

Entrepreneurial University And Innovation Environments: An Analysis From The Economic Sustainability Perspective At The University Of São Paulo

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Abstract

Background: This research goal was to understand how technology parks can help in the economic sustainability of entrepreneurial universities, and the study object was the University of São Paulo, USP.

Materials and Methods: Semi-structured interviews, non-participant observation, and collection of documentary sources were used as data collection techniques, thus establishing the triangulation of the study by collection sources. The content analysis technique was used for data analysis, and the treatment of the data was supported by NVivo software.

Results and Conclusion: The research results originated a conceptual framework in which the union of the university's innovation actors evidences the entrepreneurial culture as an incentive to the actions of academic entrepreneurship, facilitates the sharing of information, strengthening the actions of the triple helix and thus enhances the conditions for the emergence of economic sustainability.

Keywords: Entrepreneurial University; Triple Helix; Technology Parks; Sustainability; Qualitative Research

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I. Introduction

For universities, some subjects such as entrepreneurship and innovation were topics from within the classroom, reasons for discussions, and academic work among students and teachers. With the second academic revolution, this theme not only gained strength in the classroom debates but also became the focus of events and mainly actions promoted by the university. This occurred because the university started recognizing its role in entrepreneurial education, social transformation, and economic development of regions and countries²⁹.

For³¹, in this context, there is a tendency for those professionals who can demonstrate new knowledge in their areas to be employed and who have the skill to work with information and transform it into strategic data for the employer. Another possibility is to be the entrepreneur, that is to say, the one who generates these jobs. Such characteristics can be worked on in the teaching of entrepreneurship in order to boost local economic development, which shows the importance of linking this issue with the university mission.

There are still some gaps in this new university mission. According to the Brazilian Micro and Small Business Support Service²⁹, the university's disconnection from the market, the lack of structures to support students in their entrepreneurial journey and the lack of stimulus for students to generate innovation are barriers found in the generation of entrepreneurial actions within Brazilian universities.

One of the critical points highlighted by university students to close this gap is the science and technology parks. According to the opinion of 60% of students, these initiatives are essential to prepare them to undertake. Another relevant aspect listed in this regard would be the disciplines of entrepreneurship and business support services²⁹.

Based on tools such as innovation environments, the teaching of entrepreneurship is a facilitator in the development of the individual's differentiated skills. The ideal scenario for this is university education, from an integrated ecosystem in favor of an entrepreneurial culture, which extrapolates the university walls and creates strategies for local development, thus contributing to the increase of qualified jobs, the generation of innovations and the growth of cities and regions⁴². This configuration of universities concerned with their economic sustainability, as well as with generating economic and social impacts on a local, regional and national scale, is part of the new mission, the entrepreneurship, characterized by technology transfer, bonds with companies and

industries and facilitating the creation of structures for innovation and entrepreneurship¹¹.

This scenario motivated this research, which started from the theoretical approaches of the entrepreneurial university, the innovation environments, and the economic dimension of sustainability. Thus, the goal was to investigate how innovation environments, through science and technology parks, can help in the economic sustainability of entrepreneurial universities, and the University of São Paulo, USP, was the object of study.

II. Theoretical Background

Entrepreneurial Universities

The emergence of entrepreneurial universities involves an expansion of research groups, existing in universities focused on basic and applied research. According to²², this logic of investment in research enabled the creation of study groups called quasi-companies, since, through the invention of products and processes and with the help of companies, they can become innovations for the market. Thus, business incubators are created within university structures, fostering academic entrepreneurship, and strengthening the groups to become resident spin-offs in technology parks, one of the innovation environments that universities provide.

With this in mind³⁰ it mentions the main activities that make up the entrepreneurial university: consulting contracts, patenting, licensing, spin-offs, and startups. Academic entrepreneurship is an important tool for the generation of new jobs and the emergence of new industrial sectors. It also contributes to improving competitiveness in existing sectors⁵⁰.

From this viewpoint, Table 1 highlights the characteristics of the entrepreneurial university compared to the research or traditional university³².

Table 1. Characteristics of the Research University and the Entrepreneurial University.

Research University	Entrepreneurial University
Objectives: teaching and research	Same + economic development
Fundamental, applied and technological research, as well as prototypes, processes or services to meet companies demand	Same + business generation and technology transfer to existing companies
Expected products: Qualified HR for business and academic markets	Expected products: same + creation of companies and the creation of companies from egresses
Entrepreneurial education through some elective disciplines	Articulated and comprehensive entrepreneurial training, offered as a second area of competence
Students graduation	Same + companies graduation
Intellectual Property Nucleus: optional complementary unit	Intellectual Property Nucleus: mandatory complementary unit, articulated with research groups and laboratories, with the business incubator and the technology park
Planning focused on academic goals	Strategic planning focused on academic, economic and social goals

Source: adapted from³².

Universities have seen with good eyes the participation of their undergraduate and graduate students in the creation of companies from their research. However, these students need support for innovative entrepreneurship through disciplines that can instruct them managerially, enabling a market view of the creation¹². Moreover, according to⁴⁶, an entrepreneur is not formed only with an entrepreneurial discipline; it is necessary to go beyond. Therefore, it is necessary to create a context in which the student is inserted in a critical and creative university, with professionals with an entrepreneurial mentality, since it would not be possible to create an entrepreneur only in a classroom, without pedagogical methodologies that encourage and prioritize practical activities stimulating an entrepreneurial culture^{33,6}.

For the formation of an entrepreneurial university, the institution must go through some phases, which, according to²³, are classified in three: (i) the first phase - the university must establish its strategic vision, redefining priorities, mainly financial, to provide the necessary resources for its research; (ii) the second phase - the university must focus on the commercialization of intellectual property and technology transfer; (iii) the third phase - as a result of the sum of the first two phases, the university acquires a regionalized character, with a commitment to the generation of new ventures, new products, and new processes. From this third phase on, the institution begins to build relationships with other actors, such as government and companies, designing a new role in innovation performance for the region in which it is inserted. This role is not only one of knowledge commercialization, but also one of the developments concerned with producing social and sustainable impacts in the region²³.

In the view of⁴³, the so-called entrepreneurial architecture (EA) in European universities was classified

as having five components: structures, systems, leadership, strategies, and culture. These components represent² report, which defines that it is necessary to have offices that help in technology transfer, technology parks, and laboratories. Besides, the authors mention that systems include communication between departments, that leadership means qualification and orientation of the leading influencers of the institution and that the strategy constitutes the insertion of the third mission as an objective to be reached by the whole institution, fact that, when occurs, can transform the culture of the place.

Based on² arguments, it is necessary to understand the definitions of an entrepreneurial university. Table 2 synthesizes the primary authors' thoughts related to the concept of an entrepreneurial university.

Table 2. Definitions of Entrepreneurial University.

Author	Definition
Etzkowitz (1984)	A university that considers new sources of funding, such as patents, contract research and partnership with private companies.
Clark (1998)	A university that seeks to innovate in the business to elaborate an organizational character change, becoming a "stand-up" university, that is to say, a significant actor in its own terms.
Jacob et al. (2003)	A university that has new infrastructure support mechanisms to foster entrepreneurship within the organization, as well as packaging entrepreneurship as a product.
Guenther; Wagner, (2008)	A multiple organization with direct mechanisms to support technology transfer from academia to industry, as well as indirect mechanisms to support new business activities through entrepreneurship education.
Mainardes et al. (2011)	A university that seeks to be as free from state control as possible and to interact closely with the market in order to acquire resources and meet society's needs for knowledge, thus contributing to social development.
Etzkowitz, (2013)	A university that involves extending ideas to practical activity, capitalizing on knowledge, organizing new entities, and managing risks.
Guerrero et al. (2014)	A university that tries to provide a favorable environment in which the university community can explore, evaluate and create ideas that can be transformed into social and economic entrepreneurial initiatives.
Errasti et al. (2018)	A university that considers it essential to recognize the value of international mobility of students, academics, and business partners, which includes the development of joint degrees with universities abroad and conducting international research projects.
Etzkowitz et al. (2019)	As innovation is institutionalized in new organizational structures, as well as linked to teaching and research, the entrepreneurial university becomes a critical element of the triple helix of university-industry-government interaction.

