

**34th IASP Annual World Conference  
Istanbul, Turkey**

---

**Internationalization Strategy of Science Parks:  
the Brazilian Experiences**

*Plenary Session 2*

*"Innovation support services: what companies need from their parks and AOIs"*

Author:

Aurora Carneiro Zen, Ph.D (aurora.zen@ufrgs.br)  
Zenit Science Park/Universidade Federal do Rio Grande do Sul

Co-author(s)

Pierre Francesco Arrabito  
Zenit Science Park/Universidade Federal do Rio Grande do Sul



**ODTÜ-TEKNOKENT**

**ITUARI**  
TEKNOKENT

HOSTED BY

BRIGHTER  
TOGETHER

**Abstract**

Internationalization became an important element in the Science Parks (SP) practices. In the last years, SP started to offer specific services to foster internationalization of its tenant firms, such as soft-landing programs and international immersion experiences to start-ups. This paper aims to analyze the internationalization practices of Brazilian Sciences Parks in light of the Network and Internationalization Theories. An exploratory multiple case studies was conducted by the selection three Brazilian Science Parks located in the south of Brazil (Rio Grande do Sul State): Tecnopuc in Porto Alegre; Tecnosinos in São Leopoldo and Feevale Techpark in Campo Bom. Results showed that a cohesive internal and external ties and networks as well as specialization contribute to the internationalization process of the Science Parks and it's firms.

**Key words:** Internationalization; Network, Science Parks.

**1. INTRODUCTION**

Science Parks were originally developed to increase the possibilities of commercializing university research, and to meet the needs of entrepreneurial academic spin-offs. The Stanford Research Park in California, established in 1951, is often regarded as the genesis of the Science Park movement (Lindholm & Smith, 2009). It has changed the Silicon Valley area from one of the poorest regions in the USA into a global centre of technology, finance, education and research. This experience led to a global phenomenon.

Similar projects, where the relationship between universities, its R&D centres and the private initiative expanded in various parts of the world. These numbers continue to grow as their formation is increasingly adopted as an important economic development strategy and part of the national or regional innovation system (Freeman, 1995; Cooke et al, 1997; Chung, 2002).

On the other hand, as the global economic scenario goes under major transformations, there is a growing demand for novelty, increasing the organizational challenges and the need to become more innovative (Engelman & Zen, 2016).

In this context, internationalization became an important element in the Science Parks (SP) strategy in spite of the scarce literature on this important issue (Bengtsson & Löwegren, 2000; Berbel & Rocha, 2011; Ruiz et al, 2016; Guadix et al, 2016).

On the other hand, during the last decade, we observed that SP started to offer many services to internationalization support of tenants companies, such as Soft-Landing programs and international immersion experiences to start-ups (Anprotec, 2016).

This paper aims to analyze the internationalization practices of Brazilian Sciences Parks in light of the network theory approach. To do so, a multiple exploratory case study was conducted among selected science parks located at the south of Brazil: Scientific and Technological Park of PUCRS (Tecnopuc) in Porto Alegre; Technological Park of São Leopoldo (Tecnosinos) in São Leopoldo and the Technology Park of Vale do Sinos (Feevale Techpark) in Campo Bom.

## 2. LITERATURE REVIEW

### 2.1 Science Park Models

A Technology and Science Park is considered a geographical distinct environment in which social and institutional processes emerge. It's environment is expected to become more integrated overtime through a texture of social and institutional networks (Johannisson, 1998). They act to manage the flow of information, facilitating the communication between the various actors and even providing a culture of innovation and creativity, facilitating the emergence of new companies.

Science Parks has been following a geographical and historical development and evolution. An interesting approach to categorize the various Science Parks model and mapping their evolution is referred to the recognized "Generations framework". It shows the different innovation systems of the Science Parks and the contextual development step by step toward increasingly higher levels of integration in the knowledge economy (Cooper, 1971; Anprotec-ABDI, 2008).

Pioneering parks that were created spontaneously in support of technology-based companies such as the Stanford Research Park as an extension of a university that includes incubating facilities for start-up firms, related business services and, as importantly, pathways into new, research-based technology and the innovation philosophy of the First Generation Science Park was "science push" (Langrish et al, 1972; Bianchi,2008).

