# Assessing The Innovation Value Chain Of Companies In Sapucaí Valley: Unveiling Bottlenecks And Addressing Conducive Suggestions

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## ABSTRACT
Neely and Hii (1998) posit that the innovation capacity of a firm regards three important and interrelated perspectives: (1) culture, (2) internal processes, and (3) external environment. This paper aims at identifying the weakest and strongest links of internal processes of companies pertaining to the electronics industry, in the Sapucaí Valley, Brazil. In other to achieve this goal, we have adopted Hansen and Birkinshaw´s (2007) innovation value chain framework to assess internal processes of such firms, due to its practical and immediate approach. Gathering and analyzing answers from 24 respondents, results show that firms are relatively good at "Idea generation", but the companies have difficulties at "Idea conversion" and "Idea diffusion". Given these results, we present suggestions for actions for governments and companies ranging from the training of actors to marketing actions.

## SUMÁRIO
Neely e Hii (1998) postulam que a capacidade de inovação de uma empresa considera três perspectivas importantes e inter-relacionadas: (1) Cultura, (2) processos internos e (3) ambiente externo. Este trabalho visa identificar os elos fracos e fortes dos processos internos das empresas na indústria eletrônica, no Vale do Sapucaí, Brasil. Para alcançar este objetivo, adotamos o modelo de Cadeia de Valor da Inovação de Hansen e Birkinshaw (2007) para avaliar os processos internos dessas empresas, devido a sua abordagem prática e imediata. A análise da coleta de respostas de entrevistas em 24 empresas mostra que as empresas são relativamente boas na etapa "Geração de ideias", mas têm dificuldades nos elos "Conversão das ideias" e "Difusão das ideias". Dados esses resultados, são apresentados sugestões de ações para empresas e governos que vão da capacitação dos atores a ações de marketing.

# 1. Introduction

Over the last years, innovation has become an organizational goal for nearly all companies that fiercely compete in an increasingly globalized world. As a result, managers perceive **innovation** not only as a new business fashion, but as a real **means by which companies will survive in the long term** by exploring and exploiting blue oceans of uncontested market space because competing in overcrowded industries is no way to sustain high performance (KIM & MAUBORGNE, 2004).

Moreover, reviews indicate that the dominant perspective in the diffusion of innovation literature contains proinnovation biases which suggest that innovations and the diffusion of innovations will benefit adopters (ABRAHAMSON, 1991).

On the other hand, scholars around the world have produced a vast body of academic research on innovation. Most of this research has focused on various aspects of innovation, such as technological innovation, product, service and process innovation, strategic innovation, and management innovation (HANSEN and BIRKINSHAW, 2007; ABRAHAMSON, 1991).

This is evidence that: (1) light on innovation as an organization practice has been shed more actively within the last couple of decades by both practitioners and academics and (2) innovation can emerge in various ways. Therefore, although practitioners and scholars are no longer discussing the importance of adopting innovation, there is still no consensus about what are the best practices to boost innovation in a company. Neely and Hii (1998) posit that the innovation capacity of a firm regards three important and interrelated perspectives: (1) culture, (2) internal processes, and (3) external environment. This paper focuses on the internal processes that enhance innovation.

Hansen and Birkinshaw (2007) provide a somewhat interesting model to assess internal processes of a company and we have adopted this model to conduct the field research.

Therefore, the focus of this paper is on a relatively under researched subject: identifying the weakest and strongest initiatives of the innovation processes of SMEs within the electronics industry, in Sapucaí Valley, Brazil. This paper also aims at providing managers and government with tangible suggestions to overcome the weaknesses in the innovation processes of researched companies. Small and medium companies are the most Brazilian companies and currently there is a debate about the low rate of innovation in Brazilian companies. Academic literature is more fruitful to treat innovation in large firms. There is a gap for smaller companies.

This research is particularly helpful because a company's capacity to innovate is only as good as the weakest link in its innovation value chain (HANSEN & BIRKINSHAW, 2007).