Source: elaborated from^{55,19,21}.

Table 2 comprises the primary authors discussing the concept of an entrepreneurial university and also the positioning of each author concerning the subject. Therefore, while Etzkowitz addresses mainly the matter of knowledge as capital, Guenther and Wagner defend a university focused on interaction with the productive sector as a focus and education focused on entrepreneurship. Guerreiro discusses entrepreneurial initiatives, focusing on economic and social aspects. It should also be noted that as of 2017, these authors point out internationalization as a tool for consolidating an entrepreneurial university, and the innovation environments are one of the essential tools for that.

Science and Technology Parks

The first technology park appeared at Stanford University, a private institution located in California, United States, in 1950 under the name Stanford Industrial Park. In the 1970s, this park was renamed Stanford Research Park, when it began to focus on research and innovation. At that time, it had 26 thousand employees and over 70 companies. The overcrowding and depletion of Stanford Research Park also contributed to the creation of Silicon Valley^{58,8}.

Science and technology parks have emerged intending to unite technology-based companies at the same location, as well as developing new organizations, aimed at exchanging knowledge between technology-based research and the business market to enable and accelerate the creation of new products and processes²⁵. For²⁸, a technology park aims to provide technical infrastructure, logistics, and administrative and financial contributions to support the generation of new companies in the development of products in a competitive market.

Over the years, a change in the objectives of science and technology parks has been noticed as they become to be present in university centers. For⁶⁴, the parks can be classified as initiatives aimed at creating conditions for research transformed into new technologies within universities and university centers to be transferred to companies or industries so that they become new marketable products.

A park can be considered a cluster of technology-based organizations that are located close to or within the university campus⁴¹. It is for this reason that such organizations can take advantage of the knowledge generated in the research and, with this, exchange and share knowledge for the creation of innovations. In this sense, the university not only transfers technology but also develops knowledge together with these organizations installed

in the university parks. The parks help in the growth of the entrepreneurial spirit of both students and the university itself and scientific society, an element considered essential to achieve a comprehensive institutional development⁴⁰.

According to¹³, the park is a vital instrument to transform the socio-economic and technical profile of a region, influencing the actions of actors such as government, companies, and universities. Each actor has a specific role in maintaining this gear: the government can stimulate public policies to encourage research, development, and innovation, which affect regional development; companies can not only create new products but also consolidate their research and collaborative networks between researchers and universities or research centers; and universities can use the structure of the parks as basic and applied research laboratories to generate new products or processes. This configures as an essential source of cooperation between elements of the triple helix^{70,8}.

In general, science and technology parks are linked to universities, which favors the approach of companies that are seeking new knowledge or new products and processes, since they can get help from professionals involved in this field within research institutes and university laboratories. However, this factor can also constitute problems faced by companies or industries, which end up becoming research themes within fields studied at universities⁵³.

The results from⁶⁹ research developed in Iran, which sees university-enterprise interaction as an alternative for the country's economy to no longer depend on oil revenues, demonstrate that university-enterprise collaboration is successful when it links a technology park. These centers have a concern for the future, and the research conducted through the union of these actors will likely be guided by ethical and sustainable aspects⁶⁹.

While some research emphasizes the importance of an economy geared towards entrepreneurship driven by the areas of innovation, the theoretical study conducted by³⁸ specifies that the expectations allocated to technology parks as total transforming organisms of a region may be unrealistic. With this in mind, the authors understand that initiatives to create these areas need to be thought out with responsibility and commitment.

Another study conducted in Spain proposes a comparison between two types of parks, those with university interference and those without it. The results show that in parks with the most considerable influence from academic research, patenting is more appropriate, as it is technical and scientific research. However, the more significant activity of patenting does not translate into greater product innovation, even because Spanish universities have encountered problems in turning knowledge into new products. On the other hand, non-scientific parks have higher product sales and lower patenting rates¹.

Science and technology parks are considered by⁵ as innovation environments in the areas of innovation dimension. According to the authors, there are some fundamental characteristics for these innovation environments, such as production and clean technologies, shared use of state-of-the-art research laboratories, contact with investors, among others.

According to IASP, International Association of Science Parks and Areas of Innovation, parks have the objective of increasing the wealth of the community by promoting a culture of innovation and competitiveness in companies and knowledge-based institutions. In this sense, for³, the parks act as promoters of a culture of innovation, competitiveness, and business training, with their foundations in the transfer of technology and knowledge, aiming at increasing the wealth of a specific place or region.

According to⁵, there is a transition regarding the concept of science and technology parks. For the authors, a new trend is underway that can be called Learning Villages, whose elements are businesses, educational centers, and residential areas in a single environment. This means seeing innovation environments as a place to work, study, research, and live in the knowledge society. In this way, "the parks cease being in the cities and BECOME the city. The most important thing is no longer WHERE we do (physical space) but WHAT we do"⁵.

Sustainability in Higher Education Institutions

HEIs have always been actors of change and agents of innovation in society, so the search for sustainability often passes through their campuses, their magazines, and their curricula. Like the institutions, their researchers have an essential role to play in the generation of a sustainable future as they teach, educate and serve as an example for future professionals that the market will select to act ethically and responsibly. In this context, since the Brundtland Report⁶⁵ was published, there has been an effort to include sustainability in the institutional dimension of HEIs.

The university needs to develop sustainable actions for its business, and as³⁷ mention, there is a tendency that the government no longer supports higher education, only attends it. That is to say that economically, the university needs to incorporate some profitable activities to become sustainable without depending on public funding¹⁷.

According to⁵², employment for people with post-graduate degrees will be affected by changes in the macroeconomic environment, so both educational institutions and students should consider responses based on entrepreneurial and learning approaches that increase their prospects of success in what may be a stormy economic

environment. Thus, the focus must be on learning to generate jobs rather than occupying jobs.

Research such as⁹ indicates that the university needs to recognize that it does not form professionals focused on solving problems related to sustainability as a whole. Despite advances in this order, sustainability is not addressed in curricula and, consequently, it is not discussed in the classroom, failing to train professionals able to enter the market with a holistic view of the situation, not only of HEIs but of all work organizations⁹.

Creating and transferring knowledge to the labor market is one of the activities designated by the university's third mission, which is entrepreneurship. These activities create a healthy relationship between academia and business, boosting organizations, increasing fundraising for the university, and developing the region. According to¹⁰, the marketing strategies used by universities positively influence regional development, which demonstrates the importance of patenting, licensing, creation of startups, incubators, technology parks, and technology transfer, considered the first forms of marketing employed by universities for the development of the region. Therefore, scientific commercialization has become something necessary to reduce the budget that the state passes on to the institutions.

In the American context, the entrepreneurial university is seen by^{60,66} as an organization that, in addition to being sustainability-driven, is led by research, addressing the global challenges of climate change, extreme poverty, childhood diseases and the impending global shortage of clean water. In Brazil, public universities go through successive cuts, whether financial or incentives for scientific research, which makes these institutions need to use strategies to be economically sustainable, following the example of approaching the private sector. This alternative is not only a privilege of Brazilian public universities but also a strategy of private universities⁶¹.

For⁶⁷, private universities that are not sufficiently supported by central or local governments need to invest their own resources in collaborative activities, and the benefits of these activities must outweigh the resources invested. This is an indication of concern with the economic sustainability of an institution, which is why it should be checked and taken seriously by its management.

In this scenario of restricted investments, according to⁶¹, two possibilities are glimpsed: one context is formed by the large public universities, which have the support of public funds to carry out cutting-edge research and are responsible for prestigious *stricto sensu* courses; and the other context is formed by medium-sized and small institutions, which have diversity in their course offerings, regional specialties, emphasis on undergraduate courses and small government support.

One of the alternatives for the universities' close contact with the private environment is the innovation environments, especially the technology parks, where companies and non-governmental organizations (NGOs) are installed that can help these institutions in the search for investments in research, innovation and even teaching⁴.

As of 2015, the United Nations (UN) has released the 17 Sustainable Development Goals (SDGs). These goals include 169 targets, which demonstrate the concern and ambition of this universal agenda. The goals aim to achieve human rights for all, gender equality and women's empowerment. According to the⁶², these goals are integrated and indivisible and seek to contemplate and equalize the economic, social and environmental dimensions.