The second generation of Science Park remains an extension of the University, thus, making available a mix of high quality facilities in the Park, by streamlining combining value-adding business services and managing the flow of technology and related knowledge, that can be also characterized by a "demand pull" generation (Bianchi, 2008).

The Third Generation Science Park is linked with the local community, increasing their participation in local, regional and global innovation advancements, whose Science Park management recognizes that "post industrial" economic activities need a much closer interaction with the knowledge suppliers and the wide range of services that support the innovative firms (Bianchi, 2008; Hohl & Hashemi, 2011).

In a Third Generation Science Park innovations, even those mastered by a single company, may stand out as comprehensive outcomes of these interactive, functional relations (Eriksson, 2012).

At the end of the twentieth century, a description of the 4th generation model was proposed by Cunha (1998), where firms and universities elaborate action strategies to ensure the future of the institutions. In this sense, the strategic partnership model seeks a balance between the offer generated within the university/research institutions and the needs that may arise on the market in the near future. Unlike the previous models, pushing technology or capture market needs, in this model, both partners meet to establish a strategy for joint action that brings mutual results.

The partnership model is characterized as symbiotic, one in which two parties depend on each other to get a particular advantage. The university has the knowledge base and the company has the market to sell the resulting product of this knowledge. However, university and company need to maintain a constant exchange of information to enable the network learning, so that the product development process brings positive results to both institutions, while the financing comes from the governmental institutions, since the results from this partnership contribute to the regional and local development (Zen & Hauser, 2004).

## 2.2 Internationalization of Science Parks

The literature on international business has highlighted that international expansion represents an opportunity for growth and the creation of value for the company. Enterprises that enter international markets generally increase their technological and market expertise, improve their performance and often become more innovative and therefore stronger competitors in their national markets (Hansson & Hedin, 2007; Engelman, Zen & Fracasso, 2015).

The internationalization of a Science Park is mainly based on international partnership with other Science Parks, Business Incubators, international institution and organizations, but it also depends on the internationalization characteristics of its tenant companies (Bigliardi et al, 2006)

Science Parks have a wider range of companies, from start-up to Multinationals. A common characteristic of the companies in SP is that they are mainly knowledge-based enterprises, which normally imply high degrees of innovation and utilization of technology than traditional business, which are continuously exposed to the phenomenon of globalization and its effects (Zacharewicz, Sanz & Jonkers, 2017).

Although new knowledges are patentable, new technology-based firms (NTBF) can expect international competition because of the technology's dynamic evolvement. This is one reason why NTBF should engage in early-stage internationalization in order to grow and be competitive (Cahen & Borini, 2017).

Internationalization depends also on the market demand. A small domestic market could make the early internationalization essential, while there are NTBF – New Technology Based Firms coming from larger countries but the products and processes on which these firms base their operations might be highly specialized corresponding to a very narrow market niche. Thus, in order to grow these firms have to become international, serving their customers on a global scale (Bengtsson & Löwegren, 2001; Cahen & Borini, 2017).

Internationalization is not only an issue of growth, it might be an issue of survival, for companies operating in certain industries. The last years of development in the IT-sector has shown the importance of timing and fast responses in so called emerging technology markets. Being a first-mover lead to a competitive scenario described as “the-winner-takes-it-all” (Radaev, 2004). Thus, for some new technology based firms early internationalization is a necessity for long term survival and competitiveness (Sapienza, et al, 2006).

NTBF internationalization also concerns the presence in the places where the technological knowledge is especially advanced and developing fast, the so called “hot-spots”. One such “hot-spot” should of course be their own Science Park but there might also be other technological “hot-spots” in other parts of the world for the same or related technological knowledge (Bengtsson & Löwegren, 2001; Bürgel, 2012).

Some NTBF also need to be present on the international venture capital markets in order to secure enough capital investment to finance product development activities and costs associated with the growth and expansion of the business (Bengtsson & Löwegren, 2001).

