

Main Factors for the Development of the Regional Innovation System of Florianópolis

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Abstract

The technologies and scientific knowledge have promoted the reorganization and acceleration of the innovation process around the world. The hegemony of countries recognized as innovators is being divided with the developing countries, because they have seen innovation as a social and economic process. Innovation requires an ecosystem to provide for it, in which organizations act by similarity and cooperation. In this direction, the city of Florianópolis, in the State of Santa Catarina, stands out as one of the most innovative cities of Brazil. So, this article aims to identify the factors that promote regional innovation development in Florianópolis, based on the study of Chen (2017). The methodological path adopted herein began from a bibliographical and documentary research, in which the data were described and explored through a qualitative approach. During this development, in the analysis of aspects such as national and regional environment, the population size and the number of patents granted, the universities involved and the public policies developed, the Regional Innovation System of Florianópolis has presented a virtuous circle for innovation, because it can bring together universities and research institutes that create and share knowledge and develop researches. In addition, there are companies committed to transforming knowledge into value-added products, as well as the municipality's support in fostering innovation policies. Therefore, it is clear the participation of the Triple Helix in the development of innovation in Florianópolis.

Keywords: Innovation System. Regional innovation system. Factors.

1. Introduction

In recent times, the society is experiencing a strong movement in favor of innovation and globalization as factors of development. In this respect, the nature of development has changed according to the intensity with which the knowledge activities in the sector have been shared and become essential. In the recent past, the development of innovation was concentrated in the countries of the well-known Triad USA-Canada, European Union (EU) and Japan. However, other countries are taking up space on the world stage of innovation, in particular the group BRICS (Brazil, Russia, India, China and South Africa), with special emphasis on China (Tartaruga, 2017).

Technological and scientific knowledges is essential for the world development and economic growth, and they are the promoters of the innovation system, which is considered as a set of attributes, ranging from formal and informal social arrangements, structures, public and private institutions to rules and conventions to foster the development of innovation in a nation or region (Mytelka, 2000).

Although the Brazilian National Innovation System (SNI) influences the development of companies and

directly the development of innovations, the geographical location of innovation and knowledge creation is often the main focus of studies on innovation policies. With this in mind, the relevance of studying the regional innovation systems, both in terms of spatial distribution and in terms of the concentration, is realized (Knight, 1995; Yigitcanlar, 2011).

Cooke (1996) emphasizes in his studies the importance of regional connections by means of creating internal links. Saviotti (2005) states that there are several factors that influence the development of innovations in local terms. Some of these elements relate to the historic, social and institutional development of each region. Chen (2017), based on studies by Buesa, Heijs and Baumert (2010), says that the national and the regional environments, innovative companies, universities, and R&D promoted by the public administration are relevant aspects that interfere in the development of a regional innovation system. To Weiyang (2016), Economist and former head of the Guanghua School of Management at Peking University in China, despite the wealth has increased in recent decades, the market is saturated and lacking in innovation development. To this author, the socio-political constraints are one of the reasons for the non-development of this sector. Therefore, to encourage innovation, China's economic and political systems must undergo radical changes.

In Brazil, the scenario also shows a constant growth and maturation. One of the aspects that demonstrate that growth is the increase in the number of patent applications, indicating that companies and scientific institutions are engaging in new researches. Another aspect considered relevant is the technology-based companies, which have been a major booster of the local economy, with a focus on innovation. The cities of the State of São Paulo present an important storehouse of innovative companies in several areas, but the city of Florianópolis, in the State of Santa Catarina, highlights by its growth in technology-based companies (Ewers, Gomes & Octaviano, 2015)

This article aims to identify the factors that drive regional innovation development in the city of Florianópolis, based on the relevant aspects presented in the study by Chen (2017).

The methodological procedures used herein were based on bibliographic and documentary research, in which the data were explored and described through a qualitative approach.

The elements guiding this research are structured, in a first moment, by the abstract, which presents the main ideas of the research. Following, comes the introduction, which sets out the subject, problem and form of investigation. Then, comes the research method, which describes the methodological path of the investigation. From the theoretical point of view, the concept of innovation system and regional innovation system as well as the aspects relevant to the development of this system are discussed. After that, it is presented the study of the factors that collaborate for the innovative performance of Florianópolis and, finally, the final considerations and references.