Within the SDG 4, which aims to ensure quality education, there is the target 4.4, aimed at skills relevant to employment, decent jobs, and entrepreneurship⁶². It is in this target that entrepreneurial and sustainable universities can help because, according to the principles of the SDG, these institutions can transform the place where they are inserted through entrepreneurship, improve the quality of jobs generated and qualify the work.

It is also possible to link the university's actions to SDG 8, concerning decent work and economic growth. In this case, it would be necessary to pay attention to target 8.3, which is focused on generating public policies that support the development of productive activities, such as entrepreneurship, creativity, and innovation, formalizing micro-, small- and medium-sized enterprises²⁶.

Based on local objectives and priorities, each country is responsible for educational models committed to achieving sustainable development. And this commitment, in the HEI scenario, has also been recognized by the European Union with a focus on three priorities: (i) quality and relevance of skills training; (ii) more visible and comparable skills and qualifications, and advancement of skills intelligence; and (iii) informed career choices²⁴.

The impact that entrepreneurial companies and initiatives can have on a country's social and economic development is visible in the SDGs themselves, as entrepreneurship is in almost all of them, following the example of SDG 4 and SDG 8. Applying this approach to HEIs implies, therefore, bringing together strategies so that decision-making factors can be determined not only to take on the SDGs but also to launch, design, and implement processes that coordinate advances in the sustainability approach²⁶.

III. Methodology

This research was based on a subject-object interaction ontology, constructivist epistemology, phenomenological paradigm, and qualitative approach. The method used was the study of multiple cases with an

exploratory strategy and descriptive objective. The data were collected through open interviews and non-participating observation of the primary data. Data analysis was performed through content analysis with the support of Nvivo software for data treatment.

The analysis of three university rankings served as selection criteria for USP: World University Rankings (QS), conducted by the British institute Quacquarelli Symonds (QS) and Times Higher Education (THE). Both rankings evaluate 900 universities in the world, and the best universities in Latin America have been selected for this study. Based on these metrics, the first university placed in both rankings was the University of São Paulo - USP^{51,59}.

After checking the international rankings using the Latin American version, we identified the need to include a national ranking, the Ranking Universitário Folha (University Ranking Folha). In this ranking, USP is in second place, being the first place Unicamp (University of Campinas). From the analysis of the three rankings, two international and one national, the national index of entrepreneurial universities was also used, in order to certify the analysis made in the previously selected rankings, where USP is indicated as first place in the years 2016, 2017 and 2019⁵⁴.

The case study is a method used as a research strategy for exploratory studies that require care and planning for the execution of all its steps, which helps in the reliability and scientificity of the data collected and analyzed from this method⁶⁸. Although many case studies have been conducted over time, progress has been slow, mainly because little use has been made of the triangulation technique, which provides data and research safety with this method⁶⁸.

The interview script was based on authors who discuss each of the approaches in this study: sustainability, innovation environments, and the entrepreneurial university. For the theme sustainability, the thesis of^{47,49} were used, also using as a basis Dow Jones Sustainability World Indexes¹⁸. For the theme of innovation environments, the thesis of^{57,47,8} were used. Moreover, for the theme entrepreneurial university, the thesis of⁴⁸ and the studies of^{20,14,15,34,35,36} were used.

After the validation phase, the script was sent to USP so that they could understand the research goal and what would be evaluated in it. Subsequently, the institution sent the authorization to participate in the study enabling the fulfillment of the next stage, which was the forwarding for approval by the Research Ethics Committee.

The data were collected in July 2018, at USP's innovation agency in the city of Ribeirão Preto. The records are in observations of the researcher's field journal or even photographic records, all inserted in the analysis performed with the help of NVivo® software. The interviews were recorded in audio for transcription, encoding, and analysis, as indicated by^{7,44,45}. The transcriptions were manually performed in different files encoded by the name of the interviewees. Table 3 shows the information of each interviewee, such as position, duration of the interviews in time and number of pages of transcription.

Table 3. Interviewees profile.

Code	Institution	Position	Gender	Transcription Pages	Sector	Interview Time
I1	USP	Technical-Administrative Advisor	Male	8	Incubator	41min
I2	USP	Director of the Innovation Agency	Male	13	Innovation Agency	1h8min
I3	USP	Park Manager	Male	13	Technology Park	1h7min

Source: Extracted from software NVivo® and adapted by the authors.

The complete recording of the three interviews was 3 hours of content, generating 34 pages of transcription. About the non-participating observation, the content of the field diary totaled one page.

The survey research⁸ served as the basis for the elaboration of the script for the non-participating observation of this study. Besides using the script to collect data from non-participating observation, notes and reflections were made, through a field diary, about what the researcher experienced. In this diary, the researcher was able to record reports from local residents, conversations with advisors, location of innovation agencies, and the environments visited, among other elements considered necessary for the research. For¹⁶, these notes are relevant to record ideas and new elements discovered during the researcher's observations.

In this research different techniques were used for data collection - semi-structured interview, non-participating observation, and consultation of available reports and sources, such as scientific articles, for secondary data, to triangulate the data, offering quality and credibility to the results of the research¹⁶.

The categories of the study were prepared a priori, being: "historical evolution", "academic entrepreneurship", "R&D+I", "relationship with the EU", "economic sustainability". In the coding phase of the elements in the software, other categories appeared a posteriori, increasing the process of categorization that

occurred along with the coding. The following categories were incorporated into the study: "university-company interaction", "university management", a category with a subnode, called "institutional strategy", "entrepreneurial culture", "legislation", and "triple helix".

Characterization of the USP case

USP, created in 1934, is one of the most important higher education institutions in Brazil, representing alone 20% of the research conducted in the country, which has been recognized in classifications and rankings around the world⁶³. It has 249 undergraduate courses, distributed in 42 teaching and research units, and 58 thousand students. The graduate program counts on 239 programs, which offer 332 master's degrees and 309 doctoral degrees and have more than 28 thousand students enrolled⁶³.

In 2016, the institution received first place in the ranking of entrepreneurial universities in Brazil, in a study conducted by Brasil Júnior - Brazilian Confederation of Junior Enterprises and published by the Coordination for the Improvement of Higher Education Personnel (CAPES). This position is due to the fact that it has a culture focused on entrepreneurship, and one of the agencies that enable this is the Innovation Agency USP, which in 2016 carried out several activities related to the topic, such as support to the graduate entrepreneur, providing scholarships for a training program for students with a vocation for technological innovation, which could be carried out in companies in the country or abroad⁶³.

The university promoted the USP Innovation Olympics, besides offering the entrepreneurship and innovation discipline, which could be taken by any student enrolled in the university, regardless of the course. Intellectual property assistance activities, which in 2014 resulted in 89 patent applications, also attracted attention. In a simple search in the American patent base PatenteScope of WIPO and the European patent base EspaceNet, one can see that USP has more than a thousand patent applications. Besides, it is worth mentioning its training course for innovation collaborators, in which collaborators capable of identifying new potentials and new patents are trained⁶³. The result of some of these actions constitutes a potential for technology transfer, which results in an accumulated amount of almost six million reais⁶³.

From 2012 to 2017, USP granted more than 400 scholarships for entrepreneurship, and in 2017 had more than 800 students enrolled in the entrepreneurship and innovation discipline⁶³. In 2018, UI GreenMetric World University Rankings released a list with a criterion that is not analyzed in other rankings, the sustainability. In this ranking, USP ranks first in Brazil, and 23rd among the most sustainable universities in the world, 719 institutions in 81 countries were analyzed²⁷.

IV. Data Presentation and Analysis

For the USP case, analysis maps were generated where the criteria used to measure the frequency of words considering only exact word matches, using the thirty most frequent words with a minimum length of five letters. Even with these criteria, some words considered unimportant for the result were removed, such as: "times", "done", and "so".

Figure 1. Word Cloud - USP.



Source: extracted from software NVivo®.