## 2. Theoretical Background

### 2.1 Innovation capacity

Neely and Hii (1998, pg. 22) claim that the innovation literature does not provide an extensive coverage of the concept of **innovative capacity**. There is an issue of inconsistent semantics in relation to the concept: innovative ability, innovative capability, innovative competence and absorptive capacity seems to all relate to the same concept of innovative capacity.

What are the drivers of innovation? Porter and Stern (2002) show that internal factors that translate into capabilities and processes are available in traditional views of technology management. But they point to the importance of the external factors are undeniable. Their research has led to the proposition: location matters for innovation.

Tidd and Bessant (2009) point to a number of factors that influence an innovative organization: shared vision, leadership and the will to innovate; appropriate structure, key individuals, effective team working, high-involvement innovation, creative climate and external focus.

Many authors do not accept a single definition for the ability to innovate, for this work we use the definition that Neely and Hii (1998) propose:

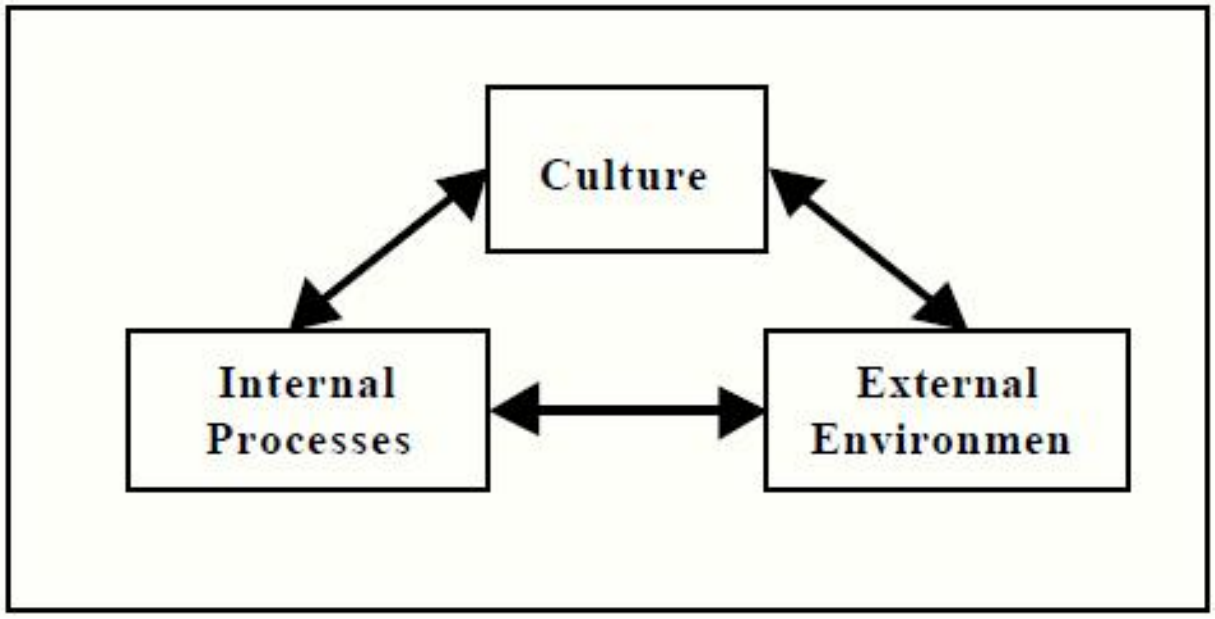
" *Innovative capacity is the potential of a firm, a region or a nation to generate innovative outputs*."

And expanding the definition, we have:

> "The innovative capacity of a firm can be thought of as a potential of that firm to generate innovative output; this potential is dependent on the synergetic interrelationships of the culture of the firm, internal processes and external environment." (NEELY and HII ,1998)

Figure 1 illustrates the interrelations between culture dimensions and external environment and internal process:

Figure 1: Dimensions of Innovative Capacity




Source: Neely and Hii (1998)

Some of the key factors and best practices present in innovative organizations that illustrate these dimensions are:

**Culture**: shared vision; strategy well known and clearly articulated; innovation strategy and corporate strategy aligned; customer satisfaction and total quality are drivers of management; risk taking attitudes ate encouraged at all levels of the organizations; high management teams assume innovation as part of their functions.

