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# THE PROCESS OF FILING PATENT APPLICATIONS IN THE VIEW OF ICT INVENTORS

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## ABSTRACT

This article analyzed the patent files of the National Commission of Nuclear Energy, CNEN, at the National Institute of Industrial Property – INPI (U.S. Intellectual Property Commission – CIPC). The following institutions were considered: the Institute for Energy and Nuclear Research - IPEN and the Nuclear Technology Development Center. The process of patent requests, under the view of ICT inventors, was verified. From these results, an increase in the register requests was found, with a stable number of inventors. Hence, it is worth highlighting the necessity to strengthen the dissemination of the legislation, as well as to show the advantages the Inventor would have by presenting a curriculum with many patents.

**Key words**

Innovation, patents, intellectual property

## 1. INTRODUCTION

The real value of a corporation, says Quim (1992), it is not in its physical resources, but in human competence. Pointing to the same direction, the research of E-Consultong (apud Raja, Hugo, Lucena Ano), mentions that the value generated by intangible assets, like knowledge, in the next decade will

exceed the value of the tangible assets in the Brazilian society, transforming the current relation 20% - 80% to 65% -35%. In the 70s, this ratio was 95% -5, i.e., tangible assets such as buildings and financial resources; products and equipment were what valued mostly in an organization. The increasing importance of knowledge as an economic asset and competitive differentiator is already a fact, what has led companies to invest, increasingly, in the practice of how to manage it, Gimenes, 2010.

The innovations and implementations of technologies suggested by the own employees should be encouraged by entrepreneurs. The structure, management practices, presence of a policy of rewards for successful ideas and the culture of the organization provides an environment that motivates employees to a greater commitment to the company goals, stimulating their innovative behavior and providing a greater competitiveness for the organization, Carrier, 1996.

Besides competitiveness, innovative organizations gain in: reputation, strategic positioning, standards definition, learning curve, institutional barriers, initial earnings and advantage in the access to scarce resources, Porter, 1989. Therefore, organizations seek to adapt to the current context, incorporating new processes, techniques and management models into their internal environment.

In this context, the technological innovation in enterprises has showed to be an essential factor for the maintenance of their activities and for the growth and development of the country. The Oslo Manual (OECD, 2004) says that the improvement in existing products or processes is also an act of innovation. To be considered innovative technologically, according to this manual, the product or process needs not to be unique in the world, but simply in the company where it is being applied.

The innovation process requires various types of technology and knowledge from different sources, including industry, companies, laboratories, research and development institutes, academic field and consumers, according to Hsu, 2005, apud Amadei, 2009.

As stated by Zouain, 2003, the global market inserts in the context of companies, aiming their competitiveness, a greater demand for products and services of high quality with intensive knowledge and innovation; hence, it is necessary to discuss the role of the different participants (companies, nations and regions) in the impact of this innovation.

Concerning Brazil, due to the lack of tradition, need and motivation of companies to invest in technological development, there are few organizations that have their own R & D structures. Collaboration with universities and research institutes is a feasible alternative, faster and cheaper than assembling and hiring specialized professionals from various fields of knowledge, Sbragia, 2006.

Observing the evolutionary process, it is noteworthy that the country's efforts in innovation are made, predominantly, by the public sector that, despite the difficulties, has achieved results in the formation and development of high-level human resources, allowing competitiveness to be maintained.

In Brazil, the innovations are mainly governed by the laws 9279/96 - Trademarks and Patents, 9.456/97 - Cultivares, 9606/98 - Software and 9619/98 - Copyright, besides international treaties, such as the Berne Convention on Copyright, the Paris Convention on Industrial property and other agreements such as TRIs - Trade Related Intellectual Property Rights. It is, also, a constitutional precept among the Fundamental Rights and Guarantees, observed in the items XXVII, XXVIII and XXIX, in agreement with sections XXII and XXIII, Article 5$^{th}$ of the Federal Constitution.