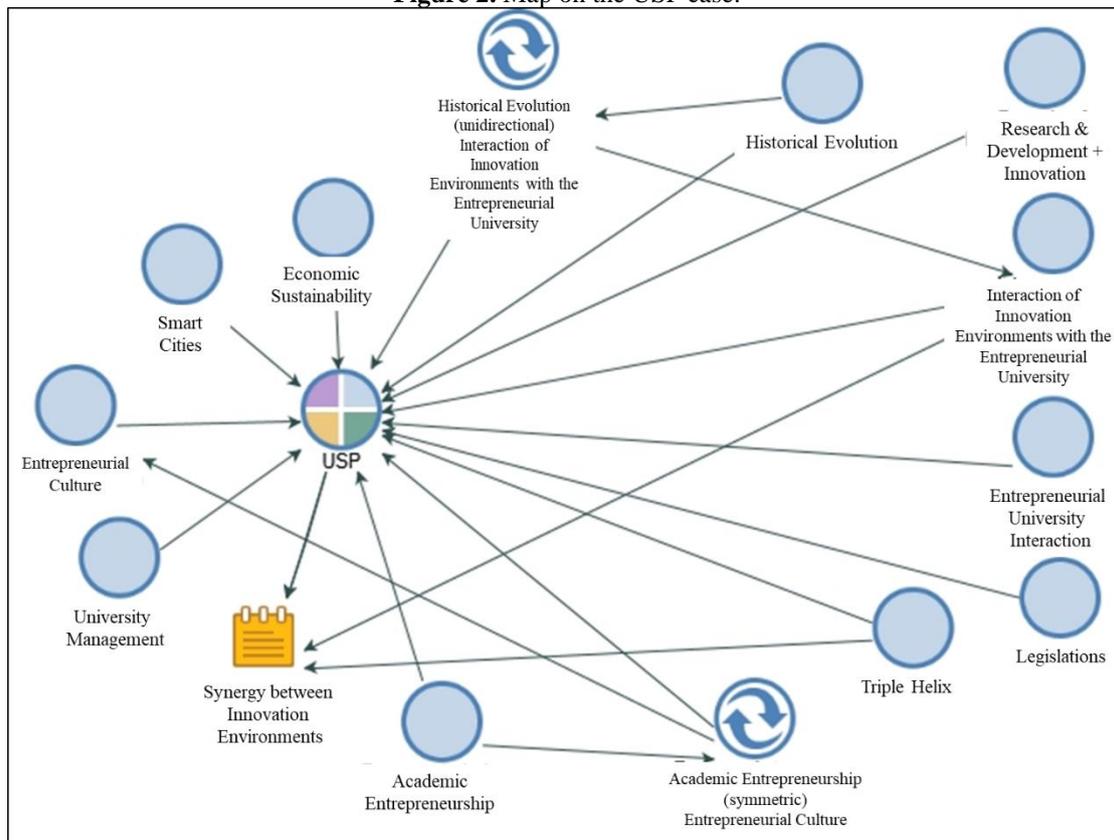
From Figure 1, we can identify some terms repeated by the interviewees, which configure the case of USP, in addition to the more cited words, which configure the subject of this research. The highlights are the words that appear with less evidence, such as "health", "culture", and "management", words repeated 22 times each. Corroborating to this statement, the speech of I1 is presented:

[...] some Board meetings demonstrate concerns about the use and direction of the park's actions so that the strategic planning was recently revised. Some actions like focusing on the park's vocation, which is **health**, so there are some concerns about that, yes (sustainability), for the park to start generating more revenue than cost as **management**.

According to the codification in thematic nodes, the case presents, through the speeches, what was most discussed in the interviews, indicating that the interviewee's emphasis was directed to specific thematic axes, as presented in Figure 2.

In Figure 2, the nodes closest to the case have a higher index of encodings, which means that these nodes were assigned more content during the interviews. From the map, we conclude that the interviewees most commented on entrepreneurship, smart cities, university management, entrepreneurial culture, and economic sustainability. This result highlights the synergy between the innovation environments, which helps to strengthen the triple helix, because, according to²², the environments need to be connected and articulated so that the triple helix can work efficiently and effectively.

Figure 2. Map on the USP case.



Source: extracted from software NVivo®.

In order to prove this link presented in the map and the theory elucidated by²², the report of interviewee I2 is presented below:

[...] I think the park has something positive that not all parks have, that you can actually involve the university, you can actually involve the municipal government, you can have the startups, you can have interaction with the local productive arrangements, with the clusters. [...] I can say that the triple helix works well here, some concrete results of that are that we have a business accelerator that works here, in the technology park. It was created by a group of entrepreneurs of the local productive software arrangement who, by living with the innovation habitat, said: "damn, there are many opportunities there, many startups are coming up, and we are not doing anything, let's set up a group, put money in and start accelerating businesses that may arise opportunities". And that is only possible with the endorsement of the city hall, which is on the board. So, I think that is a very positive thing.

According to the interviewee, it is not simple to bring the government to the university. However, USP tries to stimulate the participation of other actors through the promotion of events and partnerships with some municipal departments, which helps this articulation to be successful. This issue can be verified in the speech transcribed below:

[...] the entire technology park, because it has this focus to stimulate the development of technology-based business, somehow this ends up supporting the city, reflecting itself in the city. We stimulate a lot so that the City Hall knows innovations that are here, that eventually some can be adopted by the Health Department, Education Department. We promote some meetings in this sense. We participate in the organization of an event focused on technologies that can be used by public authorities and invite the City Hall staff to participate. This is the aspect that we can also stimulate to have a smarter society, so to speak, with the smart city concept.

The categories that stood out in the USP case are presented below. For this, the groups are considered, presenting first the highlighted group and then the other categories, or nodes, according to Nvivo®.

Highlighted Categories in the USP Case

The first category to be highlighted is "university management", which appeared a posteriori. The university management is a fundamental piece for the university to be considered entrepreneurial, for an active and participative posture, and for the university to act, perhaps, as a protagonist of the triple helix actions in its region. This thought is corroborated by³⁹, who emphasize the importance of modern university management and connected with the new market needs. For the interviewees I2 and I3, at USP, management is integrated with this demand, as indicated in the speeches below:

[...] USP, as the largest Brazilian university, everything it does end up gaining projection. So, the fact that you have the largest Brazilian university with initiatives such as the Technology Park, Incubator, this attracts media, this is publicized, this is positive even to inspire other universities, not to mention that the scientific component is very strong, has a very high competence within the University of São Paulo. So, when you can make this scientific competence reach the market through products and technologies, well, that's fantastic! You start to see the news: "product developed at USP brings these possibilities to patients...". That's very cool! And for this to happen, the management needs to be active and, at some point, prioritize these actions.

[...] USP is built of many heads and many people. I realize that part of the management is very focused on seeing this grow, and foster this culture, foster the park as an entrepreneur [...].

According to these participants, not all sectors of the institution understand entrepreneurship and innovation as a priority, as they still see these elements with a particular fear. According to the interviewees, especially in the legal sector, many processes are still lengthy, which ends up putting at risk the continuity of research and contracts. However, they state that they consider this usual since such issues are recent and sometimes require new processes and different ways of performing the work. As far as the innovation agency is concerned, they believe it is a work of awareness, which is gradually gaining fans and thus making the processes more agile and easy to execute. In this respect, it is worth noting the talk of I3:

[...] I see that the parks for the legal sector or in our management have not yet understood this very well. So I think that for us to start having an effective culture change and for the community outside to see us, they have to fight and start showing results, installed companies, indicators. This year we generated n revenue, we generated n jobs, n intellectual properties [...].

Next, the categories "academic entrepreneurship" and "entrepreneurial culture" were highlighted, in which the interviewees reported on the importance of disseminating to the community what the academy does. According to I3, "our mission is to carry what is done here for the benefit of society". This speech highlights the university's expectation that its results can be used for the benefit of society, indicating a vision of students and teachers as capable of developing skills to generate new products and processes that sustainably impact society^{21,6}.

