



## Appropriation mechanisms of search results: A case study in a public university of Minas Gerais

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### Abstract

The objective of the research was to investigate the appropriation mechanisms of research results at a public university in the state of Minas Gerais. Therefore, we conducted a descriptive and qualitative case study, based on interviews with semi-structured screenplay, literature and documentary research. It is remarkable the importance of universities in knowledge production and dissemination of research results that can lead to innovations, so this research is relevant to the universities context. The main practices identified in these institutions were the participation in networks, the presence of incubators of technology-based companies, partnerships or public cooperation, partnership between university and business, the presence of academic spin-offs, besides legal protections, such as patent applications, trademark and software registrations, plant variety log and protection, copyright and industry secret. This university is in a stage that the appropriateness culture implementation and there is a search for innovations developed within the university. However, this institution has yet to evolve in the technology transfer from academy to society, being necessary higher motivation for this practice.

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**Keywords:** Appropriation mechanisms; Research results; Technology transfer; Innovation; Public University

### Introduction

Brazilian universities faces the responsibility to provide the best return for the government and society about the public resources involved in the generation of technical and technological knowledge (Audy, Cunha, & Franco, 2002). These institutions have an important role in the fields of education, science and technology, especially in the generation of new

knowledge (Oslo, 2005). Moreover, they are directly responsible for cultural, technological and social changes (Clark, 2003). Therefore, they begin to be understood as spaces for creation of technologies with the responsibility to offer to society the elements to generate values in research and development through the commercialization of technologies (Bojesen-Trepka, 2009).

Santana and Porto (2009) identified, conducting a study in the medical sector companies, the need for companies, to be present in the cooperation process with the university, seeking opportunities in the research laboratories of educational institutions, and proposing joint actions to improve processes that can generate cooperation between those entities. Taking into account this interaction and considering that the scientific and technical knowledge is essential in generating innovation. In the context, the public university research groups play an important role in developing useful knowledge that, in cooperation with

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companies, this knowledge can drive innovations in the market (Etzkowitz & Leydesdorff, 1996).

To meet this new reality, the challenge of these institutions is to change traditional structures and pursue new strategies that enable them to generate numerous technologies related to the creation of products and processes (De Benedicto, Carvalho, Bittencourt, & Zambalde, 2014). This way, the present study aims to broaden the discussion about the appropriation of research results in universities, using studies about the subject in the literature and seeking to achieve empirical evidence within a federal institution of higher education in the state of Minas Gerais.

Aiming to address this issue, this study sought to answer the following research problem: How do the appropriation mechanisms of search results occur in a federal institution of higher education? In this way, the main objective was to investigate the appropriation mechanisms of search results generated in a federal institution of higher education in the state of Minas Gerais.

Therefore, this work has five topics that will address the subject in focus. After this introduction, there is the theoretical framework, divided into four sub-topics, the methodology, analysis of results and discussion, and finally, the final considerations of the study.

#### *Innovation context in Brazilian universities*

The world has experienced the emergence of a new model of development and competitiveness directly influenced by organizational innovations of products and processes. This new model, characterized as the knowledge economy, reaches educational institutions, as instigates actions and discussions involving the relationship between universities and companies (Gilde, 2007).

The creation and dissemination of knowledge have been the focus of the universities. The challenge is to notice how is possible to use this knowledge as an asset in order to provide value to the economy, the society and the university itself (IPO, 2011).

Markman, Gianiodis, Phan, and Balkin (2005) argued that the university–business technology transfer (TTUE) is an alternative for innovation in industries, taking advantage of the existing potential in universities. On the other hand, the author says that the technology transfer from university should not be the main and unique way of innovation. It should be seen as useful and complementary in order to take advantage of the research results in a way to create an ideal situation for generating innovation and internalization of Research and Development (R&D) in the own university and in the companies.

Branco and Vieira (2008) pointed out that the Intellectual Property Law enacted in 1996 (Brasil, 1996), in the Brazilian context, played an important role in the development of innovation and enhancement of Intellectual Property Rights (IPRs) protection. Andrade (2004) completes reporting other initiatives for the development of innovation policies implemented in Brazil from the 1990s, such as the creation of sector funds for research financial support and the relevance acquired by business incubators.

In 2004, it was approved the Federal Law No. 10.973 or “Innovation Law”, which exposes the incentives for innovation and scientific and technological research in the production environment and that boosted the establishment of technological innovation cores in the research centers in order to protect the scientific knowledge generated at the university. One of the goals of this law was to contribute to building an environment that could promote the technological development in the country (Chagas & Muniz, 2006).

Another important event about the innovation area in Brazil took place in early 2016, with the sanction of the Federal Law No. 13.243, also called “Legal Framework of Science, Technology and Innovation” (Brasil, 2016). This new law allows public universities and private companies to work more closely, allowing situations such as authorization for full-time basis teachers to develop research within companies and that university laboratories can be used by industry for the development of new technologies – in both cases, with payment. Other important points are the reducing bureaucracy of the bidding system, purchase and import of products intended for technological scientific research. This new law demonstrates an evolution of Brazil in the approach between universities and businesses and in the innovation fostering.

#### *University–business cooperation*

The cooperation between universities and business is a way to spread knowledge, make it accessible to other actors outside the academic context. Botelho, Carrijo, and Kamasaki (2009) claimed that knowledge dissemination is important because it is the source for the development of the country. The authors also consider that the university–business cooperation is a good strategic choice for companies that face some kind of technological difficulty.

From the promulgation of the Technological Innovation Law (Brasil, 2004), it was regulated the practice of partnerships between research institutions, universities and business, seeking to strengthen their relations and encourage innovation, representing a government legal mechanism to increase the number of patent records in the country (Corrêa, 2007). The new Brazilian law has the object to increase the cooperation between universities and business (Brasil, 2016). Further analysis will be necessary about the impacts of this law in university–business cooperation in Brazil.

Gonçalo and Zanluchi (2011), and Iacono, Almeida, and Nagano (2011) stated that there are some motivations for university–business cooperation. For the universities the main motivations are: (A) access to government funds; (B) increase of the social prestige with practical results; (C) lack of equipment; (D) possibilities of gaining financial resources; (E) better training for postgraduate students; (F) the possibility of additional information on the research fields; (G) improvement of the university image and (H) access to the enterprise infrastructure.

De Pellegrin, Balestro, Junior, and Caulliraux (2007, p. 314) stated that “the cooperation for innovation takes a range of forms, from technology transfer agreements, agreements with

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