

Full Length Research Paper

Evaluation of the potential for innovation of businesses located in the State of Rio Grande Do Sul

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This article describes the results of research undertaken to identify the potential for innovation possessed by companies located in the State of Rio Grande do Sul, Brazil by analyzing internal, external, operational and strategic factors, the organizational structures, the cultural and the organizational values. The methodology used was to develop a structured questionnaire which was then distributed to seventy companies located in different cities and operating in different sectors. The information obtained from this research was classified and analyzed. The results of the analysis demonstrate that the greater part of the firms researched have only a moderate innovation potential and that it can be concluded that their industrial, commercial and service sectors have the same strong points and face the same difficulties.

Key Words: Potential, Innovation, Rio Grande do Sul.

INTRODUCTION

The opening of new markets and the constant technological improvement of production processes demands that companies invest in innovative research (Danilevicz, 2006). Introducing technological innovations can give competitive and strategic advantages to nations, companies and professionals in the short term, but the main challenge is to develop the capacity to innovate in order to remain competitive for the long haul. (Silva et al., 2009; Machado, 2007).

Schenatto (2003) considers that the competitive capacity of organizations depends not only on size or structure, but on the speed with which they are able to adapt to environmental and other changes and to keep ahead of them by foreseeing coming trends and creating markets for new products and services. Innovation is based on the process of knowledge because it creates new possibilities and combines ideas to make it possible to articulate and attend evident necessities. (Tidd and Bessant, 2005).

According to Cassiolato et al. (2005), the innovation process depends not only on the efforts of the organization, but also on the structure of the innovation system wherein it is inserted, because innovation systems may

interact in different ways, and these differences in turn, are linked with the economic environment, the orientation of public policies and patterns of specialization.

Weber and Jung (2012) hold that innovation systems may be complex because different levels of relationships exist between those involved, depending on the characteristics of each government, company or business. Freeman (1997) states that the innovation system is important for planning and defining the technology strategy of companies.

Danilevicz (2006) explains that in this increasingly competitive and technologically active market not all companies are benefited, as the clients demand ever more novelty and personalization which reduces the life cycle of products and requires the producers to have the a lot of capacity and flexibility to keep pace with market. Companies that do not structure themselves to these new market demands tend to stagnate and disappear. Innovation becomes an important part of the Company's administrative strategy, and although it is a critical factor in achieving or maintaining competitive advantage, little is known about how to identify the key incentivizing variables (Machado, 2007).

Siliprandi et al. (2012), consider that, starting from the diagnosis of the potential for innovation, it is possible to establish strategies and action plans to increase that potential in the companies studied, as well as to show that success in directing the process of innovation depends on many factors, all of which must be carefully balanced to determine the potential for success of the projects undertaken.

This present study describes the results of exploratory research undertaken to identify the potential for innovation possessed by seventy companies located in different regions of the State of Rio Grande do Sul, Brazil by analyzing internal, external, operational and strategic factors, the organizational structures and the cultural and organizational values.

The text is divided into five sections. Initially, the proposal for the research is presented in this introduction followed in Section 2 by a review of the theory of the concepts of innovation, of factors that are important for creativity and innovation and of the instruments used for diagnosis of innovation. Section 3 describes the methodological procedures utilized for the research, and Section 4 presents the results and the discussions. Finally, Section 5 provides concluding commentaries about the potential for creativity and innovation in the Companies sampled, and makes suggestions for further study.

REVIEW OF THE LITERATURE

Innovation

Machado (2007) defines innovation as that process by which an idea, an object or a practice is created, developed or reinvented.

Innovation can be associated with the improvement of existing products, or of expanding the family of products produced in the organization, or to penetrate new markets so as to open new business opportunities for the company (Danilevicz, 2006). In some cases, the innovations respond to internal needs of the organization, in others, the innovations add value for the buyers and are perceived by them as benefits or responses to their needs and desires, creating a competitive advantage over competing options, regardless of how these innovations contribute to optimize internal processes (Nodari et al., 2012.)

According to Kuczumarski (1998) the needs and problems arising in the marketplace should first be identified and then products and solutions created to meet the demand – this clearly calls for innovation. Kerzner (2002), elaborates on this by pointing out that in identifying opportunities for innovation, it is possible that the company may not be able to accomplish all that is required because of its own limitations (such as the availability and quality of resources etc). Therefore, among the opportunities identified, the company should select and prioritize what it can or should do.

The innovation process may also be initiated within the company by its engineering or product development departments, or even in sectors not usually involved in such activity (Danilevicz, 2006).

