

# Entrepreneurial university: A study on the differences between Brazil and the model done in the United States

## Universidade empreendedora: um estudo sobre as diferenças entre o Brasil e o modelo feito nos Estados Unidos

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#### ABSTRACT:

The history of universities is marked by transitions in the direction of education and increasing its responsibility to society. Some revolutions caused by social problems provided the emergence of so-called entrepreneurial universities, where in addition to the educational role, universities now have mission is to improve the economy and social development. The incentives the creation of small businesses as the spin-off emerged and today transformed business research with high earning potential, adding value to institutions, which in turn also profit because they are the basis of these developments. In Brazil, although there is great universities, incentives, investments and resources are still limited in relation to developed countries. Knowing the great need to implement an entrepreneurial and innovative policy in this country capable of promoting a capacity to give effective support in the areas of teaching, research and extension, as well as progress and encourage entrepreneurship, empower students to transform technological research in business, this study aims to analyze the differences between the

#### RESUMO:

A história das universidades é marcada por transições na direção da educação e aumentando sua responsabilidade para com a sociedade. Algumas revoluções causadas por problemas sociais proporcionaram o surgimento das chamadas universidades empresariais, onde, além do papel educacional, as universidades agora têm missão de melhorar a economia e o desenvolvimento social. Os incentivos à criação de pequenas empresas à medida que o spin-off surgiu e transformaram a pesquisa de negócios hoje em dia com alto potencial de ganho, agregando valor às instituições, o que, por sua vez, também é lucrativo porque são a base desses desenvolvimentos. No Brasil, embora existam grandes universidades, incentivos, investimentos e recursos ainda são limitados em relação aos países desenvolvidos. Conhecer a grande necessidade de implementar uma política empresarial e inovadora neste país capaz de promover uma capacidade de dar apoio efetivo nas áreas de ensino, pesquisa e extensão, bem como o progresso e incentivar o empreendedorismo,

entrepreneurial university in Brazil and practiced in the United States, while pointing out solutions to reduce the gap between the models. As a methodological approach, research has descriptive character and makes use of qualitative data obtained through a literature review.

**Keywords:** Entrepreneurial University; Search; Innovation.

capacitar os alunos a transformar a pesquisa tecnológica em negócios, Este estudo tem como objetivo analisar as diferenças entre a universidade empresarial no Brasil e praticada nos Estados Unidos, ao mesmo tempo em que apontou soluções para reduzir o fosso entre os modelos. Como abordagem metodológica, a pesquisa tem caráter descritivo e utiliza dados qualitativos obtidos através de uma revisão da literatura.

**Palavras-chave:** Universidade Empresarial; Pesquisa; Inovação.

## 1. Introduction

The technology has been changing the society since the dawn of man, being especially felt from the second half of the twentieth century with the technological revolution, where the junction between science, technology and production was really effective. During this time, governments and companies have to invest a portion of its capital and research and development of these technologies.

According to Chaimovich (2000), technological competition of dilemmas in the period after World War II, more precisely at the end of the 50s, brought to the political fore the need for a large investment in science and product development, thus that costs these researches ranged from high school to universities. Especially for work carried out at the universities, these are based on three principles: education and knowledge production, research that match the needs and the real interests of the society, and finally, the extent to transmission of knowledge obtained in the form of resolution problems.

In order to solve both a socio-economic problems, as encourage the incubation of ideas and the implementation of these innovative proposals, the universities are increasingly being requested. Thus, all the university environment, ranging from undergraduate students to post-doctoral students interact with business and government to acquire investments to create and implement projects that will collaborate with the productive sectors of society, seeking technical and methodologies for creating the environment that have different characteristics in the sense of innovation, thus creating the foundation for development of entrepreneurial universities (MARTINS, 2014).

As previously mentioned, the proposed cooperation between universities, companies and government had its beginnings in the late 50's, however, only from 1980 that the proposal was indeed widespread in the United States, considered the cradle of academic entrepreneurship. In Brazil, attitudes and policies for development in science and technology (S & T) only have effect from the 90s, at which economic sectors have turned to universities by funding the development of research that helped the production processes (IPIRANGA, FREITAS E PAIVA, 2010).

The development of micro and small enterprises is favored by deploying incubators of ideas within the university environment. Therefore, it appears as a mechanism that already works well worldwide, including in Brazil. Large companies such as *Facebook*, *Buscapé*, etc., call Startups and have a high innovative potential, based on technological methods. These were born from initiatives that can be developed in university. Because according Ndonzuau et al. (2002), these environments have the conditions that provide a continuous development of innovation due to its institutional characteristics, economic and territorial favorable.