The National Institute of Industrial Property - INPI is the Brazilian agency responsible for trademarks, patents, industrial design, technology transfer, geographic indication, software and integrated circuit

topography. The National Library, located in the state of Rio de Janeiro and its State Copyright Offices is responsible for intellectual and artistic work entries and registration.

According to an article published in Época magazine, the institutions that mostly registered patents in Brazil, from 2000 to 2008, were: Petrobras: 535; Unicamp: 446; USP: 312; UFMG: 218; FAPESP: 211; whirlpool: 205; Semeato: 200; UFRJ: 177; Vale: 138 and CNEN: 101.

That article asks the question: Will Brazil ever be among the most innovative countries in the world? Attention to the subtleness: it is not just being an imaginative partnership, capable of having original ideas (what is already very good). Nor is it just that we are a society of creative people and organizations, capable of having such original ideas and turn them into reality (what is even better).

It is related to give another step - to have original ideas, turn them into reality and do it with regularity and market vision. The result may be in the form of an oven capable of cooking food in steam, new forms of administering anti-tuberculosis drugs or a system permitting planting while protecting soil from erosion and depletion of fertility. These real advances resulted in patents for Brazilians in recent years and are examples of what is creatively produced and potentially profitable in the country.

One of the key indicators to measure this progress is the number of patents registered by Brazilians. It grew by 32% over the first decade of this century, according to a survey by the National Institute of Industrial Property - INPI.

It is a significant advance, but insufficient for the country to be taken seriously as a global innovative strength. Petrobras and Unicamp lead the list of the 50 most innovative organizations and with the highest number of inventors. The survey does not include patent applications filed by foreigners, which correspond to a total of 60%. Patents until 2008 (the previous survey covered up to 2003) and partial data from 2009 to 2011 are evaluated. The delay occurs because patent applications take between 18 to 30 months to be analyzed. The study shows some innovative trends in Brazil:

• the number of patents applied for by enterprises grows more slowly than that of universities and research institutions, which gain importance. Among the top ten patentees, there are four universities (UNICAMP, USP, UFMG, and UFRJ) and a federal agency that, also, conducts research (CNEN, National Nuclear Energy Commission). In the previous survey, there were only two entities of the kind;

• small business inventors gain prominence. For 11 years, they have been among the top 50 patentees;

• agribusiness shows its creative side. There are three companies in the sector among the ten companies registering most patents: Semeato, Jet and Embrapa.

The objective of this paper is to present, in a simple way, the process of drafting patent applications, from the perspective of ICT Inventors, with the backdrop of legal instruments.

## 1 METHODOLOGY

This work was developed under the framework of an exploratory research, constructed from literature survey, structured and recorded interviews with the consent of the respondents, with descriptive objective and qualitative approach. The bibliographic references were researched in journals, books, theses and articles available in indexed databases and government websites.

The field research for qualitative data collection comprised interviews with inventors who had filed more patent applications, as reported by the Center for Technological Innovation - NIT, Institute for Energy and Nuclear Research - IPEN and Nuclear Technology Development Center - CDTN. The interviews were conducted at IPEN, face to face with the interviewees and recorded with their consent. Subsequently, the contents of the recordings were listened to and transcribed into a Word document. As for CDTN interviews, the questions were sent and received back via e-mail. The transcribed material of each interviewee has become firsthand documentation.

The semi-structured script was built on fundamental questions about the Inventors perception concerning the difficulty or facility for filing patent application.

After written, the questionnaire was tested on one of the technologists, who has patent application filed in IPEN, for the analysis of the adequacy and sufficiency of its arguments for the purposes of this study, as well as to verify whether the statements and questions were clear to the inventors.

The questions that were part of the semi-structured text, with a total of sixteen (16) questions, were organized into four (4) dimensions to give coherence to what is being investigated followed by the analysis of the responses:

**Block 1: knowledge of the legal text**

01. Are you acquainted with Law 9.610/1998 dealing with Copyright in the academic field (researchers / technologists)? If yes, how were you aware of it? If not, what was missing to know?