Porter (2004) states that innovation is a source of structural change in the industry, which according to his study may effect the product, the marketing or the process and may be introduced for the following reasons: (i) in the product, to expand the company's market share with consequent growth in its production levels or to enhance product differentiation – these changes may be initiated from inside or outside the industry, (ii) in the marketing, to attract new buyers or make the company's product pricing more competitive, and (iii) in the methods or manufacturing processes, innovation can reduce capital investment and/or the proportion of fixed/variable costs.

Porter (2004) also suggests that the company should broaden its vision of technological change beyond the boundaries of the industry and believes that the use of innovation to capture the best position may be the safest way, as long as strongly supported by management and aligned with the company's Business Plan. The ability to create great potential for innovation will depend on management policy, on strategic support for practical innovation and on the selection and training of employees capable of managing the process (Carvalho, 2010).

Important factors for increasing creativity and innovation

Dewes et al. (2011) state that the first step for creating innovative products is to develop and encourage creativity within the Company - only good ideas lead to innovations. This requires an operational environment that fosters the creativity of everyone in the Company.

Rothwell (1994) classified the important factors related to innovation at the corporate level and at the level of project execution. According to his study the important factors for the level of implementation of the project are: (i) good communication (internal and external) and access to external knowledge, (ii) consider innovation as a task of all, (iii) careful planning of the project (iv) efficient development and high quality production, (v) strong market orientation and emphasis on meeting the needs of customers, (vi) provide good technical service to clients, (vii) high quality, open-minded management, commitment to the development of human capital, and (viii) achieve synergies and learning in projects.

Also according to Rothwell (1994), factors important for the corporate level are (i) commitment and support for innovation, (ii) long-term corporate strategy associated with technology strategy, (iii) long-term commitment to major projects; (iv) flexibility and responsiveness to change, (v) risk acceptance at the corporate level and (vi) acceptance of a culture of innovation.

A study by Van de Ven, Angle and Poole (2000) analysis revealed concepts and interrelationships with innovation. These are (i) idea generation, (ii) results that

occur after the development of ideas, (iii) organizing people into groups, (iv) transactions inherent in the management of innovation, and (v) institutional context where innovations are developed.

A simple internal impulse is by no means sufficient for a creative idea to take off, because the environment where the individual develops his /her activity determines the future of the idea – to prosper and succeed or to remain just a good idea. Ideally the environment should provide freedom of choice and action, not only for the success of one idea but also to stimulate the general creative potential (Dewes et al. 2011). Machado (2007) mentions that it is important to give freedom for employees to express doubts and openly address conflicts. The challenge is to create an environment favorable to the development of creativity in all the employees and make those who are already creative even more productive of good ideas. Additionally the company, rich in resources, should also have the capacity to transform and evolve (Dewes et al. 2011).

Tools to diagnose Innovation

In the literature, tools for assessing innovation configurations are described which, based on the innovations existing in a particular company or organization, are capable of classifying and analyzing how they were created and what forces influence them. These tools can be used to measure the innovation potential of organizations. Models can also be used to support innovation, listing the factors involved in modeling an innovation. Some of the tools which contributed to the development of this present work are described below.

Rothwell (1994) describes the generations of innovation models and lists the factors related to innovation, ranking them at the corporate level and at the level of project execution, noting that the process of innovation depends on internal and external factors, and that it is necessary to learn and understand the process to be innovative.

The Minnesota Innovation Research Program (MIRP) is a program designed at the University of Minnesota that utilizes a methodology called “Minnesota Innovation Survey (MIS)” in order to make detailed studies of different innovations to investigate categories or variables that describe the innovations, how they are incentivized and what forces influence them. This tool uses a questionnaire with 83 questions that are answered using a 5-point Likert scale and also has some discursive questions. This methodology is used in different sectors, and has also been adapted, as is demonstrated in the works of Machado (2007), Depine (2012), Carvalho (2010), Barzotto (2008), Vicenti (2006), Ropelato (2010).

Siliprandi et al. (2012) developed an instrument for the diagnosis of the innovation potential from research in the literature but with new topics added, which groups 19 questions on internal factors, external factors, operational factors and post-development factors, which are to be

answered using a Likert scale. This research demonstrated the importance to be given to all the factors involved with innovation, as this will determine the success potential of the innovations undertaken, which could contribute to business competitiveness.

Carvalho (2010) sought to identify those conditions that are present in organizations capable of generating an environment conducive for innovation, using two research instruments with closed assertions that were applied in a small business.