2. Methods

Regarding the objectives, this is an exploratory and descriptive research, as well as qualitative in its approach. From the point of view of the procedures, it is characterized as a bibliographical and documentary research, with a focus on identifying the factors that drive the regional development of innovation, in the city of Florianópolis, and based on the relevant aspects pointed out in Chen's study (2017).

The qualitative approach allowed exploring and understanding meanings in the context of the innovative performance of Florianópolis, assigning relevant meanings (Creswell, 2010; Matias-Pereira, 2012). Moreover, the exploratory and descriptive character comes from the intention of providing greater intimacy with the problem and making it familiar so that it could be better understood in the context of the research (Gil, 2008).

The data collection starts from a bibliographical and documentary research, which made possible, besides the contents that are fundamental to the theoretical base, a better way in presenting guidelines and the best exposition sequence of the research sections. The basic constructs investigated go through innovation systems and their factors, having support from books, periodicals, dissertations, theses and annals of events, as well as documents, laws and statistical records that emerged as relevant to the investigation.

3. INNOVATION SYSTEM

Freeman and Perez (1988) say that innovation systems are organizational and institutional structures that provide support for technological change, and which are predominantly national in character. This concept refers to an extensive set of attributes, ranging from formal and informal social arrangements, public and private structures and institutions, to rules and conventions. Mytelka (2000) defines an innovation system as a network of economic agents and sociocultural institutions and policies that determine the behavior and innovative performance, thus constituting the Triple Helix.

The term Triple Helix came up from Etzkowitz's studies in the 1990s, in which the author researches on a model of innovation based on the relationship between the institutions University, Company and Government (Etzkowitz, 1994). This scenario reflects the expansion of the cooperation and interdependence of each institution with the others, constituting, with its outcome, the emergence of new players, such as: institutions, organizations, R&D, innovation centers and banks, which play a key role in the creation of new products, new processes and new forms of organization.

Sbicca and Pelaez (2006) state that, when studying a successful innovation system, researchers can identify the elements that contributed to that result. However, it is important to emphasize that the pure and simple transposition of a victorious model to other countries, regions or sectors is impracticable, since each system presents its specific characteristics, which are only revealed during a historical process of formation. These characteristics, according to Saviotti (2005), influence the development of innovations and their diffusion rate and are fostered by cultural, social and institutional history.

Different nations, with different innovation systems, result in different levels of economic development (Cooke, 1996). In this sense, the innovation system of a given country is a result of its capacity to create and adopt innovations and, therefore, to generate a process of technological and economic development, which is reflected in the internal organization of the companies and the producer and consumer markets (Freeman & Perez, 1988).

In Brazil, the first steps taken in the construction of a National Innovation System were those aimed at supporting research and development in the early 1950s (Rodriguez, Dahlman & Salmi, 2008).

In the 1990s, the Programs for Industrial and Agricultural Technological Development (PDTI and PDTA) were established, offering tax incentives for companies with R&D activities. However, facing the fiscal

crisis and the need for primary surplus, in 1997 there were significant cuts in support for R&D activities (Panisson, 2017).

Starting in the 2000s there was a resumption in the development of the Brazilian national innovation system. Although considered a country with a system of science and technology that has not yet become an Innovation System, Brazil presents a series of provisions in its science, technology and innovation policy that seek to develop an environment favorable to the dynamization of the technological innovation process in the companies, aiming mainly at the expansion of employment, income and added value in the various stages of production (Panisson, 2017).

3.1 Regional Innovation System

Although the national perspective is a determining factor for the development of innovation, initiatives at the subnational levels of government are fundamental in the mobilization of industrial policy instruments, showing significant results in some countries such as Belgium, Spain and Germany (Storey & Tether 1998). In this sense, in the early 1990s the concept of Regional Innovation System was devised. This concept points to the rediscovery of the importance of regional resources in stimulating technological and economic development (Cooke, 2006).

To Chen (2017), any innovation must first be carried out in its region to later reach the national level. It is about creating a local group and seeking a concentration of companies that work with the same focus, in a certain area, as is the case of the Silicon Valley in the USA, and Florianópolis, considered the capital of Brazilian technological innovation.

In Brazil, even though in a punctual way, there are several Regional Innovation Systems moving forward, contributing to the development of the economy of the regions where they are implemented.

In a decentralized federation such as Brazil, the states have full autonomy to define their own programs to finance R&D activities, fiscal incentives, investments in infrastructure and in the planning of science and technology policies, playing an important role in the regional innovative development (Panisson, 2017 P. 82).