**Internal processes:** innovative organizations have the process of innovation very clear, in terms of idea generation, selection of ideas, implementation and measurement of the outputs. Some best practices are:

*Idea generation and capture:* Innovative companies constantly generate and capture new ideas inside the companies, through employee suggestion schemes, and outside, creating links to key customers, suppliers and business partners.

*Selection of ideas and implementation:* methods of selection of ideas that are compliant with corporate, innovation and technology strategy; project management practices; involvement of as R&D, production, sales and marketing and customers in the screening process assure the internal commitment with the project.

*Measurement of output:* The evaluation of ongoing projects is constant. The objectives, goals and performance indicators clearly drawn and understood are common to these organizations. These companies are permanently comparing their selves with competitors, customer satisfaction indicators and benchmarks. Measures of innovation such as sales of new products, number of patents are used at strategy levels and are present in employee variable remuneration schemes.

*Training:* Continuous training and development of teams are common to innovative companies.

**External environment:** Innovative companies have strong links with their suppliers, are always finding out what customers want, and are always comparing their selves with existing competitors or with companies of other industry sectors. They have business partners for development and marketing activities. Academia, investors, and government are actors searched for knowledge, financing, sharing risks, and qualified information.

### 2.2 Innovation Process

Christensen and Overdorf (2000) regard three factors that affect what an organization can and cannot do: its resources, its processes, and its values. These factors will guide managers to think of what sorts of innovation their organization will be able to embrace: they need to assess how each of these factors might affect their organization´s capacity to change. Table 1, as follows, shows such factor.

Table 1: Factors affecting a company

| Factor | Definition | Relation to innovation |
|---|---|---|
| Resources | Resources include both tangible ones like people, equipment, technologies, and cash, and the less tangible ones like product design, information, brands, and relationship with suppliers, distributors, and customers. | Access to abundant, high-quality resources increases an organization´s chances of coping with change. |
| Processes | Processes are patterns of interaction, coordination, communication, and decision making employees use to transform resources into products and services of greater worth. Some processes are formal—explicitly defined and documented—thus they tend to be more visible. Others are informal: they are routines or ways of working that evolve over time, thus they tend to be less visible. | The most important capabilities and concurrent disabilities are not necessarily embodied in the most visible processes. In fact, they are more likely to be in the less visible, background processes that support decisions about where to invest resources. |
| Values | Values are standards by which employees at every level set priorities that enable them to prioritize decisions. A key metric of good management is whether such clear, consistent values have permeated the organization. | The inexorable evolution of these two values—the way a company judges acceptable gross margins and to how big a business opportunity has to be before it can be interesting—is what makes companies progressively less capable of addressing disruptive change successfully. |

Source: adapted from Christensen & Overdorf (2000).

Christensen & Overdorf (2000) also advocate that in the start-ups stages of an organization, much of what gets done is attributable to resources - people, in particular.

Over time, however, the locus of an organization´s capabilities shifts toward its processes and values. Eventually, they migrate to culture, which is powerful management tool that enables employees to act autonomously but causes them to act consistently.

Abrahamson (1991) draws our attention to the existence of processes which prompt the adoption of efficient innovations and such processes may coexist with processes that prompt the adoption of inefficient ones. This is to say that not necessarily all resulting innovations

are good for the company.

Successful companies, no matter what the sources of their capabilities, are pretty good at responding to evolutionary changes in their markets, but they run into trouble while handling or initiating revolutionary changes in their markets, or dealing with disruptive innovation (CHRISTENSEN & OVERDORF, 2000).

The innovation value chain proposed by Hansen and Birkinshaw (2007) offers a comprehensive framework for managers to take an end-to-end view of their innovation efforts, pinpoint their particular weaknesses, and tailor innovation best practices as appropriate to address the deficiencies. It breaks innovation down into three phases - idea generation, conversion, and diffusion - and six critical activities - internal, cross-unit, and external sourcing; idea selection and development; and spread of the idea - performed across those phases. Figure 1 provides a pictorial representation of Hansen and Birkinshaw´s innovation value chain.