MATERIALS AND METHODS

Structure

The research was performed by 126 professionals in 70 companies located in the State of Rio Grande do Sul, which is divided into 28 Regional Councils called *COREDES* to facilitate harmonious and sustainable regional development and integration of resources and government actions in the regions (Seplag, 2012). The 70 companies studied belong to the *COREDES* of Hortênsias, Litoral, Metropolitan Delta do Jacuí, Paranhana, Encosta da Serra, Sul, Vale do Caí e Vale do Rio dos Sinos (Table 4).

The companies analyzed differ in size, years in business, areas and sectors of activity - 55.6% are in the industrial sector, 6.3% are from the commercial sector and 38.1% operate in the service sector (Table 1).

For the convenience of the researchers interviewed 126 professionals who worked in the companies and study at two higher education institutions were interviewed - one located in Porto Alegre and another in the city of Taquara. In some of the firms more than one employee responded to the survey instrument, but as they performed different functions and have worked for different periods, all the responses received were considered and analyzed as described in the next section.

Methodological procedures

The methodological approach used for the realization of this study involves three stages of which the first is the development of a questionnaire based on bibliographic research in periodicals on models and innovation research realized.

Based on papers selected from the literature, it was possible to determine the important factors in the innovation process. Topics and similar question were identified and classified/grouped into six different “constructs”, in accordance with the degree of similarity amongst them (internal factors, external factors, operational factors, strategic factors, organizational structure, culture and values so as to avoid having redundant questions. Each construct has 4 or 5 issues, making up a survey instrument with 26 closed questions. The answers to these questions provide a means of evaluation of the potential for innovation in the companies.

The instrument thus developed features easy application, balance and comprehensiveness of the items studied, as well as providing useful results, that may identify actions, increase the potential for innovation, and consequently perfect the innovation process.

Also included in the questionnaire were questions regarding the year of foundation of the company, number of employees, area, sector and position of the respondent, years working for the Company, and the organization name and its location (Table 2 and 3). These questions were included for further stratification of the information obtained, but the names of the participating companies will not be published in this article.

Internal factors included questions about the company’s policy

Table 1. Classification of the companies by area of activity.

Category	Percentage
Industrial	55.56
Commercial	6.35
Services	38.10

Source: Primary

Table 2. Classification by the respondent's work area.

Respondent's work area	% of the companies
Production	19.84
Engeneering	20.63
Administrative	54.76
Information technology	4.76

Source: Primary.

Table 3. Length of time respondent works with the company.

Time (years)	Percentage of the companies
Less than 1	15.87
From 1 to 5	50.79
From 6 to 10	22.22
More than 10	11.11

Source: Primary.

innovation-oriented leadership, on management attentiveness to the needs of the market especially the use of practices to promote innovation, use of temporary autonomous teams dedicated to the project, the selection criteria for projects defined through specific techniques, and the use of market/client feedback tools to verify that the company's R&D sector is adequately aligned with the market where it operates.

External factors questioned were: does the firm receive Government support in the sense of understanding and supporting the organization; do Universities help in R&D and in establishing strategies for the development of the local region; do Suppliers work with the company on quality and flexibility, strengthening and aiding innovation; does the company use external consultants to protecting its knowhow, to obtain financing, to understand regulations or to form strategic alliances.

The construct Operational Factor researched the conditions of the infrastructure of the R&D department in order to determine the need for support (in terms of machinery, equipment, physical space, and software) for the innovative activities. Also questioned the Financial Structure to verify whether the company has capital available for innovation or whether it depends on investment or financing; analyzed the situation on human intellectual capital in the context of obtaining, developing and maintaining the team. Furthermore, in the scope of operational factors are the practices of innovation such as the use of tools of relationship with the client that generate knowledge through the lessons learned.

The fourth construct, called Strategic Factors, involved questions

about the company's strategies to correct deficiencies in knowledge; the actions to protect intellectual capital; the existence of challenging targets proposed by the administration; and management that shares knowledge and operates with transparency and leadership.

The organizational structure is the fifth group of questions, and was analyzed by questions about the use of multidisciplinary groups to develop the team of employees and the organization itself; debating lessons learned and the documentation for each project, which can help increase the maturity of the company in the execution of projects; the existence of a method for solving problems and depositing patent applications which permits the company to be a leader in the market for innovations.

The sixth and final construct deals with the organizational culture and values, and was made up of questions that asked about the pride of the employees working in the organization, which can be determined through internal research, for example, the quest for learning and personal development of employees of the company; valuation of the capacity of innovation, that is, does the company encourages new activities and the exercise of trial and error; the existence of systems for generating ideas for improvements whether directed at their own work, or to the development of new products, processes or safety and if the results obtained are recognized and shared.