In China, cities are also important elements to be studied in terms of innovation system (Chen, 2017). According to this author, one of the arguments used is that China's different regions, which constitute nations, have their own particularities and characteristics in historical, cultural, political and economic terms, differentiating themselves from each other and forming their own innovation systems.

Asheim and Coenem (2004) also present the relevance of this regional dimension and synthesize some relevant aspects, among them: 1) presence of human capital; 2) potential for knowledge creation; 3) sharing of information and experiences, agreements and collaboration, through the interaction between companies, schools, universities and training centers (Triple Helix), and 4) formal and informal networks for conducting business.

Chen (2017) presented a study conducted in 106 Chinese cities, in order to provide an image of the city-based innovation movement. The author synthesizes and describes five aspects relevant to the development of the regional innovation system, among them: 1) the national environment; 2) the regional environment;

3) the innovative companies and the patents; 4) the universities, and 5) the R&D promoted by public administration.

Another relevant factor addressed by the author is the regionality of the cities in geographical terms – between the cities of the North and the South – and also in terms of borders – inland versus coastal cities. In this context, the author states that it is necessary to know the elements that make up the innovation system of a region. To accomplish this, it is necessary to study the existing institutions and interactions that aim to promote the creation of an environment that stimulates technical training, local innovation, diffusion and incorporation of new technologies. In this way, it is possible to achieve a Regional Innovation System focused on regional competencies.

3.2 Factors of Development of the Regional Innovation System of Florianópolis

Based on the five aspects presented by Chen (2017), relevant to the development of the Regional Innovation System in China, the following data are presented aiming to identify the factors favoring the development of the Regional Innovation System of Florianópolis.

3.2.1 The National Environment

During four centuries, since its discovery, Brazil was a predominantly rural country, but such hegemony began to give way in the mid-twentieth century, by the developing of an industrial base concentrated in the Southeast region, which became the engine of Brazilian economic growth in the period 1950-1980 (De Araújo, 1999; Sarti & Hiratuka, 2011). "With 11% of the Brazilian territory, the Southeast region accounted for 81% of the industrial activity in the country in 1970, with São Paulo alone accounting for 58% of the production of the existing industry" (De Araújo, 1999, p.3).

During the same period, in the early 1950s, the creation of the Brazilian National Innovation System was started, through support for research and development (Rodriguez, Dahlman & Salmi, 2008). In 1951, the National Council for Scientific and Technological Development (CNPq) was created to support mainly researches in physical and natural sciences. In 1967, was created the National Fund for Scientific and Technological Development (FNDCT), administered by the Research and Projects Funding Agency (FINEP).

However, starting from 1980, with the changes in internal and external conditioning factors, economic policies restrictive to industrial development were adopted, and, consequently, a relative loss of dynamism of the industry and of the process of convergence of the productive structures, which also provoked high instability in the main macroeconomic variables.

In the 1980s, known as the "lost decade", economic instability constrained private investment decisions in capacity expansion, modernization and innovation (Sarti & Hiratuka, 2011). In spite of this, in 1985 the Ministry of Science and Technology was created, and today it has the term "Innovation" added to its denomination, becoming the Ministry of Science, Technology and Innovation (MCTI).

Faced with the persistent fiscal crisis of the 1990s and the need for a primary surplus, there were significant cuts in support for R&D activities in 1997, mainly reducing investment in infrastructure and limiting even more the already scarce fiscal incentives (Panisson, 2017).

It was only in the early 2000s that the development of the Brazilian National Innovation System was resumed, establishing a legislative portfolio with some tax exemptions for R&D activities, most of which were directed towards the information and communication technology sector (Presidência da República do Brasil, 2001).

The Brazilian Federal Law No. 10.973, passed in December 2004, presented as the Innovation Law, although modest in scope and depth, aims to establish "measures to encourage innovation and scientific and technological research in the productive environment, aiming to the technological qualification, to attain technological autonomy and the development of the country's national and regional productive system". (Presidência da República do Brasil, 2004, p.1). The following year, Law 11.196/2005, known as "Law of Good", passed and modified some provisions of the National Tax Code, simplifying the procedures for requesting tax exemption by companies, and was well received by the private sector (Panisson, 2017). In 2012, the National Strategy for Science, Technology and Innovation (ENCTI 2012-2015) was designed, articulated with the industrial policy embodied in the Plan "Brasil Maior (A Greater Brazil)" with the following objectives:

- (i) Systematically expand training and capacitation of human resources and scientific and technological research;
- ii) Expressively increase resources for technological development and innovation;
- iii) Provide a systemic approach to the State support actions and develop new modalities and instruments of support, partnership, risk sharing and coordination with companies and priority sectors for the promotion of innovation;
- iv) Support the technological densification of production chains with potential for competitiveness or weakened by international competition, aiming at reducing critical trade balance deficits, increasing the local share in the production of goods of high technological content, and increasing the participation of national capital companies in high knowledge content technologies;
- v) Establish rules for foreign direct investment, aiming at the internalization of R&D centers, transfer of technologies and association with national companies (Brasil MCTI - ENCTI 2012-2015, p.11).

Despite recent efforts to promote innovation, Brazil is considered an innovative country, but does not yet having an innovation system, remaining in the 69th position of the Global Innovation Index 2017 (GII, 2017), developed by Cornell University, Insead Institute (France) and the World Intellectual Property Organization (WIPO). Of the 127 economies surveyed, Switzerland leads the rankings for the seventh consecutive year, in second place is Sweden, the Netherlands in third and the United States kept fourth (GII, 2017).

China was the only emerging country (rated in the rankings as a middle-income economy) to be ranked among the top 25. The Asian country climbed from the 25th position, won in the 2016 survey, to the 22nd position in 2017 (Gil, 2017).

Although the Brazilian economy remains one of the most attractive for foreign investment, according to the World Investment Report (World Investment Report, 2017) the volume of international investments directed to Brazil plummeted 23% in 2016 (from US\$65 billion to US\$50 billion), keeping the country on

the sixth position of the Foreign Direct Investment (FDI) index, behind Singapore, Hong Kong, China, United Kingdom and the USA, as illustrated in Figure 1.

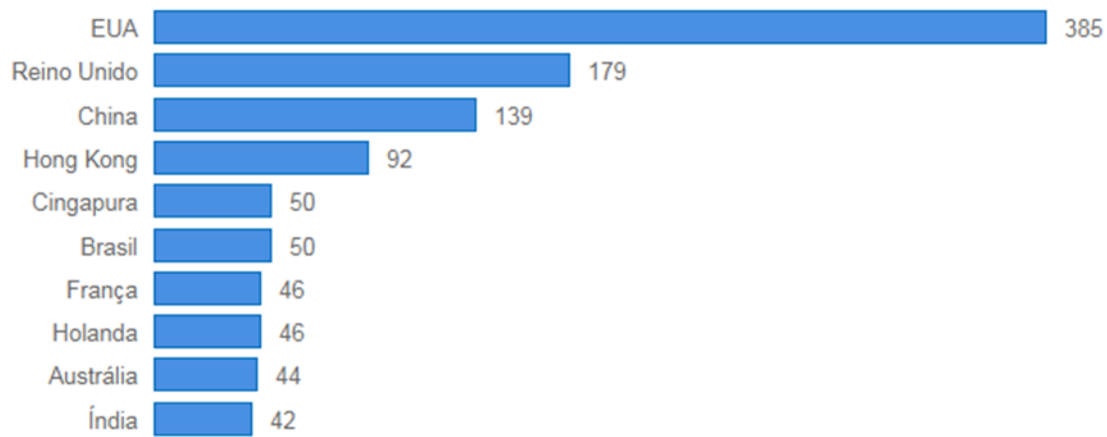


Figure 1, Ranking of received investment

Source: UNCTAD, 2017.

It is worth mentioning the expressiveness of the positive performances of the East and of the economies of Southern Asia, which contributed significantly to the increase of the FDI in the region to US\$ 541 billion in 2016, standing out among the top ten: China, Hong Kong, Singapore and India (UNCTAD, 2017).

3.2.2 The Regional Environment

The different regions that make up a nation present their own particularities and characteristics in historical, cultural, political and economic terms, differentiating themselves from each other and forming their own innovation systems, and these are considered regional innovation systems (Yigitcanlar, 2011). Some particularities of these regional systems identified by the author refer to the economic development (local production x population) and grouping of companies of the same base in the same region, which, in the case of Florianópolis, occurs with technologically based companies.