For I1, USP is beginning to understand that it can generate more than "good employees". Thus, according to him, academic entrepreneurship gains more space and credibility:

[...] the university has historically prepared good employees, good researchers, but only it has recently begun to prepare good entrepreneurs. A staff that wants, that is willing to open their business, and we see that in the country, this is very important, the microenterprise in our country is fundamental. Most of the jobs come from microenterprise, according to data from various researches that we are aware of. So it does is important that the university can put, not as an imposition, but as a path the entrepreneurship because of the importance it has for Brazil's economy, for the very innovation that is generated within the university that can solve several of the social and environmental problems that we are facing. Then the university does need to show this other path, which is possible to undertake, even if you have difficulties, but it is possible to undertake.

In this scenario, some actions to publicize the work performed by the university's innovation areas are essential so that the academic community can understand the services it has at its disposal. In some instances, academics do not have the dimension that they can develop a new product or process while still at the university. With this in mind, USP, according to the I1 report, performs some activities:

[...] we promote several events, both national and international, and this involves the entire structure of entrepreneurship and innovation of the university. Recently a tool that helps in the internationalization of companies has been released, a tool created by the agency USP; the visits that have frequently occurred here from students, and we have made several lectures as well as events at the university. We are invited to events even of

courses that apparently have nothing to do with entrepreneurship, but we are present to divulge this history and to raise possible interest.

For the interviewee I2, there is a significant gap to be overcome, since Brazil is among the twenty countries that most produce science in the world, but when the subject is innovation, it is not even among the first fifty. "If we train scientists, given the country's conditions, reasonably well, why can't we train innovators? I think it is this lack of entrepreneurship within the university, so the university does need to foster this mission". This statement is corroborated in the European Union report of², which encourages the insertion of entrepreneurship in the third mission as a goal to be developed by the whole institution and points out that, when this mission is accomplished, it can transform the culture of the place.

Academic entrepreneurship can be stimulated mainly by an entrepreneurial university, which values actions to generate applied knowledge for society. According to¹⁹, the international mobility of students, the existence of business partners, the development of degrees in conjunction with institutions abroad, and the execution of international research projects are crucial elements for the new entrepreneurial university. According to the interviewee I3:

[...] USP is on its way to becoming an entrepreneurial university. If you look at other Brazilian or Latin American universities, it is ahead, but if you look at European or American universities, then you realize that there is a long way to go, and it is in them that our focus must be. We have to develop research, projects, products, something that really makes a difference.

The differential of an institution that has an entrepreneurial culture is that it can stimulate and encourage actions both within and outside the country, which can determine the success of the region where the institution is located. For I3, however, particular caution is necessary, since the entrepreneurial culture does not necessarily mean a capitalist culture: "the keyword ends up being this issue of the entrepreneurial and innovative culture. It is a long process, which stimulates people to think differently, and not to simply see it as the culture of capitalism within the university".

As can be seen in Figure 2, the entrepreneurial culture has a symmetrical relationship with academic entrepreneurship, showing that, for those interviewed, the culture has a direct influence on what is developed through academic entrepreneurship, and this, in turn, ends up strengthening the entrepreneurial culture of the university.

For the interviewees, these actions impact the institution's economic sustainability, which is the next category to be highlighted in this study. In this regard, an excerpt from the I2 speech should be observed:

[...] we have to seek autonomy, even to strengthen the project, not to be dependent on public resources. Today it is not possible for the university to have a share in the revenues, but it will in the future when we start to occupy the lots, it will not be a land sale; it will be an expensive fee to use. Of that each company pays to occupy the area, one part comes to the management entity's condominium costs, another part goes to the university, it's a proportion of about 30%, 35% goes to USP, the rest goes to the management entity to make the condominium costs.

Still, according to I2, there are other revenues considered important for sustainability:

[...] as indirect revenues, I highlight that the University of São Paulo has a stake in the ICMS of São Paulo. The more business is created, the more companies earn, in one way or another, this returns to the university as well. And the other indirect income is that the technology park promotes entrepreneurship, promotes business-university interaction; the university has patents, patents that are commercialized or that generate royalties, and generates income for the university as well. It's very difficult for you to measure, "this is the exact amount going to the university", it will be possible to measure the direct aspect as a whole, but there is this indirect aspect that should be considered as well. And there are one or two aspects that are companies hiring projects directly from the university, there are laboratories that provide development services for companies, so this is also a source of revenue.

All these resources, according to the interviews, can be considered to subsidize the expenditures that the innovation areas have. Also noteworthy is I2's statement about the park's budget:

[...] the funding is financed by the City Hall which passes on the budget to the Foundation, it does not pass on money to companies, it passes on to the Foundation which makes its staff available to entrepreneurs, and we also collect fees from companies that are here, which helps in our budget also to provide support for them. The university does not directly fund the business here within the technology park, which the university does indirectly, that we know that it also costs, has made the area available, has its security guards who circulate around, all this we know that also costs. However, the cost of managing the technology park of Ribeirão Preto is made by the Foundation, which receives a budget from the City Hall and also has its own revenues.

To achieve economic sustainability, an institution needs to look at three key metrics: employment growth, market share, and revenue per sector that contributes to the global economy⁵⁶. Given this, in the understanding of I2, USP impacts the creation of direct jobs through the technology park:

[...] we have a survey that in the technology park alone today works around 300 people. It is not a very

big number, but you notice that we are only in the first phase. We have here today startups; we still can't make the area viable for big companies to settle. It is not a number to throw away. A good part of the staff who are here is post-graduated, it is another even more relevant indicator, even more interesting (it is a qualified job generation). Not to mention that we have here, in the technological park, the Software Training Center, which was set up via the Paulista Local Productive Arrangements Support Program. I said that we have the headquarters of the local productive arrangements here. We managed to capture it with the state government resource; with this, we built a laboratory to train the software, language courses, and programming workforce.

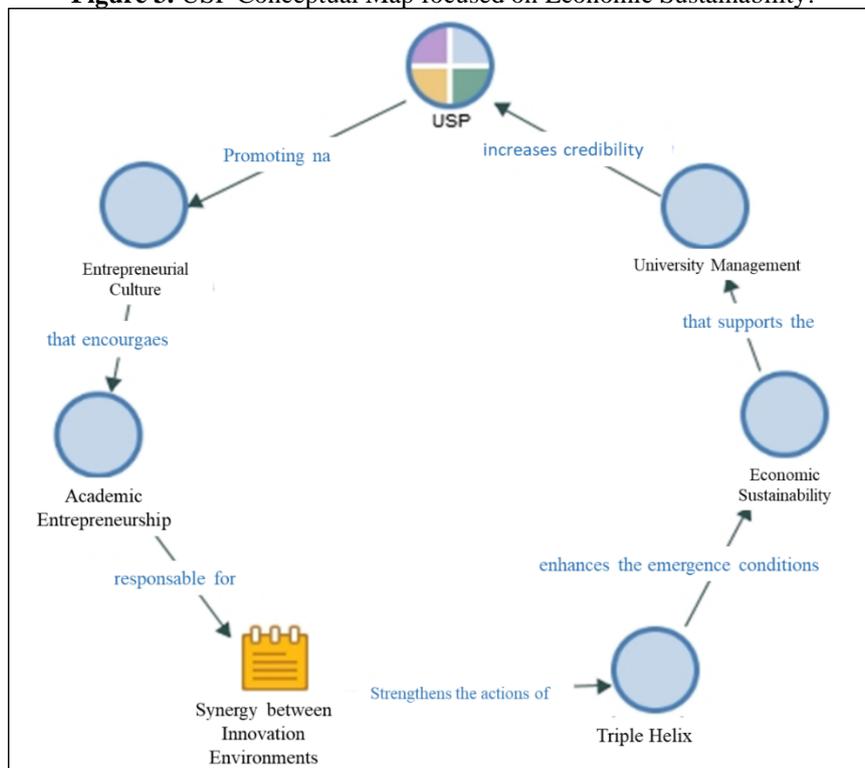
This interviewee's speech indicates one of the concerns expressed by the target 4.4, aimed at skills relevant to employment, decent jobs, and localized entrepreneurship, of SDG 4⁶². It is in this goal that entrepreneurial and sustainable universities can help because, according to SDGs' principles, these institutions can transform, through entrepreneurship, the place where they are inserted, improve the quality of generated jobs, and qualify them.