The instrument evaluated the situation of the company via the constructs analyzed, using a five-point Likert scale, which comprises at its lower limit the employee's complete disagreement with the factor in question (1 point attributed) and at the upper limit his/her total concordance with the factor (5 points attributed).

In this instrument it was found initially that a binary question (yes/no) existed, where the question to be answered, for example, for the leadership factor, is the following: "Does leadership oriented towards innovation exist in the Company?". If the reply is negative, tick the option "totally disagree" and proceed to the next question. If the reply is positive another question needs an answer: at what level does this factor exist in the Company at present (from 2 to 5 points)? As a general orientation, based on the methodological principles proposed by Silliprandi et al. (2012), a Company that receives points less than 50% of the total points possible, is considered to have a poor potential for innovation, while another Company that got between 50% and 75% would be classified as having moderate potential and one with more than 75% as of high potential.

The second step in this process was the application of the research instrument to students in undergraduate or post graduate courses in business administration, accounting, information systems and manufacturing engineering. These students are employees of the companies and study at night or on weekends.

When the questionnaires had been completed with the professionals, the responses were entered into a spreadsheet, and then categorized and interpreted, generating results that are organized, which are presented in section 4. This was the third and final stage of this methodological procedure.

RESULTS AND DISCUSSION

Description of sample analyzed

This research sought to identify what factors the companies have already developed and which aspects are most deficient in relation to the potential for innovation. To do this the researchers diversified the companies and the professional respondents, asking qualitative questions in order to verify the sector where the respondent is employed, how long she/he has been with the company, the area of operation of the companies studied, among

Table 4 . Quantity of questionnaires by COREDE.

COREDE	Cities with Companies researched	Quantity of questionnaires
Hortênsias	Canela, Gramado, São Francisco de Paula	9
Litoral	Capão da Canoa	1
Metropolitano Delta do Jacuí	Gravataí, Santo Antônio da Patrulha, Porto Alegre, Alvorada	40
Paranhana Encosta da Serra	Igrejinha, Parobé, Rolante, Riozinho, Taquara, Três Coroas	42
Sul	Pelotas	6
Vale do Caí	Montenegro	6
Vale do Rio dos Sinos	Campo Bom, Canoas, Nova Hartz, Sapiranga, Novo Hamburgo	22

Source: Primary.

Table 5. Classification of the companies by their potential for innovation.

Classification by potential for innovation	Percentage of companies			
	Commerce	Industry	Service	General
Low	25.00	1.42	12.50	7.14
Moderate	50.00	74.29	58.33	66.67
High	25.00	24.29	29.17	26.19

Source. Primary

others.

There are a classification in accordance with their potential for innovation of the companies (Table 5). Here a note below 50% indicates a low potential, between 50% and 70% moderate potential and above 75% high potential for innovation, as suggested by Siliprandi et al. (2012).

More than half of the companies have a moderate potential for innovation, demonstrating that some actions or conditions conducive to innovation have been taken, but that there is still room for improvement.

As for the potential for innovation of the companies evaluated, (which is represented by the percentage of points earned to total points possible), the spread is very wide, because the lowest potential found was a company in the service sector which obtained only 21.54% of the total points possible, and that which received the best evaluation is a company in the industrial sector which reached 92.31% of the possible points.

Analysis of the results

The researchers first observed that each one of the 26 questions was answered with 1, 2, 3, 4 and 5, indicating that there is no single factor that is already fully developed in all the companies or any factor that is

unknown to them. The standard deviations of the scores for each question were close, the lowest value being 0.86 for the question “Does the company have good intellectual human capital” and the highest, 1.20 for “The Company has an adequate infrastructure for R&D”. These two questions are part of the Operational Factors construct.

Verifying the average score of all reviews for each set of proposed questions, it can be seen that there is no single factor that stands out on its own because the reviews were close to the intermediate note (3 points) and all the questions obtained a evaluation between 1 (lowest) and highest (5).

When the averages of the constructs are arranged from the highest to lowest, it can be seen that the different sectors have practically the same strong points and the same difficulties – this is because the industrial and service sectors have the same classification, which is (i) Operational Factors, followed by (ii) Organizational Culture and Values, (iii) Strategic Factors, (iv) Internal Factors, (v) Organizational Structure and, finally, (vi) External Factors. The classification of the constructs for the commercial sector is similar, except that “Internal Factors” and “Organizational Structure” are inverted.