Additionally, NTBF performing better in terms of growth and profitability presents more elaborate local network with other local firms and with the university as well as a more elaborate international network with foreign customers, suppliers, universities and partners (Keeble et al, 1998).

Some aspects are related to how a Science Park can support the internationalization of its tenants firms, developing and adapting the following services: (i) *international commercialization*: SP's can support their resident companies in this respect, such as organizing companies' encounters, missions to accompany their managers abroad or bring foreign managers to visit their own resident companies; (ii) *partnerships in international projects*: this can be one of the first solid steps of any young global enterprise towards greater levels of internationalization; (iii) *international joint ventures*: STPs can help in screening and finding adequate partners for such endeavours; (iv) *international workforce*: by creating a program of international talented students and organizing selection and training of professional (Zacharewicz, Sanz & Jonkers, 2017).

The early stage internationalization of NTBF's is mostly explained by the "Born-Global" literature related to the entrepreneur's networking ability and competencies. (Knight, 1996; Madsen & Servais, 1997; Hasshai, 2011; Cavusgil & Knight, 2015; Coviello, 2015; ).

Bengtsson & Löwegren (2001) found that the Science Park networks may help the technology-based firm to bridge supply and demand across international borders, although most science park managers reported that internationalisation is high on their agenda, few parks have any plan or strategy for their internationalisation activities.

Additionally, the park could specialize in a particular sector, giving priority to the population, internationalization, and employment parameters as a path to improve its outcomes (Guadix et al, 2016).

Nevertheless, the conditions of the context where a science park is located and operates, the real stakeholders interests and the life cycle may affect strategy adopted (Bigliardi et al, 2006)

### **3. METHOD**

The aim of this paper was to analyze the internationalization practices of Brazilian Sciences Parks in light of the network theory. Thus, an exploratory approach was adopted using a multiple case study research strategy which focuses on understanding the dynamics presented within single settings, when the purpose of the research is to develop theory, not to test it (Yin, 1984; Eisenhardt, 1989; Eisenhardt & Graebner, 2007).

The studies currently have focused on the "Born Global" and "International Entrepreneurship" related to the entrepreneur's networking ability and competencies. (Knight, 1996; Madsen & Servais, 1997; Hasshai, 2011; Cavusgil & Knight, 2015; Coviello, 2015;).

So, the "qualitative research is uniquely suited to "opening the black box" of organizational processes, as it unfolds over time in context" (DOZ, 2011, p. 585).

A qualitative study was conducted, using two data sources: interviews and archival data. The primary data source involved semi-structured interviews with the directors of three Science Parks in the area of Porto Alegre (South of Brazil), during the month of June 2016. Interviews ranged from 50 minutes to 1 hour. Each interview was recorded and transcribed into the questionnaire form, resulting in 22 pages.

The interviewees were interviewed in their mother tongue (Portuguese). The interviews data were supplemented with archival data from various sources, including reports, websites and news articles about the Science Parks. These secondary data sources were collected before the interviews and they

have been very important to familiarize with the context and to validate emerging insight from the interviews.

We selected the three Brazilian Science Parks located in Rio Grande do Sul: Scientific and Technological Park of PUCRS (Tecnopuc) in Porto Alegre; Technological Park of São Leopoldo (Tecnosinos) and the Technology Park of Vale do Sinos (Feevale Techpark) in Campo Bom city. Each of them are connected to universities and located in the metropolitan area of Porto Alegre. They have been created between the 1998 and 2003 by their own university, which is also their main financing agent, together with other public institutions and the municipal government. They have different occupied area but approximately the 90% of the Science Parks space are reserved to the tenant companies.

#### **4. DATA ANALISYS AND RESULTS**

The theme of “Science Parks” was introduced in Brazil in 1984 through the National Council for Scientific and Technological Development (CNPq). This institutional body is linked to the Ministry of Science, Technology and Innovation (MCTI) and it’s in charge to foster the research in Brazil. The lack of culture for innovation and the low number of innovative enterprises existing at that time made the first technology Parks projects create the first business incubators in Brazil. This trend has grown rapidly, involving more incubators and innovative companies generated from Incubators, Universities and Research Centres throughout the country. In 1987 it was founded the Brazilian Association of Science Parks and Business Incubation – ANPROTEC. It represents mainly business incubators and Science & Technology Parks. It possesses the experiences in leading organizations through promoting innovation and entrepreneurship, articulation on public policies, as well as generation and dissemination of knowledge. Today with 261 members, they represent 400 Incubators, 40 Science & Technology Parks resulting in 6.300 innovative enterprises, which generated 33.000 jobs in the country (ANPROTEC, 2014).