The economic development resulting from the grouping of companies leads the cities to a new management model, in which the approaches predominantly used in production give way to a global economy based on knowledge (Grant, Chuang, 2012). These authors also enhance the importance of indicators that demonstrate the competitive advantages of countries, regions and cities and, in this way, can be identified by their relative positioning among global classification indices.

Human capital is a key factor for local development and development, making essential the attracting and retaining intelligent, talented and creative people to the cities. The presence of the creative class is an effective way to improve regional development through innovation and human capital (Depiné, 2016). In this sense, urban space turns out to have an important factor of durability to attract and retain workers, especially those of the knowledge sector, who articulate creativity and innovation in the generation of value (Esmailpoorarabi, Yigitcanlar & Guaralda, 2016).

According to data from the Directory of Research Groups in Brazil, the number of researchers with a doctor's degree enrolled in censuses of this Directory, without double counting, shows the Brazilian

Southern Region as having the largest number of doctor's degrees per inhabitant: 98.6 doctors per 100 thousand inhabitants. The State of Santa Catarina has 83.8 doctors per 100 thousand inhabitants, ranking as the seventh state of the country with the highest number of doctors per inhabitant, and the national average is 69.2 doctors per 100 thousand inhabitants (CNPq, 2017).

When it comes to its population, the capital of Santa Catarina stands out in the national scenario with the best index of human capital of the country. One fact for this conclusion is that 60% of the graduates in the city are enrolled in high quality courses by the Ministry of Education. In addition, it is the city with the highest proportion of masters and doctors in Brazil (Endeavor, 2015)

According to data from the Brazilian Institute of Geography and Statistics (IBGE, 2017), in 2016 Florianópolis had a population estimated at 478 thousand inhabitants and its economic profile has been renewed in the last decades, not being known anymore only by its touristic attractions, and becoming acknowledged as the Capital of Innovation, with an identity that demonstrates its technological potential. The financial base is constituted in the technology sector, and brings to the public coffers, from the municipal tax on services, the greatest return. Even in the face of the national crisis scenario, Santa Catarina's information and communication technology sector grew by 15% in 2015, according to ACATE (Willerding, Panisson & Lapolli, 2017).

This strong growth of the technological pole is the result of the union between Government, universities and private initiative, which form the Triple Helix (PMF, 2017). The more than 45 players that make up the innovation system in Florianópolis, including universities, the institutions of science and technology (ICTs), such as CERTI, business incubators, technology parks, associations, the municipal and state governments, among others, join forces to make the technology segment grow (Octaviano, 2015).

Along a timeline on the potential of Florianópolis for innovation, Willerding, Panisson and Lapolli (2017) verify that the process of establishing this innovation system began in the 1960s with the creation of the Federal University of Santa Catarina (UFSC) and the Federal Technical School of Santa Catarina (now called Federal Institute of Santa Catarina - IFSC), which provide a research and knowledge environment. In 1984, the Center for Technology and Innovation (CERTI) Foundation was created. In 1986, the country's first technology-based incubator appears, currently called Business Center for Advanced Technologies (CELTA). The same year were also created the Santa Catarina's Association of Technology Companies (ACATE) and the Industrial Informatics Condominium (CII).

In the 1990s, the Alfa Technological Park and the Foundation for Research Support of Santa Catarina (FAPESC) were created, in order to foster science, technology and innovation activities in the state. In the 2000s, LABelectron was created, a laboratory to support the development of projects OF electronic products. In 2006, Newsweek placed Florianópolis in the "Ten most dynamic cities of the world".

In 2009, the ACATE Innovation Center was founded, as well as the Innovation Via, which is formed by universities, technological centers and technology companies' condominiums. In the same year, the Santa Catarina State Law of Innovation was regulated, and the Municipal Department of Science, Technology and Innovation of Florianópolis was created. The following year, the city released its logo "Capital of Innovation". In 2011, the Municipal Innovation Law was drafted, and approved in 2012 (PMF, 2017).

Thus, given the context presented, Florianópolis offers a favorable regional environment that is becoming

stronger every year so that companies, especially in the technology sector, can innovate and leverage the economy of the city and the quality of life of its population. Incentives come from both the private and the government sectors, through laws and financial support, as well as from the academy producing knowledge and skilled labor.

3.2.3 The Innovative Companies And The Patents

Chen (2017), when dealing with innovative companies and patents as an important aspect for regional innovation, deals with the ratio of indicators between the number of companies created and the number of patents granted.