In addition, Table 6 demonstrates the overall average for the sectors was 3.37 for the industrial sector, 3.34 for

the service sector and 3.05 for the commercial sector. Although industry has obtained the highest average, the Variance Analysis (ANOVA) using SPSS and considering the average of the 26 questions showed no significant difference between the three sectors (p -value = 0.39 > 0.05). Therefore, no sector is more innovative than the others.

Industrial Sector

Analyzing the industrial sector it can be seen that the greatest standard deviation between the notes was 1.23 for the question "*Does the company have an adequate infrastructure for R & D*", and the lowest standard deviation was 0.78 for the question "*The company has good human intellectual capital*", showing that a large number of companies stand out from the general average, and that these two questions pertain to the Operational Factors construct. The highest average was for the question "*Top management often establishes challenging targets*" with 3.87, while the lowest was 2.44 for the question "*The Company receives support from the university*," from the constructs Factors Strategic and External Factors, respectively.

Almost all the questions were scored 1, 2, 3, 4 and 5, demonstrating once again that there is no fully-developed factor in any of companies and that there are no factors unknown to the firms. But to the question "*The Company receives support from the university*" no-one replied "strongly agree", showing that the industrial sector and the academic environment need closer contact. Also, to the questions "*The processes and projects of the company are well documented and useful for organizational learning*" and "*Experimentation is encouraged, there is freedom to try and fail, innovation is highly valued in the organization*" no "strongly disagree" answer was received demonstrating that among industrial organizations these two aspects are already active.

Among the industries studied, the organization that presented the greatest innovative potential is a food-industry company located in the COREDE *Paranhana Encosta da Serra*. This company was founded in the year 2000, and although it has only 90 employees they reached 92.31% of the possible research points - the highest score among those all who participated in this research. Another company located in the same COREDE which earned only 47.69% - and was the one classified as weak in innovation potential - is a footwear company with about 3500 employees and 50 years of activity. These two examples show that seniority and number of employees have no direct relation with innovation potential.

Commercial Sector

In the analysis of the evaluations of the commercial sector the research uncovered considerable differences

between the responses to the question "*Is there a leadership in business-oriented innovation*" from the Internal Factors and obtained a standard deviation of 1.36. The smallest standard deviation was 0.48 for two issues: "*The Company has adequate financial structure*" and "*Experimentation is encouraged - there is freedom to try and fail. The capacity for innovation is highly valued in the organization*", from the Operational Factors and Organizational Values and Culture, respectively.

The highest average in the commercial sector was for the question "*Does the company have adequate financial structure*", receiving only answers "agree" and "strongly agree", demonstrating that respondents recognize the importance of the financial organization of the Company where work. The lowest average was for the question "*The company deposits its patents*" with only 2.25 (highest score 3), neither agree nor disagree, demonstrating that employees perceive that the Company has little or no interest in the process of patenting.

Only 1 of the 26 questions, "*Senior management leads by example and is very effective in sharing knowledge and acting with transparency*" received the five notes 1, 2, 3, 4 and 5 - the others did not receive any of this level of assessments at all. One possible reason for this situation is the fact that the commercial sector is represented by only 8 companies in this research. Also in this analysis, one should stress the questions "*The company has adequate financial structure*" which received only the answers "Agree" and "Strongly Agree", and "*The Company has adequate financial structure*" and "*Experimentation is encouraged - there is freedom to try and fail. The capacity for innovation is highly valued in the organization*" which got only "I neither agree nor disagree" showing conformity among the respondents as to the Companies concern in developing these items.

In the commercial sector the company with the greatest innovative potential - 75.38% of the possible points - is located in *Paranhana Encosta da Serra*, COREDE and is a building materials store, with more than 40 years of existence and 80 employees, while the company with the lowest potential for innovation - 40.77% - is a paint material deposit employing 24 collaborators and is located in the *Vale do Rios dos Sinos* COREDE.

Services Sector

In the service sector, the greatest standard deviation between the notes was 1.32 to the Internal Factors construct question "*The company receives government support*" while the lowest standard deviation was 0.87 for "*It is expected that the people in the organization shall be very proactive in the pursuit of learning and personal development*", belonging to the Organizational Culture and Organizational Values construct. This same issue received the highest average, 4.04, indicating that the respondents know that the Company expects this attitude from its human resources. Finally, the lowest average in

Table 6. Analysis by question and sector.