##### 4.1 Rio Grande do Sul and Porto Alegre Regional Innovation System

Universities of Rio Grande do Sul State are increasing the transfer of knowledge and technology to society. Several investments gave more impetus to the expansion project in this area, led by the state government and the “Gaucho Science and Technology Parks Program”. Currently, there are 26 poles - projects that aim to develop technologies appropriate to different regions of the state - and 15 technological parks - physical areas where there are installed companies and R&D centers. It shows as the state is a pioneer in this type of initiative. The expansion is not only territorial but also financial. It has been already invested an amount of R\$ 60 million, which will increase because of the speed and capillarity of the results.

Rio Grande do Sul has fourth GDP in Brazil, housing approximately 10,000 companies, having 25 universities/federal institutes with about 53,000 researchers, teachers and doctors. The State has a government program that encourages the implementation of Scientific and Technological Parks in all its regions, with the support of local community colleges, which founded the 16 implementation of initiatives underway, and 4 in operation, 7 deployment and 5 in project.

Porto Alegre (RS) is among the most attractive Brazilian cities for receiving investments in innovation considering two concepts: the inputs for the innovation taking place and the outputs as results of innovation (Endeavour Brasil, 2016).

Porto Alegre, capital of the Rio Grande do Sul, has a very privileged geographic location in relation with the MERCOSUL (Free Trade Area Agreement between Brazil, Argentina, Paraguay and Uruguay) because

it is located between two big metropolis: Buenos Aires and São Paulo. It has 1.3 million of inhabitants and its metropolitan area has more than 3 million. Additionally, the technological infrastructure, financing resources, qualified human resources and their innovative ability contributes with this result.

The city has built a technological development program where the municipal government assumed as the articulator role between the local actors. There were two programs which reflect this effort by the government in the last two decades - the Porto Alegre Tecnopole (PAT) and the Municipal Council of Science and Technology (COMCET). The former one is an initiative, which involved nine institutions (Research centres, public administration and the business community) that in 1995 formalized their partnership to jointly develop and coordinated actions to promote the economy of the metropolitan area of Porto Alegre, based on innovation and technology. The second one aims to formulate, propose, evaluate and monitor public actions and policies of technical and scientific development, from government initiatives or in partnership with private agents (Hauser, & Zen, 2005).

#### 4.2 Case Studies General Approach

The three main Science Parks operating in Rio Grande do Sul State are the Scientific and Technological Park of PUCRS (Tecnopuc) in Porto Alegre, Technological Park of São Leopoldo (Tecnosinos) in São Leopoldo and the Feevale Techpark in Campo Bom. Each of them connected to universities and located in the metropolitan area of Porto Alegre (Mammarella et al, 2015).

These SPs have been created between the 1998 and 2003. The common founder of the three of them is their own university, which is also the major investor, together with other public institutions and the municipal government. They have different occupied area but approximately the 90% of the Science Parks space are reserved to the tenant companies. Nevertheless, the governance is managed in different ways: in the case of Feevale Tech Park and Tecnopuc, the governance is effected only by the university with their own actors, while Tecnosinos presents the triple helix model - local government, entrepreneur's associations and Unisinos University.

Feevale Techpark and Tecnosinos administrative staff comprises 6 and 7 people: SP Director and administrators, Incubator's administrator, analysts, and assistants, while the Tecnopuc staff comprises beyond the general director, a negotiation and a relationship manager, secretaries, a communication team and a counselling team, reaching a total of 18 employees.

The networks developed by the three Science Parks consists of various stakeholders and it counts with the local, regional and national partnerships. The main institutional partnership is the REGINP - Business Incubators and Technology Parks Network of the State of Rio Grande do Sul. Beyond this common partnership we found alliances with Endeavour Brazil (Innovative entrepreneurs), and Techno Policy Network for Tecnosinos and Tecnopuc.