Figure 2: Hansen and Birkinshaw's innovation value chain

| | IDEA GENERATION | | | CONVERSION | | DIFFUSION |
|---|---|---|---|---|---|---|
| | IN-HOUSE<br>Creation within a unit | CROSS-POLLINATION<br>Collaboration across units | EXTERNAL<br>Collaboration with parties outside the firm | SELECTION<br>Screening and initial funding | DEVELOPMENT<br>Movement from idea to first result | SPREAD<br>Dissemination across the organization |
| KEY QUESTIONS | Do people in our unit create good ideas on their own? | Do we create good ideas by working across the company? | Do we source enough good ideas from outside the firm? | Are we good at screening and funding new ideas? | Are we good at turning ideas into viable products, businesses, and best practices? | Are we good at diffusing developed ideas across the company? |
| KEY PERFORMANCE INDICATORS | Number of high-quality ideas generated within a unit. | Number of high-quality ideas generated across units. | Number of high-quality ideas generated from outside the firm. | Percentage of all ideas generated that end up being selected and funded. | Percentage of funded ideas that lead to revenues; number of months to first sale. | Percentage of penetration in desired markets, channels, customer groups; number of months to full diffusion. |

Source: Hansen and Birkinshaw (2007)

## 3. Methodological procedures

This research tried to identify the weakest and strongest links of the innovation value chain of a sample of companies. Field research details are discussed next.

This approach enabled the authors to systematically assess the innovative capability of

firms, i.e., a firm´s potential to successfully launch innovative products or services.

Using this approach, the firm can identify the bottlenecks of its innovation value chain, determine the best solution, and reap benefits from it, because the firm´s innovative capability is as good as its weakest link.

The field research was conducted at companies pertaining to the so-called Sapucaí Valley, State of Minas Gerais, which is often regarded as the Brazilian Silicon Valley, due to the concentration of successful Information and Communication Technology companies. All interviewed companies belong to the electronics industry and they participate in a federal government program called NAGI – Nuclei of support innovation management.

According to Brazilian official data, in 2009, in the municipality of Santa Rita do Sapucaí, which is the most important within the region of Sapucaí Valley, there were 157 companies pertaining to the electronics industry: 114 had up to 19 employees - therefore, considered micro-sized, 37 had between 20 and 99 - therefore, considered small-sized, and 6 had between 100 to 499 - therefore, considered medium-sized. None had more than 500 employees.

The year of 2007 witnessed the electronics industry achieving 40.6% of the gross value added of the municipality of Santa Rita, pointing the importance of this industry to the local development.

We conducted the field research at 24 companies within the electronics industry—out of 157, representing 15.3% of the total number. All collected responses were valid. The field research was conducted in May and June 2012.

Table 2, as follows, shows the operating age of companies in our sample:

Table 2: Sample: age of the companies

| Range of age | Number of companies in the samples |
|---|---|
| Up to 5 years | 5 |
| From 6 to 10 years | 12 |
| More than 11 years | 7 |
| **Total** | **24** |

Source: field research (2012).

Table 3, as follows, shows the companies size.

Table 3: Sample: size of the companies by number of employees

| # of Employees | Number of companies in the samples |
|---|---|
| Up to 19 | 12 |
| Between 19 and 50 | 8 |
| More than 51 | 4 |
| Total | 24 |

Source: field research (2012).

The questionnaire, adapted from Hansen and Birkinshaw (2007), was divided into four blocks: the first one was devoted to the identification of the company and the other three regarded the three phases of Hansen and Birkinshaw´s (2007) innovation value chain, be (1) idea generation, (2) idea conversion, and (3) idea diffusion. Each affirmative was measured by a 5-point Likert scale. The complete questionnaire is shown in Table 4, as follows.