Construct	Question	Industry			Commerce			Service		
		Standard Deviation	Average	Average of the construct	Standard Deviation	Average	Average of the Construct	Standard Deviation	average	Average of the construct
Internal Factors	Leadership oriented to innovation exists in the company	0.86	3.73	3.36	1.36	3.13	2.84	1.2	3.67	3.27
	Temporary teams are used constantly, with wide autonomy dedicated to innovative projects.	1	2.86		1.3	2.75		0.98	2.85	
	Criteria for the selection of promising projects exist in the company	1.12	3.19		1.11	2.38		1.15	3.19	
	The Company uses tools to receive feedback from the market/clients	1.02	3.69		1.05	3.13		1.15	3.38	
External Factors	The Company receives Government support.	1.04	2.83	2.97	1.09	1.75	2.34	1.32	2.89	2.99
	The Company receives support from Universities.	0.98	2.44		1.12	2.00		1.15	2.72	
	The Company receives support from suppliers.	0.98	3.16		0.93	3.13		1.04	2.94	
	The organization utilizes external consultants to distribute knowledge internally and to protect its own knowledge.	1.1	3.46		1.12	2.50		1.2	3.43	
Operational Factors	The Company has adequate an R&D structure	1.23	3.20	3.58	1.32	3.00	3.66	1.13	3.19	3.66
	The Company has adequate financial structures,	1.11	3.70		0.48	4.38		1.02	3.73	
	The Company has good intellectual human capital.	0.78	3.76		0.86	3.63		0.95	4.02	
	One of our practices for innovation is to discover exactly how our clients use our products	0.79	3.64		0.7	3.63		1.06	3.69	
Strategic Factors	Knowledge deficiencies are identified and strategies are developed to correct them.	0.89	3.34	3.53	0.5	3.50	3.25	0.93	3.38	3.39
	The organization takes proactive steps to protect its intellectual capital (via patents copyright, business secrets etc.)	1	3.37		1.12	3.00		0.96	3.21	
	The top administration of the Company frequently establishes challenging targets.	0.81	3.87		0.99	3.38		1.21	3.56	
	The Company's top administration leads by example and is very efficient in sharing knowledge and acting with transparency.	0.82	3.53		1.17	3.13		1.26	3.42	
Organizaciona I Structure	Formal Multidisciplinary teams that take precedence over the traditional formal structure and hierarchy are used constantly.	1.03	3.04	3.23	0.97	2.75	2.88	1.06	3.00	3.06
	All Company projects/initiatives include a formal stage dedicated to a discussion of lessons learned and to document them.	0.93	3.19		0.86	2.63		1.03	3.25	
	The Company's processes and projects are well documented and useful for organizational learning.	0.85	3.43		1.09	3.25		1.09	3.25	
	The organization has well-established and widely-disseminated systems for problem solution, generation of ideas etc.	1.05	3.43		1	3.50		1.07	3.19	
	The Company deposits its patents.	0.96	3.04		0.83	2.25		0.9	2.63	

Table 6. Contd.

Organizational cultura and Values	"Confidence between the Company and its employees is strong, and in general, people are very proud to work for the organization"	1.02	3.49	3.53	0.5	4,00	3.33	1.06	3.69	3.64
	It is hoped that people in the organization are very proactive in seeking learning and personal improvement.	0.85	3.90		1.11	3,63		0.87	4.04	
	Experimentation is encouraged. Freedom to try and fail exists. Capacity to innovate is valorized in the organization..	0.5	3.56		0.48	3,38		1.08	3.56	
	The majority of people in the organization contribute with ideas for improvement (in processes, products, security, relationships with clients etc.)	1.05	3.39		1.05	2,88		1.02	3.52	
	Results obtained from sharing knowledge are publically recognized.	1.11	3.34		0.83	2,75		1.13	3.40	

Source. Primary.

this sector was 2.63 for the question "*The Company has realized patent deposits*" because service companies still do not have much interest in formally registering their innovations.

Only two questions did not receive any 1, 2, 3, 4 and 5, ratings. These were "*It is hoped that people in the organization are very proactive in the pursuit of learning and personal development*" and "*The vast majority of people in the organization contribute ideas improvements (in processes, products, safety, customer relations, etc.)*". These questions, both from the Culture and Organizational Value construct, received notes in the range of 2 to 5.

In the service sector the company that got the highest innovative potential evaluation - 89.23% - was an Educational Sector organization located in the *Paranhana Encosta da Serra*, COREDE while the firm with the lowest potential obtained only 21.54% of the possible points – this latter is a Communications Sector company founded in 2007, which has about 250 employees and is in the *Delta Jacuí Metropolitan* COREDE. This was the lowest evaluation of all the companies surveyed.

The process of innovation of services is a field of study that has not yet been adequately explored

in the literature dealing with innovation, because while the process of innovation and, especially, technological innovation, has been studied since the 1930s, research on innovation in services only began in the mid-1980s (Nodari et al. 2012).