In this sense, considering all that has been mentioned, this work aims to analyze the differences between Brazil and some developed countries as the United States, for example, based on the research and development applied in the entrepreneurial universities in addition to providing solutions for the gap be minimized.

## 2. Theoretical reference

## 2.1 Entrepreneurial University: History and Concepts

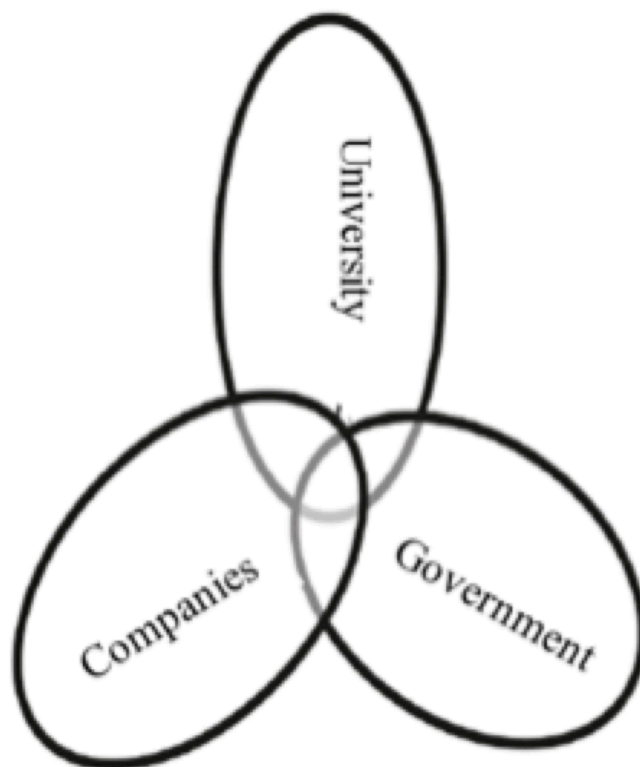
The universities, in general, have a large responsibility to society, and are in charge for forming people able to perform many functions in organizations, it is also the main source of technology worldwide. At first, teaching in universities was not geared to social and economic growth, being based only on respect the authority of the ancient sages model that over time has changed that sought to make the most efficient and functional education.

In the mid-eighteenth century, with the occurrence of the first academic revolution was incorporated in the universities encouraging research activity that until then did not compose a teaching function. In Brazil, this situation arose in 1970, when the teaching was directed by the military.

Currently, according to Casado, Siluk and Zampieri (2012) apud Clark (2006), Universities are facing financial limitation and are required to overcome challenges such as innovating and structuring a new pedagogical models; conducting a thorough curricular reform in order to facilitate greater employability to their graduates, making the universal study to ensure everyone a higher education; contributing to the development of society in which it is responsible and make the university an international enterprise able to provide not only training professional services, as well as the creation of innovations that contribute to society.

According to Etzkowitz (2004), the scenario, which he calls the second academic revolution, where economic and social developments become part of the responsibility of the universities, is actually the fact that gives rise to the concept of entrepreneurial university. According to Aranha and Garcia (2013) cited Etzkowitz (2004), the concept of entrepreneurial university is related to the concept of a triple helix: teaching, research and extension, so that innovation is the supporting pillar of the relationship government, university and industry.

**Figure 1** – Triple helix



Source: Casado, Siluk e Zampieri (2012, p. 39) apud Etzkowitz and Leydesdorff (1998)

## 2.2 Relationship between University and Company

At a time when universities are required to work for the society's quality of life, cooperation between universities and companies arises in order to value the goods and services produced in the country, increasing the internal and external competitiveness.

Casado, Siluk and Zampieri (2012, p. 646) apud Novo and Melo (2013), list some interactions between universities and business, described in Table I.

**Table I** - Factors of cooperation University / Organization

|                                       |  |
|---------------------------------------|--|
| <b>University institutions</b>        | Non-profit institutions that have greater flexibility and agility in dealing with partnership processes and the execution of contracts and projects management.    |
| <b>Business incubator</b>             | Environment that encourages the creation and development of companies or products, with special emphasis on innovative and intensive companies without experience. |
| <b>The technology transfer office</b> | The provider of management and monitoring services of mutual interest activities, on both the company and university interests.                                    |
| <b>Junior company</b>                 | Non-profit institution. Created and run by students of different majors in the university, under the supervision of professors.                                    |

Source: Adapted de Novo e Melo (2013).