Table 4: Questionnaire employed for the field research

| | Completely disagree | Disagree | Neither agree nor disagree | Agree | Completely agree | Activity | Phase |
|---|---|---|---|---|---|---|---|
| (1) Our culture makes it hard for people to put forward novel ideas. | 1 | 2 | 3 | 4 | 5 | In-house idea generation | High scores indicate that your company may be an **idea-poor company**. |
| (2) People in our unit come up with very few good ideas of their own. | 1 | 2 | 3 | 4 | 5 | | |
| (3) Few of our innovation projects involve team members from different units or subsidiaries. | 1 | 2 | 3 | 4 | 5 | Cross-pollination among businesses | |
| (4) Our people typically don't collaborate on projects across units, businesses, or subsidiaries. | 1 | 2 | 3 | 4 | 5 | | |
| (5) Few good ideas for new products and businesses come from outside the company. | 1 | 2 | 3 | 4 | 5 | External sourcing of ideas | |
| (6) Our people often exhibit a "not invented here" attitude—ideas from outside aren't considered as | 1 | 2 | 3 | 4 | 5 | | |
| (7) We have tough rules for investment in new projects—it's often too hard to get ideas funded. | 1 | 2 | 3 | 4 | 5 | Selection | High scores indicate that your company may be a **conversion-poor company**. |
| (8) We have a risk-averse attitude toward investing in novel ideas. | 1 | 2 | 3 | 4 | 5 | | |
| (9) New-product-development projects often don't finish on time. | 1 | 2 | 3 | 4 | 5 | Development | |
| (10) Managers have a hard time getting traction developing new businesses. | 1 | 2 | 3 | 4 | 5 | | |
| (11) We're slow to roll out new products and businesses. | 1 | 2 | 3 | 4 | 5 | Diffusion | High scores indicate that your company may be a **diffusion-** |
| (12) Competitors quickly copy our product introductions and | 1 | 2 | 3 | 4 | 5 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| often make preemptive launches in other countries. | | | | | | | poor company. |
| (13) We don't penetrate all possible channels, customer groups, and regions with new products and services. | 1 | 2 | 3 | 4 | 5 | | |

Source: the authors, based on Birkinshaw (2007).

Data analysis was conducted with the employment of simple descriptive statistics which is a branch of statistics that applies various techniques to describe and summarize a set of data. In this study we used Tabular Description in which tables of frequency are used to summarize the data.

## 4. Results and Analysis

According to the goals of this paper, results are presented and analysis is depicted.

Table 5, as follow, shows the results of the aggregated responses of the questionnaire, including all questions, absolute and relative scores, the activity and phase of each question.

If we analyze the statistics of the questions (Table 5), it's possible to perceive some details and extrapolate some conclusions:

As high scores indicate poor performance, 'new-product-development projects often don't finish on time' is, by far, the weakest link.

It can indicate either a lack of project planning culture, tools, and resources or, as the majority of the companies in our sample are new and micro sized companies, they may not have a process of new product development stabilized.

By contrast, 'our people often exhibit a "not invented here" attitude - ideas from outside aren't considered as valuable as those invented within' is the strongest link of the innovation value chain of the interviewed companies. It indicates a nationwide culture open to others.

'We have a risk-averse attitude toward investing in novel ideas' is also a strong link. The reason can be that the companies pertain to a dynamic industry and it is a necessary characteristic to be a player in this sector.

When results for each question are regarded, it is quite easy to determine which the strongest and weakest links of the innovation value chain of the interviewed companies are.

As high scores indicate poor performance, 'new-product-development projects often don´t finish on time' is, by far, the weakest link. This might result from the lack of project planning or, more dramatic, from the poor project planning. Brazilians are not recognized, in general, as top-notch project planners and they are perceived as persons who improvise throughout the development of a project. On the one hand, improvising is good because it provides people with flexibility to deal with unexpected situations. However, on the other hand, it is quite undesirable because results in noncompliance of time and budget constraints.