Discussion of the Constructs

The Operational Factors appear as the constructs most developed amongst the companies, including, for example, Intellectual Capital, Financial Structure, Research and Development and good innovation practices. Leifer et al (2002) explain that those organizations that manage to attract, develop, reward and retain the human resources that execute innovation, and that also possess skills, knowledge, talents, and an efficient infrastructure to support innovation and technology, have a corporate setting appropriate for promoting innovations.

With an average evaluation of 3.56, Culture and Organizational Values was the second most developed construct in the companies studied. For Leifer et al., (2002), one of the greatest executive contributions towards progress in innovation within a Company is to adapt the

organizational culture so as to make innovations acceptable and valued, whereas Heskett (2007) considers that the most important element for promoting organizational values and a culture focused on innovation, is to have in the leadership at all levels, people who are courageous enough to face the critics.

Strategic factors were placed third with an average score of 3.46. This can be improved by company action to develop an environment which facilitates the development of creativity of the entire organization, so that it becomes a new entity with the capacity to evolve and transform (Dewes et al., 2011).

Fourth was the Internal Factors construct, with an average of 3.3, which number demonstrates either that the companies still do not have a leadership oriented to innovation, or that it lacks procedures to select promising projects. Companies could also use feedback from the market or the company’s clients or temporarily maintain teams devoted exclusively to innovation projects. The Organizational Structure construct received an average grade of 3.14, for a fifth place. Carvalho (2009) state that organizational structure can facilitate the dissemination of knowledge, but it is not possible to say which structure is best

suited for organizations that desire to innovate. According to Cassiolato and Lastres, (1999), so that there may be a focus on learning, it should first be recognized how important innovations are to the development of nations, regions and institutions, and that innovation and learning processes depend on interactions, which in turn are strongly influenced by external factors. In this research Organizational Structure received on average the lowest evaluations with a result of 2.94. The production of innovations cannot be attributed exclusively to a set of skills and people's personality traits, but also to the influence of social and cultural factors in the environment where they live and work (Alencar and Fleith, 2003).

The low score of the external factors demonstrates explicitly the importance of an organized innovation system, and to create such a system the Company should be able to rely on Government leadership and on the ability of the people involved to strengthen the efforts and participation of industries, research centers and universities (Weber and Jung, 2012).

Tang (1998) explains that the type, quality and quantity of innovation in the organizations depends on their external environment, and that changes in that environment can encourage organizations to innovate, because an external environment that has social and cultural norms favorable for innovation is likely to produce more innovative and entrepreneurial organizations. Van de Yen (1993) argues that the performance of an organization as regards innovation is determined both by its internal factors and by its innumerable relationships with the external system. For Tang (1998) if an organization is highly stable and undemanding, is unlikely to be innovative because innovation often results from market, competitive or other challenges. The nature of the operations in an organization often depends on how it responds to the challenges presented by the external environment. Weber and Jung (2012) add that innovation remains a major challenge for businesses, and that government and universities can make important contributions.

CONCLUSION

The objective of this study is to analyze the potential for innovation in companies located in different regions of the State of Rio Grande do Sul, considering internal factors, external factors, operational factors, strategic factors, organizational structure, culture and values.

Based on the literature, we identified factors that influence the innovation process and then structured an instrument to check the innovation potential of the organizations. This instrument contained 26 quantitative questions with answers using the Likert scale scored from 1 to 5. Included were questions that made it possible to classify the organizations by operational area, location, number of employees, among others. The

questionnaires were sent to organizations in 70 different cities and the data provided in the answers received was organized, analyzed and interpreted.

Classification of the construct averages by sector was distributed in the following order - from the highest to the lowest note: (i) Operating Factors - Industry 3.58; Commerce 3.66 and Services 3.66 (ii) Culture and Organizational Values - 3.53 for the Industry; 3.32 in Commerce 3.64 in Services, (iii) Strategic Factors - Industry 3.53, Commerce 3.25 and Services 3.39; (iv) Internal Factors - Industry 3.36, Commerce 2.84 and 3.27 in Services, (v) Organizational Structure - Industry 3.23, Commerce 2.87 and 3.06 and Services (vi) External Factors - Industry 2.97, Commerce 2.34 and Services 2.99. Because the three factors have practically the same distribution sequence (except that Internal Factors is the 5th and Organizational Structure is the 4th, while these two positions are reversed in the other two sectors), it appears that the problems and opportunities are similar for all the organizations studied, regardless of the sector they belong to. Moreover, as there are no significant differences between the industrial, commercial and services sectors it is not possible to say which sector is the most innovative of the three.