02. Do you think you are sufficiently informed about this law?

03. Do you know Law 10.973/2004, which provides incentives for innovation in the academic area (researchers / technologists)? If yes, how did you hear about it? If not, what would be missing to know?

04. Do you think you are sufficiently informed about this law?

05. Did the Innovation Law 10.973/2004 help you file the patent? If yes, in what aspects? If not, speak about it.

**Block 2: the patenting process experience**

06. What was your adopted procedure to file your patent application(s)?

07. How do you evaluate these procedures? Were they facilitated? Were they made difficult? Why?

08. Are you aware of the current structure and procedures at IPEN / /CDTN and CNEN for the registration of patents?

09. The corporation structure and existing procedures facilitated the execution of the patent application? If yes, related to what? If not, what could be done?

10. Have the development agencies given any type of support or stimulation for your patenting applications?

**Block 3: motivations**

11. Regarding your patent applications, who had the initiative of registering: you or your partner? Why?

12. What motivated you to patent?

13. What incentives could be established?

14. What aspects discourage to file a patent registration?

15. What were your personal and professional goals to file your patent application(s)?

**Block 4: Additional information**

16. What recommendation would you make to the firm so that this process could be improved?

Research scope

In the present study, ten (10) inventors, with the largest number of patents filed, were interviewed: eight (8) from IPEN and two (2) from CDTN, as described below:

| Interviewee | Institution | Academic background | Title | Position | Experience |
|---|---|---|---|---|---|
| E1 | IPEN | Mechanical Engineering | Msc. | Tecnologist | 29 years |
| E2 | CDTN | Metallurgic Engineering | Dr. | Researcher | 33 years |
| E3 | IPEN | Chemistry | Dr. | Researcher | 13 years |
| E4 | CDTN | Physics | Dr | Researcher | 13 years |
| E5 | IPEN | Chemistry | Dr. | Researcher | 28 years |
| E6 | IPEN | Mechanical Engineering | Msc. | Tecnologist | 27 years |
| E7 | IPEN | Physics | Dr. | Researcher | 27 years |
| E8 | IPEN | Chemistry | Dr. | Researcher | 18 years |
| E9 | IPEN | Biology | Dr. | Researcher | 18 years |
| E10 | IPEN | Chemistry | Dr. | Researcher | 11 years |

## 2 QUANTITATIVE DATA ANALYSIS

In the first part of this study, patent applications files of the National Commission of Nuclear Energy – **CNEN** were analyzed, in order to verify inventors' productivity in the year 2011, as it follows:

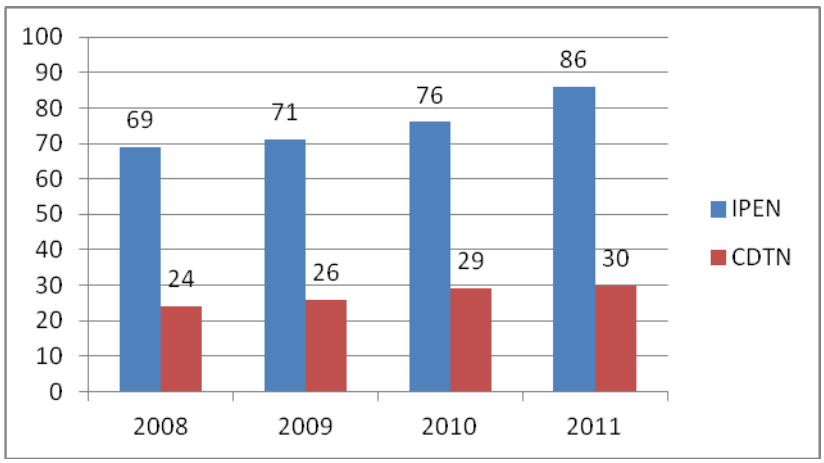
**Table 1 – Patent applications and computer programs records – per institution, according to the CNEN Management Report, 2011.**

| Institutions | Patents | Computer program | Total |
|---|---|---|---|
| IPEN | 85 | 1 | 86 |
| IRD | 6 | 2 | 8 |
| IEN | 13 | 5 | 18 |
| CDTN | 22 | 8 | 30 |
| DIPLAN | - | 1 | 1 |
| CRCN-NE | 2 | 2 | 4 |
| TOTAL | 128 | 19 | 147 |

For the comparative analysis, the Institute for Energy and Nuclear Research - IPEN and the Development Center of Nuclear Technology – CDTN were considered since both have similar structures (located in University campuses (USP and UFMG, respectively), and have technology innovation centers. For this analysis, the number of patents filed in the last four years was considered.