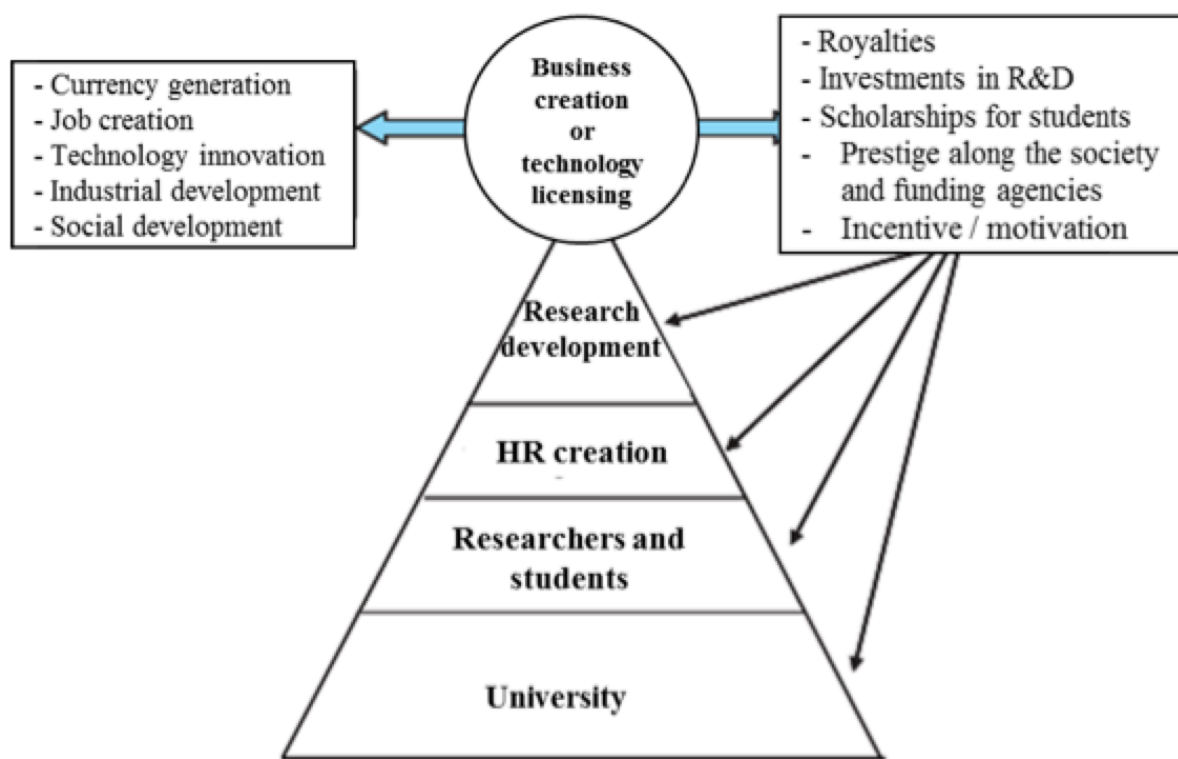
## 2.3 Entrepreneurship at the University: Academic Spin-Off

As one of the key factors for the growth and maintenance of the wealth of a country, the entrepreneurship is increasingly present in the universities. The support and encouragement to innovation, the search for new technologies and also improving the existing ones are paramount in higher education institutions and may result in the development of small companies linked to these institutions.

An academic spin-off is a company that originates from a research and development work carried out at a university, often have high profitable potential due to the case of innovations that call specific customer attention. Moreover, these companies have a good social contribution by generating jobs, improve the local economy and works as a mirror for future technology investments.

The universities, as the basis of these small businesses, besides the financial return through royalties, also increases the interest in investments, research and development, become recognized by the society, among other advantages.

**Figure 2** – Cause and effect from the implementation of academic Spin-off



Source: Araújo et al. (2005, p. 27).

The process of creating a spin-off according to Araújo et al. (2005) begins with the will of a researcher to undertake a major challenge because it is a different aspect of your universe. That decision shall be taken through theoretical substantiation to be obtained about to undertake. Araújo et al. (2005) lists four steps in the creation of a spin-off as shown in Table II.

Table II – Steps of creating an academic Spin-off

|               |   |
|---------------|---|
| <b>Step 1</b> | Identify potential ideas and their protection                       |
| <b>Step 2</b> | Facilitate technical and economic feasibility of the marketing idea |
| <b>Step 3</b> | Company Creation  |
| <b>Step 4</b> | Consolidation and creation of economic value                        |

Source: Araújo et al. (2005, p. 29)

Creating a spin-off is a major challenge for the students, often the way of thinking and acting as a researcher must be changed in order to create an entrepreneurial sensitivity and be able to run a business with high potential profit. The Universities that encourage this kind of business should generally instruct their students to seek and disseminate knowledge of entrepreneurship.