The analysis also showed which companies obtained the highest and lowest innovation potential among the sectors. Those that received the best ratings were: (i) - Industrial - a company in the food sector which got 92.31% of the possible points, (ii) Services - an education organization received 89.23% notes, (iii) Commercial - a shop selling construction materials with 75.38% of the points. Among the companies with poor innovative potential, the following received the lowest ratings: (i) Services - a communication industry organization obtained only 21.54% of the possible points, (ii) Commercial - a building materials supply company that got 40.77%, (iii) Industry - the only industry classified as having a weak innovation potential is a footwear company that obtained 47.69%. It is not possible to determine whether organizations that have more employees and/or are longer in the market have greater potential for innovation than smaller and less experienced companies.

Some suggestions for increasing the innovation potential were received, for example, that organizations should seek help from universities, government, suppliers and/or consultants. These institutions (which in this study are part of the External Factors construct), can support innovation through partnerships in research and development, by the realization of tests and access to specialized laboratories, by supplying skilled labor and establishing innovation incentives. From the government firms can seek specific funding for research and innovation, suppliers can assist in product development through partnerships guaranteeing attention to the needs of the end client, and the knowledge possessed by external consultants can help to protect and disseminate

knowledge within the organization. These are some opportunities for companies to improve their innovation potential – it has been demonstrate above that most of the companies studied (66.67%) have only moderate potential for innovation.

The Operational Factor construct is also important for the Companies: this is the topic most developed in the organizations studied and which originated the highest notes. Therefore, it is important that companies maintain an adequate Research and Development Structure, in addition to a solid Financial Structure and adequate human intellectual capital. Research designed to analyze how the clients utilize the products can provide important information to create and execute innovations.

Finally, the importance of on-going studies designed to develop organizations is obvious and can best be achieved by developing tools or models - applicable to the three sectors - designed to develop the factors that stimulate innovation and consequently, raise the innovation potential of organizations.

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Appendix A

Dear Sir or Madam,

This instrument forms part of a research project designed to contribute to a diagnosis of the factors that contribute to the process of Innovation in organizations.

Please tick the alternative that best expresses the present situation in your organization

The information provided will not be made public with the name of the Company.

Please complete the questionnaire as clearly as possible.

Thank you for your participation.

Name of the Organization/Company: _____
 Location of the Organization (City) _____
 Type of Organization/Company: () Public () Private
 Year founded: _____ Number of employees: _____
 Area of activity: () Industrial () Commercial () Services
 Position occupied in the Organization/Company: _____
 City where resident: _____
 Time working for the Company: _____

1. Internal Factors	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally Agree
Leadership oriented to innovation exists in the Company					
Temporary teams are in constant use, have great autonomy and are totally dedicated to innovative projects.					
The Company has criteria for the selection of promising projects.					
The Company uses tools to obtain feedback from the market/clients.					
2. External Factors	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally Agree
The Company receives support from the government.					
The Company receives support from Universities.					
The Company receives support from suppliers.					
The organization utilizes external consultants to bring in knowledge and disseminate it within the Company and to protect the organization's own know-how.					
3. Operational Factors	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally Agree
The Company has an adequate R&D structure.					
The Company has an adequate Financial Structure.					
The Company has good human intellectual capital.					
One of our innovation practices is to find out how our clients really use our products.					

4. Strategic Factors	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally Agree
Deficiencies of knowledge are identified and strategies are developed to correct them.					
The organization is proactive in protecting its intellectual, capital (via patents, copyright, business secrets etc.).					
The top administration frequently establishes challenging targets.					
The top administration leads by example, is very efficient in sharing knowledge, and acts transparently.					

5. Organizational Structure.	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally Agree
Formal multidisciplinary teams that are superior to the formal and hierarchal structure are in constant use					
All Company projects/initiatives include a stage where lessons learned are discussed and documented.					
The Company's processes and projects are well documented and useful for learning about the organizational.					
The organization has well established/disseminated methods for problem solution, generation of ideas etc.					
The Company deposits its patents in accordance with Law.					

6. Culture and Organizational Values.	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally Agree
"Strong sentiments of confidence exist between the organization and the employees and, in general people are proud to work in the organization."					
It is hoped that people in the organization will be very proactive in seeking learning and personal improvement.					
Experimentation is encouraged. Employees have the liberty to try and fail. Capacity for innovation is highly valued in the organization.					
The great majority of people in the organization contribute with ideas for improvements (in processes, products, relationships with clients, etc)					
The results obtained from the sharing of Knowledge are publically acknowledged.					