The table below shows the evolution in the application for patents over the last four years, demonstrating the benefits perception and motivation for a future recognition

**Graphics – Evolution in the number of patents registered**




The table below shows the contribution of inventors in filing patent applications, as well as the evolution of their contribution.

**Table 2 – Evolution in inventors' contribution**

| YEAR | IPEN | | CDTN | |
|---|---|---|---|---|
| | Patents/Inventor | INDICATOR | Patents/Inventor | INDICATOR |
| 2008 | 69/407 | 0.169 | 24/168 | 0.142 |
| 2009 | 71/394 | 0.180 | 26/164 | 0.158 |
| 2010 | 76/413 | 0.184 | 29/167 | 0.173 |
| 2011 | 86/410 | 0.210 | 30/157 | 0.197 |

## 3 QUALITATIVE DATA ANALYSIS

The second part of the search results refers to the responses of inventors as well as the topics related to the study. Hereafter, to make the findings clearer, responses maintaining the 4 dimensions indicated in the questions are analyzed.

### 4.1. Knowledge of the legal text

As a whole, the legislation involved in the process was diffused to a small extent. It was clear from the respondents that legislation issues and the resulting bureaucracy do not attract those involved with science. The focused organizations, IPEN and CDTN, sought to involve the actors of the process, providing infrastructure and support to stakeholders.

### 4.2. Patent filing process experience

It was noticed that most inventors sought help in the NIT; only 40% know the procedures provided by the institutions; although these organizations have made their infrastructure and expertise available and fomentation agencies have stimulated inventors with productivity scholarships, the experience of filing a patent requires an appropriated wording, what made the process very difficult for them.

### 4.3. Motivations

60% of respondents had the initiative to file the patent applications; as to the other 40%, it was the inventor and partners initiative; 100% of respondents were motivated by knowledge protection, country development, curriculum improvement and financial gain.

Bureaucracy, lack of law implementation and absence of support for filing an international patent are factors that discourage.

40% of respondents aimed at protecting personal and professional knowledge and 60% at improving the curriculum, besides taking profit.

### 4.4. Additional information

100% of respondents indicated that dissemination centers should be improved. The organizations should believe more in the Law of Technological Innovation, give training in text writing and dispose of clarification of what is patentable.

## 4 CONCLUSION

With a greater receptivity of intellectual property, the need to add value to information, systems and processes, the federal government enacted measures to encourage technological innovation, the Law 9610/98, which deals with the Copyright Law and Law 10.973/2004, providing innovation incentives in the academic field. Although they are, respectively, 14 and 8 years old, it is observed that the subjects involved in the process are not properly informed yet.

It can be seen that, although there is stagnation in the number of inventors, as shown in Table 3, the number of patents has evolved over the past four years. If we take IPEN figures, 2008-69 Patents for 407 Inventors; 2011 – 86 Patents for 410 Inventors, i.e. an increase of 24%. If we take the CDTN results, 2008-24 Patents for 168 Inventors; 2011 – 30 Patents for 157 Inventors, i.e., a growth of 25%.

Therefore, it may be conclude that the surveyed organizations should plan measures aimed at disseminating internal knowledge, allowing Inventors to be aware of present legislation. They should, also inform the inventor about the advantages obtained with a curriculum with many patents: the number of patents is one of most highly – renowned criteria to be evaluated for receiving a productivity scholarship.

The limitations of this opens new possibilities for exploring o theme in the own research institutions or other segments, in order to improve a effectiveness of human resources involved in the de obtaining a patent registration.

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