Table 5: Results of responses

| | Total Score | % Out of Maximum Score | Activity | Phase |
|---|---|---|---|---|
| (1) Our culture makes it hard for people to put forward novel ideas. | 61 | 61 / 120 = 50.8% | In-house idea generation | High scores indicate that companies may be **idea-poor.** |
| (2) People in our unit come up with very few good ideas of their own. | 79 | 79 / 120 = 65.8% | | |
| (3) Few of our innovation projects involve team members from different units or subsidiaries. | 82 | 82 / 120 = 68.3% | Cross-pollination among businesses | |
| (4) Our people typically don't collaborate on projects across units, businesses, or subsidiaries. | 59 | 59 / 120 = 49.2% | | |
| (5) Few good ideas for new products and businesses come from outside the company. | 59 | 59 / 120 = 49.2% | External sourcing of ideas | |
| (6) Our people often exhibit a "not invented here" attitude—ideas from outside aren't considered as valuable as those invented within. | 50 | 50 / 120 = 41.7% | | |
| (7) We have tough rules for investment in new projects—it's often too hard to get ideas funded. | 69 | 69 / 120 = 57.5% | Selection | High scores indicate that companies may be **conversio n-poor.** |
| (8) We have a risk-averse attitude toward investing in novel ideas. | 52 | 52 / 120 = 43.3% | | |
| (9) New-product-development projects often don't finish on time. | 102 | 102 / 120 = 85% | Development | |
| (10) Managers have a hard time getting traction developing new businesses. | 62 | 62 / 120 = 51.7% | | |
| (11) We're slow to roll out new products and businesses. | 71 | 71 / 120 = 59.2% | Diffusion | High scores indicate that companies may be **diffusion-poor.** |
| (12) Competitors quickly copy our product introductions and often make preemptive launches in other countries. | 64 | 64 / 120 = 53.3% | | |
| (13) We don't penetrate all possible channels, customer groups, and regions with new products and services. | 81 | 81 / 120 = 67.5% | | |

By contrast, 'our people often exhibit a "not invented here" attitude - ideas from outside aren't considered as valuable as those invented within' is the strongest link of the

innovation value chain of the interviewed companies. This result was somehow expected, as Brazilians are recognized as very open to other people. This can be seen not only in the workplace, but also in the culture and religion, as the country is very eclectic and welcomes peacefully several nationalities, races, and creeds.

'We have a risk-averse attitude toward investing in novel ideas' is also a strong link. This finding was somewhat of a surprise, as Brazilians, in general, are considered very conservative and risk-averse. On the other hand, we have dealt with companies pertaining to the electronics industry in a very innovative region. As innovation requires a certain shot of risk, it seems quite reasonable to figure that the interviewed companies are more risk-averse when investing in novel ideas.

Table 6: Results of responses

| Activity | Total Score | % Out of Maximum Score | Phase |
|---|---|---|---|
| In-house idea generation | 140 | 140 / 240 = 58.3% | High scores indicate that companies may be **idea-poor.** |
| Cross-pollination among businesses | 141 | 141 / 240 = 58.8% | |
| External sourcing of ideas | 109 | 109 / 240 = 45.4% | |
| Selection | 121 | 121 / 240 = 50.4% | High scores indicate that companies may be **conversion-poor.** |
| Development | 164 | 164 / 240 = 68.3% | |
| Diffusion | 216 | 216 / 360 = 60.0% | High scores indicate that companies may be **diffusion-poor.** |

Source: field research (2012).

Table 7: Results of responses

| Activity | Total Score | % Out of Maximum Score | Phase |
|---|---|---|---|
| In-house idea generation | 390 | 390 / 720 = 54.2% | High scores indicate that companies may be **idea-poor.** |
| Cross-pollination among businesses | | | |
| External sourcing of ideas | | | |
| Selection | 285 | 285 / 480 = 59.4% | High scores indicate that companies may be **conversion-poor.** |
| Development | | | |
| Diffusion | 216 | 216 / 360 = 60.0% | High scores indicate that companies may be **diffusion-poor.** |

Source: field research (2012).

Although it is not possible to preach that conversion-poor and diffusion-poor dimensions are significantly different from each other, there is evidence that the average of idea-poor is slightly below the other two. As high scores indicate that companies are poor at a given dimension, results show that companies seem to be a bit better at generating ideas than converting—or, in Birkinshaw´s (2007) words, select ideas for funding and developing them into products and practices—, and diffusing those products and practices.

Finally, 'Managers have a hard time getting traction developing new businesses' was the only variable that helped to explain the number of employees in a company (Table 4): the worse a manager gets traction developing new businesses, the higher the number of employees. In SMEs, in general, the owner himself or only a limited number of employees develop the actual business and the new businesses. Bigger companies may have access to more resources to develop new businesses and the managers have time, resources and develop new business is part of their functions.