Tecnopuc has a more complex institutional network involving also other research, innovation and technology funding centres such as CIENTEC, CNPq, FAPERGS, FINEP (Science and Technology funding agencies) as well as entrepreneurs associations such as FAJERS - Young Entrepreneur's Association, and COMUNG (Consortium of Communitarian Universities).

Concerning services portfolios for the tenant's companies, there are various such as innovative business solutions, juridical support and consultancy. An interesting partnership of Tecnopuc and Tecnosinos is within the incubator accelerator program named "*Ventur*", which provides a wide range of services and alliances for a limited period of time to make start-ups ready for the market, including connecting with investors.

Another relevant aspect within the Tecnopuc SP is the INOVAPUC - Innovation and Entrepreneurial Network of Tecnopuc, presenting several specialised laboratories, technological management agency, entrepreneurial management agency, technology transfer office, innovation management support centre.

Tecnopuc and Feevale Techpark have an internal bureau of intellectual property protection, while Tecnosinos has an external partnership, in spite of the university presents its own intellectual property agency. The three Science Parks presents a multidisciplinary business areas.

Table 1: Business Areas Comparison

Feevale Tech Park	Tecnosinos	Tecnopuc
<ul style="list-style-type: none"> <li>● Information and communication technology;</li> <li>● Creative industry;</li> <li>● Materials and Nanotechnology;</li> <li>● Health sciences and biotechnology;</li> </ul>	<ul style="list-style-type: none"> <li>● IT;</li> <li>● Communication and digital convergence;</li> <li>● Health technology;</li> <li>● Engineering and automation.</li> <li>● Environmental sciences and renewable energy.</li> </ul>	<ul style="list-style-type: none"> <li>● Information and Communication Technology and Electronics;</li> <li>● Energy and the Environment;</li> <li>● Biological and Health Sciences and Biotechnology;</li> <li>● Creative Industry.</li> </ul>

The main goal for all the three SP is the economic, technological and social development of the region and of the country. To get these common objectives they aim to attract P&D centre and new technology based firm, fostering the relationship between academia, government and businesses, through the flow of knowledge and technology.

Beyond this extensive institutional role, Feevale Techpark and Tecnosinos directors highlighted some more specific goals. The first one remarks how the role of the Science Park is important in creating employment, thus increasing the quality of life the region, while the second one declared the Park to be focused on developing some specific business area such as environmental technology and renewable energy, since it's related with a plurality of sectors. Tecnosinos also fosters the creation of start-ups in the area of health as a result of a non-institutionalized partnership with a medical cluster in Germany.

#### 4.3 Internationalization

This part of the interviews approached the internationalization practices of the SP's, the partnership with other SP's or incubators or international organizations as well as the results for the SP itself or for its tenant companies.



Feevale admitted not presenting a declared internationalization strategy but eventual partnerships with other Science Parks via the “Land2Land” project from Anprotec – Brazilian Association of Science and Technology Parks.

Land2land is a platform for the internationalization of innovative enterprises that intend to settle in innovation environments, such as technology parks and business incubators in Brazil or any other country. The platform also provides easy access to a trusted network of technology parks and incubators.

By accessing the platform, companies can meet and contact Incubators and Science Park with recognized quality in supporting innovative enterprises during their internationalization process. These environments are able to monitor and provide support throughout the internationalization process - from assessing the responsiveness of a given product or service at the intended target market to the installation and operation of the business in another country

The strategy of Tecnosinos is based on institutional partnerships such as Anprotec and IASP – International Association of Science Parks and unformal agreements with the commercial areas of the embassies of Switzerland, Canada, UK, France and the Chamber of Commerce and Industry Brazil-Germany in Porto Alegre (RS AHK).

The Tecnopuc has international agreements with various Scientific and Technological Parks in the world, in addition of international networks and platforms which gives access to dozens of innovation environments.

