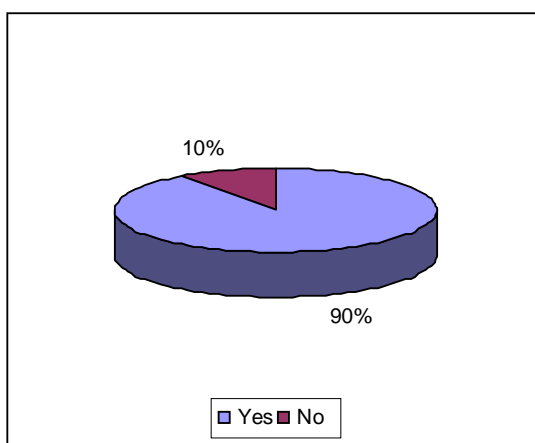


Figure 10 - Necessity of specific training
Source: GAE - Proper elaboration

In accordance with figure 10, about 90% of the enterprises had affirmed to have necessity of specific training. The areas that the companies had mentioned a greater interest of training, is product development, production and the technological area.

Final consideration

Was observed that the maim difficulties faced by enterprises incubated in Maringá Technological incubator are the same one found in general in Brazil. Enclosing difficulties of management, insertion of its products in the market and, mainly, the scarcity of resources, detached for the deficiency of the stock market, the lack of financing for small enterprises in the research and development of its products.

On the basis of the results gotten through the questionnaire, are clearly that the searched companies possess difficulties how much to the process of production of its products. It had consensus as for the lack of chance for demonstration of its products, or services, in specific fairs and events for the sector which are inserted. The same entrepreneurs affirm that they possess difficulties to request resources in the official entities for the marketing area and training, and mainly financing for the development of its products.

Another problem is of attainment of resources for technological qualification of the team. The available resources for the incubated enterprises are for the area of management in marketing; however, without a product is not necessary to make

investment in marketing, that is, it must have redistribution for the phase of conception of the product.

Beyond the scarcity of financings, supplied for the promotion institutions, to be available only for medium and big companies. A solution for this question could be the awareness of the investors, that is, could invest more in the small innovative companies, as it is practiced in many countries of the Europe and the United States, that if present under the form of risk capital e *angels capitalists*, that is, innovative angels.

Thus, it can be observed that the enterprises of technological base are important for the development of new technologies, and are considered potential competitors in the national and international scope, that is, these possess potential to concur with imported products of high technology, being able to develop a market in expansion, improving the region where they act. The lacks for this good performance is the incentive in the research and development, where if finds the foundation for the expansion of these companies.