V. Conclusion

After the presentation and analysis of the categories, a mental map is presented, based on the data collected. The map, represented in Figure 3, seeks to provide a general understanding, in a clear and summarized way, of how USP, in the view of the interviewees, positions itself concerning the subject approached in the interviews.

From the conceptual map, it was possible to identify the key categories for USP to reach economic sustainability through innovation environments. In this case, the synergy between innovation environments, such as the incubator, the park, the poles installed in the parks, the startups, the spin-offs, and the innovation agency, which, by working together, facilitate the sharing of information, strengthening the actions of the triple helix and empowering the conditions for the emergence of economic sustainability, stand out. This type of action seems simple to occur in academic environments that have entities focused on entrepreneurship, such as parks and incubators, but in practice, it is complex to establish rules, processes, and the good progress of these relationships. However, this study showed that USP has developed this ability, which can be identified as the university and its actors differential. It is also important to emphasize the entrepreneurial culture as a foster for academic entrepreneurship because, without this element, it would be difficult for the other actions of the model to be possible. The entrepreneurial culture is fostered precisely by actions to bring together the different actors, through events, entrepreneurship courses that are not of administrative areas, but that encourage students to think like entrepreneurs and to develop solutions to the problems their professions face.

Figure 3. USP Conceptual Map focused on Economic Sustainability.



Source: Elaborated by the authors from software NVivo®.

As a limitation of this study, the codification is pointed, which is one of the stages of content analysis, and was carried out by one of the researchers manually, seeking to respect the choice for a phenomenological paradigm of research. This may have influenced the analyses in some way, since the history of the researcher, her convictions and her paradigms may have privileged some phases of research and analysis. As future studies, it would be possible to analyze the contribution of actors such as companies and government, in the relationship with the entrepreneurial university and to investigate how this relationship could influence the economic sustainability of HEIs or even sustainability in its three dimensions.

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References

- [1]. Albahari, A.; Pérez-Canto, S.; Barge-Gil, A.; Modrego, A. (2017). Technology Parks Versus Science Parks: Does The University Make The Difference? *Technological Forecasting & Social Change*. 116, 13-28. Available At: <https://www.sciencedirect.com/science/article/pii/S0040162516306655?via%3Dihub>. Retrieved On November 15, 2018.
- [2]. Allinson, R.; Jávorka, Z. Collins, I. (2012). The Development Of A Guiding Framework For Entrepreneurial Higher Education Institutions In Europe. Available At: <http://www.technopolis-group.com/?Report=Development-Guiding-Framework-Entrepreneurial-Higher-Education-Institutions-Europe>. Retrieved On June 9, 2017.
- [3]. ANPROTEC - Associação Nacional De Entidades Promotoras De Empreendimentos Inovadores. Available At: <http://anprotec.org.br/site/pt/incubadoras-e-parques/>. Retrieved On February 9, 2017.
- [4]. Audy, J. L. N. (2006). Between Tradition And Renewal: Challenges Of The Entrepreneurial University. In: Audy, Jorge Luis Nicolas; Morosini, Marília Costa (Orgs.). *Innovation And Entrepreneurialism In The University*. Porto Alegre: EDIPUCRS.
- [5]. Audy, J. L. N.; Piqué, J. (2016). Dos Parques Científicos E Tecnológicos Aos Ecossistemas De Inovação. *Recurso Eletrônico On-Line: Desenvolvimento Social E Econômico Na Sociedade Do Conhecimento*. P. 26. Brasília, DF: ANPROTEC. Available At: <http://docplayer.com.br/49855717-Dos-Parques-Cientificos-E-Tecnologicos-Aos-Ecossistemas-De-Inovacao.html>. Retrieved On September 25, 2017.
- [6]. Balan, P.; Maritz, A.; Mckinlay, M. (2018). A Structured Method For Innovating In Entrepreneurship Pedagogies. *Education + Training*, 60 (7/8), 819-840. Available At: <https://www.emeraldinsight.com/doi/full/10.1108/ET-05-2017-0064>. Retrieved On November 12, 2018.
- [7]. Bardin, L. (2010). *Análise De Conteúdo*. Lisboa, Portugal: (70), LTDA.
- [8]. Bencke, F. F. (2016). A Experiência Gaúcha De Parques Científicos E Tecnológicos: A Quarta Hélice. 2016. 351 F. Tese (Doutorado Em Administração). Universidade De Caxias Do Sul. Programa De Pós-Graduação Em Administração, Caxias Do Sul. Available At: <https://repositorio.ucs.br/xmlui/bitstream/handle/11338/1236/Tese%20Fernando%20Fantoni%20Bencke.pdf?sequence=1&isAllowed=Y>. Retrieved On May 12, 2017.
- [9]. Blewitt, J. (2010). Higher Education For A Sustainable World. *Education + Training*, 52 (6/7), 477-488. Available At: <https://www.emeraldinsight.com/doi/full/10.1108/00400911011068432>. Retrieved On November 16, 2018.
- [10]. Breznitz, S.M., O'Shea, R.P.; Allen T.J. (2008). University Commercialization Strategies In The Development Of Regional Bioclusters, *Journal Of Product Innovation Management*. (25), 129-142. Available At: <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1540-5885.2008.00290.x>. Retrieved On October 2, 2016.
- [11]. Budyldina, N. (2018). Entrepreneurial Universities And Regional Contribution. *International Entrepreneurship And Management Journal*. Saint Petersburg. 14 (2), 265-277. Available At: <https://link.springer.com/e314.periodicos.capes.gov.br/article/10.1007/2Fs11365-018-0500-0#citeas>. Retrieved On February 26, 2019.
- [12]. Carayannis, E. G.; Rogers, E. M.; Kurihara, K.; Allbritton, M. M. (1998). High-Technology Spin-Offs From Government R&D Laboratories And Research Universities. *Technovation*, 18 (1), 1-11. Available At: <https://www.sciencedirect.com/science/article/pii/S0166497297001016>. Retrieved On April 2, 2017.
- [13]. Chiochetta, J. C. Proposta De Um Modelo De Governança Para Parques Tecnológicos. (2010). 208 F. Tese (Doutorado Em Engenharia Da Produção) - Universidade Federal Do Rio Grande Do Sul, Porto Alegre, 2010. Available At: <https://www.lume.ufrgs.br/bitstream/handle/10183/28794/000770257.pdf?sequence=1>. Retrieved On May 12, 2017.
- [14]. Clark, B. *Creating Entrepreneurial Universities*. (2003a). Oxford: IAU Press-Elsevier Science. 38, 373-374. Available At: <https://link.springer.com/article/10.1023/A:1003771309048>. Retrieved On May 12, 2017.
- [15]. Clark, B. *Sustaining Change In Universities: Continuities In Case Studies And Concepts*. (2003b). *Tertiary Education And Management*, (9), 99-116. Available At: <https://link.springer.com/article/10.1023/A:1003771309048>. Retrieved On May 12, 2017.
- [16]. Denzin, N. K.; Lincoln, Y. S. (2008). *Collecting And Interpreting Qualitative Materials*. (3). Thousand Oaks, Calif: Sage. Available At: <https://us.sagepub.com/en-us/sam/collecting-and-interpreting-qualitative-materials/book237870>. Retrieved On April 10, 2017.
- [17]. Diaconu, M.; Dutu, A. From The Orientation Of Marketing To Business Model - A More Entrepreneurial University. *Academica Brâncuși Publisher*. University Of Târgu Jiu, (5) 57-62. Available At: http://www.utgiu.ro/revista/ec/pdf/2014-05/10_Diaconu,%20Dutu.pdf. Retrieved On February 16, 2017.
- [18]. DJSI - DOW JONES SUSTAINABILITY WORLD INDEXES. Dow Jones Sustainability World Indexes Guide Book 2011. Disponível Em: <http://www.sustainability-indices.com/>. Acesso Em 16 De Fev. De 2017.
- [19]. Errasti, N.; Bezanilla, M.J.; García-Olalla, A.; Auzmendi, E.; Paños J. (2018). Factors And Maturity Level Of Entrepreneurial Universities In Spain, *International Journal Of Innovation Science*, 10 (1), 71-91. Available At: <https://www.emeraldinsight.com/doi/full/10.1108/IJIS-05-2017-0043>. Retrieved On November 20, 2018.
- [20]. Etzkowitz, H. Leydesdorff, L. (1996). *The Triple Helix - University, Industry, Government Relations: A Laboratory For Knowledge*