### 3. Methodology

The methodological procedure used for the research is descriptive with qualitative approach, since according to Gil (2008, p. 28), "have as their primary objective the description of the characteristics of a given population or phenomenon or the establishment of relations between variables. " To perform the same, it was necessary to do a literature review articles, journals and dissertations for the theoretical enrichment on the theme, so that it might allow the identification of information believed to be essential for the discussions of this work. Therefore, we used two databases, the SPELL (Scientific Electronic Library Periodicals) repository of scientific articles, and the Capes, virtual library with access to national and international scientific texts complete.

After owning all the theoretical material, it was possible to compare the university entrepreneurship in Brazil and practiced in the United States. For such a comparison could be made, the use of quantitative and qualitative data with approaches using graphs, figures or tables taken and adapted from the works analyzed has become an essential factor for the dissertation results.

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## 4. Discussion

The process of innovating has direct implications for the economic and social development of an organization. The discussion of the present paper will be limited to the relation of the triple helix: universities, companies and the State. In this sense, the University's role vis-à-vis society goes beyond giving students the basic knowledge to train and occupy a job vacancy. It should also develop and provide tools in order to qualify and prepare the individual for problem solving, and enabling the emergence of ideas in the academic field with a high degree of innovation through research, as well as their execution through development.

The link between innovation and entrepreneurial university can be verified through the exchange of scientific knowledge of universities with companies and markets. The technologies developed in the Universities are registered as patents for later use by the companies. However, for the innovation to have economic viability, a process of cooperation between them is necessary so that the gaps left by the failure to sell a particular innovation can be overcome in a later version, and then, this approximation between University and Company might keep continuous and mutual (SBRAGIA, 2006 apud GUERRA, GOMES and CHENG, 2011).

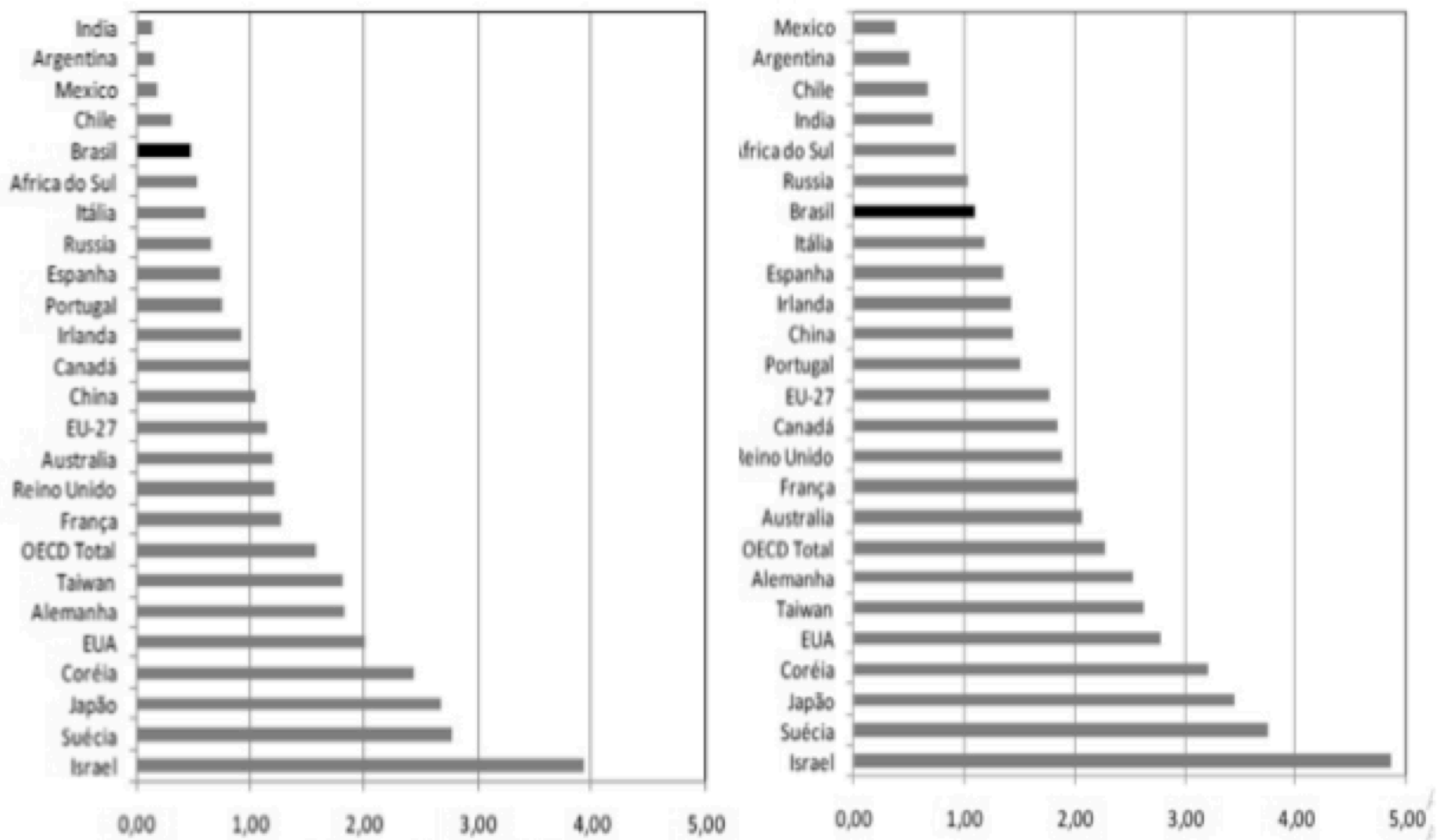
In a general comparison, it is well known that entrepreneurship education in Brazil differs a lot from the more developed countries, mainly due to the fact that Brazilian students have contact with the scientific doing and the entrepreneurial thought in a late form. According to Novo and Melo (2013), even with advances in research and the emergence of business incubator centers in recent years, Brazil still needs more financial support, be it business or governmental, in a way that emergence of University ventures.