The agreements are part of the internationalization program for Tecnopuc and enable companies in the park to access the global market in a more agile way, and also allowing foreign companies to receive support to access the Brazilian market. This approach not only benefits the companies interested in settling in another country, but also those who want other types of connections and international partnerships. Table 2 presents the international partnerships of Tecnosinos and Tecnopuc.

**Table 2: International Partnership of Tecnosinos and Tecnopuc**

Tecnosinos	Tecnopuc
<ul style="list-style-type: none"> <li>● Russia - Skolkovo Innovation Center</li> <li>● Canada - David Johnston Research and Technology Park, Waterloo University</li> <li>● Canada - Spark centre of Dhuram</li> <li>● South Korea - Expo Science Park, Daejeon,</li> </ul> <p>All the Partnerships have not been contractually formalized</p>	<ul style="list-style-type: none"> <li>● Germany - HMWVL – Hessisches Ministerium für Wirtschaft, Verher und Landesent and House of Information Technology</li> <li>● Ireland - PRE-Park</li> <li>● Canada - GTMA – Greater Toronto Marketing Alliance</li> <li>● China - TUSPARK - Tsinghua University Science Park</li> <li>● USA - University of South Florida Research Park</li> <li>● Italy - Fondazione Bruno Kessler</li> <li>● UK - UKTI - United Kingdom Trade and Investment</li> <li>● Russia - Skolkovo Innovation Center</li> <li>● Global ICT Parks Network</li> </ul>

The Three Science Parks are associated to the Anprotec and to the IASP. They interact with the two associations via the “Land2Land” platform and conferences. It is also important to note that Tecnopuc participates of the INCOBRA Program – Increasing the STI Cooperation Between Brazil and the European Union.

It is a IASP project, which provides the expertise and the vast resources of its global network. The overall objective of INCOBRA is to focus, increase and enhance Research & Innovation (R&I) Cooperation Activities between Brazil and European Union R&I actors, so that both regions get the best value out of the mutual cooperation.

4.4 Achievements

Feevale TP, through an international program of Anprotec allowed to a resident company to expand its market thanks to an agreement with a multinational. The main goal of this international programs promoted by Anprotec and Iasp is indeed to match characteristics and needs of tenants companies with other Science Parks resident companies or established multinational which can offer their distribution channel or market knowledge for a mutual advantage arising from the exploitation of the technology solution offered.

**Table 3: Internationalization results**

Feevale Tech Park	Tecnosinos	Tecnopuc
<p>Marina, resident company in Feevale Techpark, was selected by the Support System Innovative Enterprises Internationalization - Anprotec project in partnership with Apex-Brasil.</p> <p>It was a great opportunity to break into new markets because in Brazil is still quite difficult to get space for an alternatives solution to traditional raw materials.</p> <p>Marina was not received by any SP but by companies such as Goodyear.</p> <p>The same Anprotec organized this partnership.</p>	<p>Program "Sharing of Korea's STP Experience", the Technology Park of South Korea. Knowledge Exchange in INNOPOLIS innovation cluster in the city of Daejeon;</p> <p>Students exchange through the Innovation Research Lab, Germany 2015;</p> <p>The Chamber of Commerce and Industry Brazil-Germany in Porto Alegre (AHK RS) offers the services provided by the camera and international facilities to local companies.</p>	<p>Signing the memorandum of understanding aimed at increasing participation in international networks conversation with UKTI;</p> <p>Take-off program: Pandorga</p> <p>Soft landing program: Globosense;</p> <p>Exchange of entrepreneurs between Brazil and Europe: 3 entrepreneurs 1 UK, 1 from Belgium, 1 from Poland</p> <p>Bilateral cooperation agreement signed with USF (University of South Florida).</p>

The results obtained by Tecnosinos are focused on participation on international programs in order to expand or reinforce the international network and to generate knowledge exchange even thus, informally.

Tecnopuc formalized its partnership with Universities, European and international organization of Research areas and Science Parks. It also fosters knowledge, techniques and international culture environment by promoting entrepreneurs exchange through specific programs such as the Take-off and Soft-landing. These programs offer to resident companies effective business bridges to new markets and innovation ecosystems. They aim to accelerate that process by facilitating exploring business trips from a few days up to a few months.