- Based Economic Development. In: The Triple Helix Of University, Industry And Government Relations: The Future Location Of Research Conference. Amsterdam. 14 (1), 14-19. Available At: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2480085. Retrieved On October 5, 2017.
- [21]. Etzkowitz, H.; Germain-Alamartine, E.; Keel, J.; Kumar, C.; Smith, K.N.; Albats, E. (2019). Entrepreneurial University Dynamics: Structured Ambivalence, Relative Deprivation And Institution-Formation In The Stanford Innovation System. *Technol. Forecast. Soc. Chang.* (141) 159–171.
- [22]. Etzkowitz, H. (2003). Innovation In Innovation: The Triple Helix Of University-Industry-Government Relations. *Social Science Information*, 42 (3), 293–337. Available At: <https://journals.sagepub.com/doi/abs/10.1177/05390184030423002>. Retrieved On October 5, 2017.
- [23]. Etzkowitz, H. (2013). Anatomy Of The Entrepreneurial University. *Social Science Information*. 52 (3), 486–511. Available At: <https://journals.sagepub.com/doi/10.1177/0539018413485832>. Retrieved On October 5, 2017.
- [24]. EUROPEAN COMMISSION. Directorate-General For Education, Youth, Sport And Culture. (2017). Communication From The Commission To The European Parliament, The Council, The European Economic And Social Committee And The Committee Of The Regions: On A Renewed EU Agenda For Higher Education. European Commission: Brussels, Belgium. 4–12. Available At: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017DC0247&rid=4>. Retrieved On November 13, 2018.
- [25]. Felsenstein, D. (1994). University-Related Science Parks – "Seedbeds" Or Enclaves Of Innovation? *Technovation*. 14 (2), 93-110. Elsevier Science, Ltd., Reino Unido. Available At: <https://www.sciencedirect.com/science/article/pii/016649729490099X>. Retrieved On September 15, 2017.
- [26]. Fleaca, E. Fleaca, B.; Maiduc, S. (2018). Aligning Strategy With Sustainable Development Goals (Sdgs): Process Scoping Diagram For Entrepreneurial Higher Education Institutions (Heis). *Sustainability*. V. 10 (4), 1032. Available At: <https://www.mdpi.com/2071-1050/10/4/1032>. Retrieved On November 13, 2018.
- [27]. Greenmetric. UI University Greenmetric University Ranking 2018. Available At: <http://greenmetric.ui.ac.id/what-is-greenmetric/>. Retrieved On January 7, 2019.
- [28]. Guy, I. A Look At Aston Science Park. (1996). *Technovation*. 16 (5), 217–218. Available At: <https://www.sciencedirect.com/science/article/pii/0166497296000028>. Retrieved On March 15, 2017.
- [29]. SEBRAE; ENDEAVOR. Empreendedorismo Nas Universidades Brasileiras 2016. Available At: <https://www.sebrae.com.br/sebrae/portal%20sebrae/anexos/relatorio%20endeavor%20imprensa.pdf>. Retrieved On May 21, 2017.
- [30]. Fuller, D; Pickernell, D. (2018). Identifying Groups Of Entrepreneurial Activities At Universities. *International Journal Of Entrepreneurial Behavior & Research*, 24 (1), 171–190. Available At: <https://www.emeraldinsight.com/doi/full/10.1108/IJEBR-03-2017-0096>. Retrieved On November 20, 2018.
- [31]. Galvão, A.; Ferreira, J. J.; Marques, C. (2018). Entrepreneurship Education And Training As Facilitators Of Regional Development: A Systematic Literature Review. *Journal Of Small Business And Enterprise Development*, 25 (1), 17–40. Available At: <https://www.emeraldinsight.com/doi/full/10.1108/JSBED-05-2017-0178>. Retrieved On February 25, 2019.
- [32]. Guarany, L. R. Dos. (2010). Universidade Empreendedora: Conceito Em Evolução, Universidade Em Transformação. In: *Educação Empreendedora: Conceitos, Modelos E Práticas*. Rose Lopes (Org.). Rio De Janeiro: Elsevier; São Paulo: Sebrae.
- [33]. Guerra, M. J.; Grazziotin, Z. J. (2010). Educação Empreendedora Nas Universidades Brasileiras. In: *Educação Empreendedora: Conceitos, Modelos E Práticas*. Rose Lopes (Org.). Rio De Janeiro: Elsevier; São Paulo: Sebrae. Available At: <https://books.google.com.br/books?hl=pt-BR&lr=&id=5wooyq3qbt&oi=fnd&pg=PP1&dq=Educação+Empreendedora+Nas+Universidades+Brasileiras>. Retrieved On April 2, 2018.
- [34]. Guerrero, M.; Urbano, D. (2016). The Impact Of Triple Helix Agents On Entrepreneurial Innovations' Performance: An Inside Look At Enterprises Located In An Emerging Economy. *Technological Forecasting & Social Change*, 119 (2017), 294–309. Available At: <http://isarticles.com/bundles/article/pre/pdf/95184.pdf>. Retrieved On April 2, 2018.
- [35]. Guerrero, M.; Urbano, D. (2013). Entrepreneurial Universities: Socioeconomic Impacts Of Academic Entrepreneurship In A European Region. *Economic Development Quarterly*. (27), 40–45. Available At: <https://journals.sagepub.com/doi/abs/10.1177/0891242412471973>. Retrieved On April 3, 2018.
- [36]. Guerrero, M.; Urbano, D. (2014). Academics Start-Up Intentions And Knowledge Filters: An Individual Perspective Of The Knowledge Spillover Theory Of Entrepreneurship. *Small Business Economics*, 43 (1), 57–74. Available At: <https://link.springer.com/article/10.1007/s11187-013-9526-4>. Retrieved On October 4, 2018.
- [37]. Gumpert, P.; Jennings, J. D. (1999). Are We Privatizing Public Higher Education? *Change*, (31), 61, 1999.
- [38]. Henriques, I. C.; Sobreiro, V. A.; Kimura, H. (2018). Science And Technology Park: Future Challenges. *Technology In Society*. (53) 144–160. Available At: <https://doi.org/10.1016/j.techsoc.2018.01.009>. Retrieved On November 15, 2018.
- [39]. Hu, J.; Liu, H.; Chen, Y.; Qin, J. Strategic Planning And The Stratification Of Chinese Higher Education Institutions. *International Journal Of Educational Development*, (63) 36–43. Available At: <https://www.sciencedirect.com/science/article/pii/S0738059316304382>. Retrieved On August 23, 2018.
- [40]. Khanmirzaee, S.; Jafari, M.; Akhavan, P. (2018). A Study On The Role Of Science And Technology Parks In Development Of Knowledge-Based Economy. *World Journal Of Entrepreneurship, Management And Sustainable Development*. 14 (1), 74–85. Available At: <https://doi.org/10.1108/WJEMSD-05-2017-0021>. Retrieved On November 15, 2018.
- [41]. Link, A. N.; Scott, J. T.U.S. (2006). Science Parks: The Difusion Of Na Innovation And Its Effects On The Academic Missions Of Universities. *International Journal Industrial Organization*. 21 (9), 1323–1356. Available At: <https://www.sciencedirect.com/science/article/pii/S0167718703000857>. Retrieved On March 22, 2018.
- [42]. Lindh, I.; Thorgren, S. (2016). Entrepreneurship Education: The Role Of Local Business. *Entrepreneurship & Regional Development*. Luleå, Suécia. 28 (5-6), 313–336. Available At: <https://www.tandfonline.com/doi/full/10.1080/08985626.2015.1134678>. Retrieved On February 26, 2019.
- [43]. Martin, L. M.; Warren-Smith, I. Lord, G. (2018). Entrepreneurial Architecture In UK Universities: Still A Work In Progress? *International Journal Of Entrepreneurial Behavior & Research*. 25 (2), 281–297. Available At: <https://www.emeraldinsight.com/doi/full/10.1108/IJEBR-01-2017-0047>. Retrieved On September 20, 2018.
- [44]. Miles, M.B., Huberman, A. M.; Saldana, J. (2014). *Qualitative Data Analysis: A Methods Sourcebook*. (3), Sage Publicatoin.
- [45]. Minayo, M. C. De S. (2017). Scientificity, Generalization And Dissemination Of Qualitative Studies. 22 (1), 16–17: *Ciência E Saúde Coletiva*. Available At: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1413-81232017000100016. Retrieved On September 20, 2018.
- [46]. Mintzberg, H. (2004). Leadership And Management Development: An Afterword. *Academy Of Management Executive*. 18 (3), 140–142. Available At: https://www.jstor.org/stable/4166104?seq=1#page_scan_tab_contents. Retrieved On September 20, 2018.