Patel and Pavitt (1998) classify with countries their potential in research and development in three groups. The first one is composed of developed countries such as the United States, Japan and Germany, which have a well-developed teaching and extension platform, providing an environment conducive to the elaboration and maturation of ideas. The second group of countries disseminates the innovations launched by the first group. The countries in this group are Sweden, South Korea and Taiwan. Finally, developing countries such as Brazil, India and China have incomplete systems, with low technological infrastructure, and, although they have S & T systems, they have not turned them into effective systems of innovation.

According to Chaimovich (2000), unlike Brazil due to lack of incentives and investments, the way universities implement and execute research projects in more developed countries follow the evolutionary line of search for new knowledge in order to revolutionize markets. Cruz (2010) states that the investments made in the United States for the development of research are significantly superior to those of Brazil, evidencing one of the many reasons that the United States is a power in this area.

In addition to the late contact of Brazilian students with scientific production and entrepreneurship, the lack of research funding, both at the corporate and governmental levels, especially when compared to the countries of the first group, such as the United States, is alarming. The information mentioned above can be seen in Chart 2.

**Chart 2** - Expenditure in percentage of Gross Domestic Product (GDP) spent on research and development with business capital (a) and (b) total (sum of business and government).



Source: Cruz (2010, p. 3).

As a strategy to minimize the differences between research, development and the implantation of universities that have an entrepreneurial character, currently, in major Brazilian university centers such as the University of São Paulo (USP) and in also the State University of Campinas (UNICAMP), the departments of Technology has produced more and more innovative actions, mainly since the Innovation Law 10.973 / 2004 was created, which brings up important information about the dissemination and intellectual protection and guide the research in the development of patents.

## 5. Conclusion

From what has been exposed throughout the work, he sought to point out and analyze the entrepreneurial university model practiced in Brazil, analyzing its characteristics related to the research and application development in the process. Therefore, it was necessary to conduct a comparative study and survey research data on investment in Brazil and other countries and establish their main differences.

Thus, it can be inferred that the American system of enterprises in the university seeks to encourage the technology industry to act more forcefully in the universities, since it is an environment conducive to new ideas, and under some appropriate adjustments and guidelines, they can be widely used in order to disrupt the market ideologies already defined through innovation.

In Brazil, the practice of research and development is not stimulated as intensely as in developed countries, which might cause disinterest in the whole university sphere. Seeking to improve this factor, encouraging young researchers, still at this stage, would be a motivation to expand the interest in it, as well as the scientific development. Furthermore, about the Brazilian universities and its low production rates when compared to the United States, just like it was raised in the results, it can be considered that, in general, due to the low interest of individuals to inquire knowledge before joining the academic career. However, currently, some secondary educational institutions, such as the Federal Institutes, has broken this design. Such examples should be followed, so that, in the near future, when these same young people to enter the



undergraduation program, they would be more interested and better prepared to create and produce science more easily.

During the undergraduation course, you must have minimal structures of research development, as innovation laboratories, appropriate equipment serving segments increasingly innovative. Allied to this, seeking partnerships with companies and investors to bring these laboratories, and always remaining cautious for the purpose of research keep directed to the society, is the crucial way to follow to achieve the real concept of entrepreneurial university.

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