The firms benefit from a full package of infrastructure and services to support their business development such as: ready-for-use and free-of-charge premises and facilities for intermittent visits or for a limited period of time (from 1 to 3 months); support, guidance and organization of accommodation and transportation within the targeted country or region; customized business introduction, cultural integration and coaching services.

It worth noting that the internationalization results take into consideration the goals obtained during the current management of each science park.

## **5. CONCLUSION**

Science Parks and incubators evolved over time and this evolution is embedded to the regional and local environment. The internationalization practices of Tecnosinos is based on institutional partnerships like the one with the Anprotec and IASP and through not formalized agreements with the commercial areas of the embassies of Switzerland, Canada, UK, France and the Chamber of Commerce and Industry Brazil-Germany in Porto Alegre.

The Tecnopuc has international agreements with various Scientific and Technological Parks in the world, in addition of international networks and platforms providing access to several innovation environments. The agreements are part of the Internationalization Program from Tecnopuc and enable companies in the Park to access the global market in a more sustainable manner.

This approach not only benefits the companies interested in settling in another country, but also those who want other types of connections and international partnerships, both from a marketing such as technological point of view. Feevale Techpark didn't present robust internationalization practices, thus, develops partnerships with other Science Parks through the "Land2Land" program of Anprotec that allows Brazilian companies to access various parts of the world in a simple and easy way, and enable the SP to internationalize its operations with the support of innovation environments.

The Three Science Parks are associated to the Anprotec and to the IASP and Tecnopuc is the only park of the selected case to participate of the INCOBRA program offered by IASP.

In sum, the internationalization of a Science Park is mainly based on international partnership with other Science Parks, Business Incubators, international institution and organizations, but it also depends on the internationalization characteristics of its tenant companies. The Science Park can support the internationalization of its tenants firms, developing and adapting the following services: (i) international commercialization; (ii) partnerships in international projects; (iii) international joint ventures; (iv) international capital (equity/shareholders); and (v) international workforce.

By combining the literature on Network Theory (Granovetter, 1989; Johanson & Mattson, 1998; Ghoshal and Bartlett, 1990; Forsgren et al, 2005; Johanson & Valhne, 2009; 2013) and the results of this exploratory study reveals that a cohesive internal and external ties and networks as well as specialization contribute to the internationalization process of the Science Parks and it's firms.

While weak external ties and networks contribute to the early stage of internationalization process of the Science Parks and it's firms.

This is an exploratory research based on three case studies, thus presenting an important limitation to generalization of results. Further research can explore these elements in a quantitative study others emerging economies.

## REFERENCES

ANPROTEC – Brazilian Association of Technology Parks. (2017). International Projects. Access June 29, available in <http://anprotec.org.br/site/menu/projetos/>

ANPROTEC – Brazilian Association of Technology Parks. (2014). Estudo de Projetos de Alta Complexidade: Indicadores de parques tecnológicos. Ministério da Ciência, Tecnologia e Inovação, Brasília: CDT/UnB. Recovered in 2017, June 29, available in: [http://www.anprotec.org.br/Relata/PNI\\_FINAL\\_web.pdf](http://www.anprotec.org.br/Relata/PNI_FINAL_web.pdf).

Bengtsson, L., & Löwegren, M. (2000, August). **Internationalization in Nordic Science Parks-A report on park activities and firms needs**. Report presented at the Nordic Science Park meeting in Trondheim, August.

Berbel, A., Rocha, A., Sá, L., & Carneiro, J. (2011). Clustering effects and the internationalization of high-tech new ventures in technology parks and incubators. **XXXV Encontro da ANPAD**, Rio de Janeiro: ANPAD.

Bianchi, P. (2008). **International handbook on industrial policy**. Edward Elgar Publishing.

Bigliardi, B., Dormio, A. I., Nosella, A., & Petroni, G. (2006). Assessing science parks' performances: directions from selected Italian case studies. **Technovation**, 26(4), 489-505.

Bürgel, O. (2012). The internationalization of British start-up companies in high-technology industries (Vol. 9). **Springer Science & Business Media**.