- [47]. Moura, E. O. (2012). Proposta De Um Instrumento Para Medição Da Percepção Da Eficácia Dos Parques Tecnológicos Conforme Critérios De Desenvolvimento Sustentável: O Caso Do Tecno Parque De Curitiba. Dissertação. Pontifícia Universidade Católica Do Paraná.
- [48]. Otani, N. Universidade Empreendedora: A Relação Entre A Universidade Federal De Santa Catarina E O Sapiens Parque. 2008. 216 F. Tese. (Doutorado Em Engenharia E Gestão Do Conhecimento). Universidade Federal De Santa Catarina. Available At: <https://repositorio.ufsc.br/bitstream/handle/123456789/91593/PEGC0064-T.Pdf?sequence=1&isallowed=Y>. Retrieved On November 13, 2018.
- [49]. PETARNELLA, L. A Inserção Da Sustentabilidade Nos Programas De Pós-Graduação Stricto Sensu Em Administração No Brasil. 2014. 189 F. Tese. (Doutorado Em Administração) Programa De Pós-Graduação Em Administração. Universidade Nove De Julho - UNINOVE. Available At: http://bibliotecade.uninove.br/bitstream/tede/730/1/B_Leandro%20Petarnella.Pdf. Retrieved On November 15, 2018.
- [50]. Pérez, M.; Sánchez, A. M. (2003). The Development Of University Spin-Offs: Early Dynamics Of Technology Transfer And Networking. 23 (10), 823–831. *Technovation*. Available At: <https://www.sciencedirect.com/science/article/pii/S0166497202000342>. Retrieved On November 13, 2018.
- [51]. QS. University Rankings Latin America. Available At: <https://www.topuniversities.com/university-rankings/latin-american-university-rankings/2016#Sorting=Rank+Region+=+Country+=+Faculty+=+Stars=False+Search=>. Retrieved On May 23, 2017.
- [52]. RAE, D. Riding Out The Storm: Graduates, Enterprise And Careers In Turbulent Economic Times. (2008). *Education + Training*, 50 (8/9), 748–763. Available At: <https://doi.org/10.1108/00400910810917118>. Retrieved On November 16, 2018.
- [53]. Roldan, L. B., Hansen, P. B., Garcia-Perez-De-Lema, D. (2018). The Relationship Between Favorable Conditions For Innovation In Technology Parks, The Innovation Produced, And Companies' Performance: A Framework For An Analysis Model. *Innovation & Management Review*, 15 (3), 286–302. Available At: <https://doi.org/10.1108/INMR-05-2018-0027>. Retrieved On November 15, 2018.
- [54]. RUF. Ranking Universitário Folha 2018. Available At: <http://ruf.folha.uol.com.br/2018/Ranking-De-Universidades/>. Retrieved On January 5, 2019.
- [55]. Schmitz, A.; Urbano, D.; Dandolini, G. A.; Souza, J. A.; Guerrero, M. Innovation And Entrepreneurship In The Academic Setting: A Systematic Literature Review *International Entrepreneurship And Management Journal*. V. 13, N. 2, P. 369–395, 2017. Disponível Em: <https://link.springer.com/article/10.1007/s11365-016-0401-z>. Acesso Em: 10 De Maio De 2016.
- [56]. Schulz, S. A.; Flanigan R. L.; (2016). Developing Competitive Advantage Using The Triple Bottom Line: A Conceptual Framework, *Journal Of Business & Industrial Marketing*, 31 (4), 449–458. Available At: <https://www.emeraldinsight.com/doi/full/10.1108/JBIM-08-2014-0150>. Retrieved On May 16, 2017.
- [57]. Silva, D. D. (2009). Articulação Do Sistema De Inovação No Município De Sorocaba. Um Estudo Com Base Na Experiência Nacional De Ambientes De Inovação E Nos Pólos Franceses De Competitividade. 423 F. Tese. (Doutorado Em Ciências). Institutos De Pesquisas Energéticas E Nucleares. Universidade De São Paulo. Available At: <file:///C:/Users/User/Downloads/Devanildodamiaodasilva.Pdf>. Retrieved On March 15, 2017.
- [58]. Spolidoro, R. M.; Audy, J. (2008). Parque Científico E Tecnológico Da PUCRS: Tecnopuc. Edipucrs. Available At: <http://ebooks.pucrs.br/edipucrs/tecnopuc.pdf>. Retrieved On June 5, 2017.
- [59]. THE. The Higher Education World University Rankings. Available At: <https://www.timeshighereducation.com/world-university-rankings>. Retrieved On May 23, 2017.
- [60]. Thorp, H.; Goldstein, B. (2010). *Engines Of Innovation: The Entrepreneurial University In The Twenty-First Century*. Chapel Hill: University Of North Carolina Press. Available At: https://books.google.com.br/books?id=KMB09kqFR2MC&printsec=frontcover&hl=pt-br&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false. Retrieved On November 13, 2018.
- [61]. Trindade, H. (1999). Universidade, Ciência E Estado. In: TRINDADE, Hélgio (Org.). *Universidade Em Ruínas: Na República Dos Professores*. Petrópolis, RJ: Vozes/ Rio Grande Do Sul: CIPEDES, 1999.
- [62]. UN, United Nations. *Transforming Our World: The 2030 Agenda For Sustainable Development*. Available At: <https://sustainabledevelopment.un.org/post2015/transformingourworld>. Retrieved On August 14, 2020.
- [63]. USP. Universidade De São Paulo. Available At: <http://www5.usp.br/>. Retrieved On January 19, 2017.
- [64]. Venkataraman, S. (2004). Regional Transformation Through Technological Entrepreneurship. *Journal Of Business Venturing*. Nova Iorque, 19 (1), 153–167. Available At: https://econpapers.repec.org/article/eejebvent/v_3a19_3ay_3a2004_3ai_3a1_3ap_3a153-167.htm. Retrieved On April 20, 2017.
- [65]. WCED. *Our Common Future*. Oxford: Oxford University Press, 1987.
- [66]. Wynn, M.; Jones, P. (2017). Knowledge Transfer Partnerships And The Entrepreneurial University. *Industry And Higher Education*, 31 (4), 267–278. Available At: <https://doi.org/10.1177/0950422217705442>. Retrieved On November 18, 2018.
- [67]. YAMAGUCHI, Y.; FUJIMOTO, J.; YAMAZAKI, A.; KOSHIYAMA, T. A Study Of The Factors Influencing Industry-Academia Collaboration Activities In Private Universities. *Portland International Conference On Management Of Engineering And Technology (PICMET)*, Honolulu, HI, P. 1–10, 2018. Disponível Em: <http://ieeexplore-ieee.org/Ez314.Periodicos.Capes.Gov.Br/Stamp/Stamp.Jsp?Tp=&Arnumber=8481773&Isnumber=8481733>. Acesso Em 26 De Fev. De 2019.
- [68]. Yin, R. K. (2017). *Case Study Research And Applications: Design And Methods*. Sage Publications
- [69]. Ziyae, B.; Tajpour, M. (2016). Designing A Comprehensive Model Of Entrepreneurial University In The Science And Technology Parks. *World Journal Of Entrepreneurship, Management And Sustainable Development*. 12 (3), 267–280. Available At: <https://doi.org/10.1108/WJEMSD-04-2016-0022>. Retrieved On September 21, 2018.
- [70]. Zouain, D. M.; Plonski, G. A. (2006). *Parques Tecnológicos: Planejamento E Gestão*. Anprotec.