Table 8: Impact of the innovation value chain variables on the number of employees of an interviewed company

| Independent variables | OLS | |
|---|---|---|
| Constant | 14.978 | (39.934) |
| (1) Our culture makes it hard for people to put forward novel ideas. | 7.398 | (4.534) |
| (2) People in our unit come up with very few good ideas of their own. | 5.860 | (4.047) |
| (3) Few of our innovation projects involve team members from different units or subsidiaries. | -0,863 | (11.855) |
| (4) Our people typically don't collaborate on projects across units, businesses, or subsidiaries. | -6.882 | (5.936) |
| (5) Few good ideas for new products and businesses come from outside the company. | 1.965 | (6.207) |
| (6) Our people often exhibit a "not invented here" attitude—ideas from outside aren't considered as valuable as those invented within. | 3.305 | (4.672) |
| (7) We have tough rules for investment in new projects—it's often too hard to get ideas funded. | 2.106 | (7.263) |
| (8) We have a risk-averse attitude toward investing in novel ideas. | -4.043 | (7.808) |
| (9) New-product-development projects often don't finish on time. | 5.625 | (4.207) |
| (10) Managers have a hard time getting traction developing new businesses. | 11.109* | (2.179) |
| (11) We're slow to roll out new products and businesses. | -1.554 | (5.846) |
| (12) Competitors quickly copy our product introductions and often make preemptive launches in other countries. | -6.066 | (4.265) |
| (13) We don't penetrate all possible channels, customer groups, and regions with new products and services. | -4.603 | (3.614) |
| $R^2$ | 0.531 | |
| Number of Observations | 24 | |

Notes: OLS = Ordinary Least Squares; Robust standard errors in brackets; * statistically significant at the level of 0,01.

The only statistically significant variable on the number of employees is 'managers have a hard time getting traction developing new businesses'. For each increase of the respondent answer for this question, the company increases the number of employees by 11.

Table 9, as follows, addresses some suggestions companies and government should adopt to overcome the weakest links.

Table 9: The weakest links and recommendation for companies and government

| | Companies | Government |
|---|---|---|
| New product development often don't finish on time | Promote training and development programs to train manager to conduct projects and | Drive initiatives to train people in the electronic cluster through |

| | | |
|---|---|---|
| | create an organizational culture to meet deadlines | formal workshops, seminars and others. |
| Few of our innovation projects involve team member from different units or subsidiaries | Companies should promote interactions between members of different units. | Promote region or nationwide consortia to debate ideas and technologies, encouraging strategic alliances, through funding and taxes reduction, for example. |
| We don't penetrate all possible channels, customer groups, and regions with new products and services | Enhance the market issue while building the business plan and drive resources to market exploration. In general, companies in dynamic industries, such as the electronics, shed more focus to technology, neglecting marketing aspects. The companies would try others business models to overcome their market weaknesses, e.g. commercial alliances with bigger companies; partnerships with companies with complementarities etc. | Provide companies with means to reach domestic and, mainly, external markets through official agencies promoting Brazilian goods and services outside. Moreover, government should privilege internal products and services of small companies in purchases. |

# 5. Final Considerations

This research has examined and discussed one of the components of the innovative capacity in Brazilian SME, the internal processes. We applied Hansen and Birkinshaw's (2007) framework of the innovation value chain in a sample of 24 SME.

The final considerations are:

The model may be not appropriate for very small companies. In these companies, the lack of resources and the strategy of survival are usual, so the process of innovation are minor. Very small companies are concerned about generating cash for the next payroll, sometimes in introducing the first product in the market;

If the focus of the analysis is the phase, it can lead to a misunderstanding because it considers the average of two or three questions in each phase and the average may hide extreme values. However, when considering each question separately, the model may provide better insights for propositions to managers and government to enhance the innovation capacity;

The framework is valid for a small sample of Brazilian SMEs. Moreover, it facilitates diagnosis and the proposition of actions; and

The results of this research cannot be transferred to other SME companies. We applied the Hansen and Birkinshaw's (2007) framework to a sample of SME in the electronics sector.

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