Cahen, F. R., Jr, M. D. M. O., & Borini, F. M. (2017). The internationalization of new technology-based firms from emerging markets. **International Journal of Technology Management**, 74(1-4), 23-44.

Cavusgil, S. T., & Knight, G. (2015). The born global firm: An entrepreneurial and capabilities perspective on early and rapid internationalization. **Journal of International Business Studies**, 46(1), 3-16.

Coviello, N. (2015). Re-thinking research on born globals. **Journal of International Business Studies**, 46(1), 17-26.

Cunha, N. C. V. (1998). **Interação da universidade-empresa em projetos de dois centros de biotecnologia**. Universidade Federal do Rio Grande do Sul, Porto Alegre, Rio Grande do Sul, Brazil.

- Dahlstrand, A. L., & Smith, H.L. (2009). Science Parks and economic development. **Globalization of Technology**, P. Reddy, Oxford: EOLSS Publishers.
- Endeavor Brasil (2016). Índice de Cidades Empreendedoras. Recovered in 2017, June, 28, available in <https://endeavor.org.br/pesquisas/>.
- Eriksson, J. (2012, April 17). **Third Generation (3G) Innovation Environment**. Recovered in 2017, June 29, available in: <http://blog.bearing-consulting.com/2012/04/17/third-generation-3g-innovation-environment>.
- Hansson, A., & Hedin, K. (2007). Motives for internationalization: Small companies in Swedish incubators and science parks.
- Hashai, N. (2011). Sequencing the expansion of geographic scope and foreign operations by “born global” firms. **Journal of International Business Studies**, 42(8), 995-1015.
- Hauser, G., & Zen, A. C. (2005). **Tecnópole: o desafio da sinergia**. Porto Alegre: Nova Prova.
- Keeble, D. Lawson, C. Smith, H. L. Moore, B., & Wilkinson, F (1998) Internationalisation processes, networking and local embeddedness in technology-intensive small firms. *Small Business Economics*, 11, 327-342.
- Knight, G. (1996). **Born global**. Wiley International Encyclopedia of Marketing.
- Kohl, H., & Hashemi, H. A. (2011). **Science Parks as main driver for the development of National Innovation Systems in resources-driven economies!** The importance of Intellectual Capital Management for Sustainable Manufacturing. *Advances in Sustainable Manufacturing*, 45-50.
- Machado, R. E., Zen, A. C., & Fracasso, E. M. (2015). The impact of the incubator on the internationalization of firms. **Journal of technology management & innovation**. Santiago, Chile. Vol. 10, no. 1 (2015), p. 29-39.
- Madsen, T. K., & Servais, P. (1997). The internationalization of born globals: an evolutionary process?. **International business review**, 6(6), 561-583.
- Mammarella, R., Pessoa, M. L., FERREIRA, G. D. S., & TARTARUGA, I. (2015). Estrutura Social e Organização Social do Território: Região Metropolitana de Porto Alegre–1980-2010. **Porto Alegre: transformações na ordem urbana**. Rio de Janeiro: Letra Capital/Observatório das Metrôpoles, 133-184.
- Radaev, V. (2004, September). The Winner Takes It All? A Clash of Foreign and Domestic Retailing Chains in Russia. **In** International Conference «Economic Sociology: Problems and Prospects». University of Crete (Rethymno) (pp. 8-10).
- Sapienza, H. J., Autio, E., George, G., & Zahra, S. A. (2006). A capabilities perspective on the effects of early internationalization on firm survival and growth. **Academy of management review**, 31(4), 914-933.
- UNESCO. (2017). Science and technology park governance: Concept and definition. Recovered in 2017, June 29, available in: <http://www.unesco.org/new/en/natural-sciences/science-technology/university-industry-partnerships/science-and-technology-park-governance/concept-and-definition/>.
- Zacharewicz, T., Sanz Menendez, L., & Jonkers, K. (2017). **The Internationalization of Research and Technology Organisations**. Luxemburg: Publications Office of the European Union, EUR, 28442.
- Zen, A. C., & Hauser, G. (2004). **Parques Tecnológico: um debate em aberto**. 1ª. Ed. Porto Alegre: Nova Prova.