The author also states that innovation capacity (as measured by patents granted) is almost directly correlated with the economic production. Bringing it to the context of Florianópolis, 54 patent applications and 45 software registrations originated in the city in 2016, according to data from the Brazilian National Institute of Industrial Property (INPI, 2016). It is Santa Catarina's city with the second largest number of patent applications (behind only Joinville, also in the State of Santa Catarina, with 56 patent applications). The number is still small as compared to Chinese cities: that country, according to the Inventta Institute (2016) in 2013, was the largest patent applicant in the world. When it comes to validated patents, China is in 3rd place, while Brazil is in 19th place, according to the WIPO Statistics Data Base (2014).

Despite the small number of Brazilian patents, Florianópolis is consolidating as a pole of technology-based companies, with approximately 600 companies providing software, hardware and technology services, where it creates about five thousand direct jobs. These companies have been receiving prominence, acknowledgment and several innovation awards (PMF, 2016).

Several projects in the Florianópolis technology pole resulted from the demand of large state-owned companies, such as CELESC (Santa Catarina's electricity utility), TELESC (Santa Catarina's telecommunications company) and ELETROSUL (Southern Brazil's electricity utility). This phenomenon allowed the absorption of several engineers trained by the Federal University of Santa Catarina, stimulated the development of innovative technologies and fostered the creation of enterprise that provide technology products, such as INTELBRAS, DIGITRO, NEXXERA and PARADIGMA (SARQUIS et al., 2014).

According to data provided by ACATE, in December 2013 it had 372 associated companies and by the end of 2015 this contingent reached 482 companies, 88 of which were incubated. Incubator MIDI Tecnológico is also a highlight, and has already won three times the award for best Brazilian incubator by ANPROTEC. In 2015, it had 19 incubated companies, of which 5 were pre-incubated companies, 9 were residents and 10 were virtual, and ended the year with 83 graduated companies. 86% of these companies are active and 35% participate in ACATE's project "Verticals of Businesses", which today brings together companies that work in similar and complementary segments, encouraging associativism and integration among participating companies (Willerding, Panisson & Lapolli, 2017).

In addition to these technology-based companies, the city also has four venture capital funds and seed capital, and ten research and development centers and institutes. The companies in the city were responsible for raising 58% of the projects, about R \$ 10.2 million, approved by the Santa Catarina's version of Juro Zero (Zero Interest Rate), FINEP's program to encourage innovation. The average turnover of companies

increased by an average of 50% during the project execution period, after taking credit. The export of products and services was also a highlight among the participating companies, with a growth of 101% (STARTUP SC, 2017).

3.2.4 Universities

In China, as companies are considered Science Parks, essential to the National Innovation System, especially the Tsinghua University Science Park or TusPark (Chen, 2017).

The pole of Florianópolis has 17 Higher Education Institutions, including two public universities: Federal University of Santa Catarina (UFSC) and Santa Catarina State University (UDESC), two community universities (UNISUL and UNIVALI) and two poles of the Federal Institute of Santa Catarina, institutions responsible for 110 postgraduate courses, 75 research groups and laboratories and 26 junior companies. The city has an estimated population of 478 thousand inhabitants and an area of 675.4 km² and, according to Octaviano (2015), has a large number of educational institutions, considering its area and population. For this reason, the collaboration between universities, companies and Government is what strengthens the technological pole of Florianópolis.

Sarquis et al. (2014) found that the profile of entrepreneurs and the qualification of the local workforce are the main factors favorable to innovative entrepreneurship when it comes to the technological pole of Florianópolis. The entrepreneurs are usually people with a school education in the area of technology (full undergraduate, postgraduate, master's degree and/or doctorate), with a creative and innovative profile and with a great entrepreneurial vocation.

In addition to the universities, another indicator that stands out in the scenario of Florianópolis are incubators, technology parks and companies' condominiums, known as environments conducive to innovation. Florianópolis has three technological parks and companies' condominiums, and three large incubators. Although these environments have different characteristics, they are partnerships for the formation of workers, as well as for research, development or improvement of products, processes and services, making the valorization of knowledge the key to the growth of the sector in this scenario (FIESC, 2017).

3.2.5 R&D Promoted By The Public Administration

In recent years, Brazil has expanded the number of federal public universities. Of the 63 universities now in existence, 19 (30%) have been created since 2000. In addition, a large number of federal technological institutes were created, also increasing the offer of high-school level professionalizing courses, in a partnership between the Union, States and Municipalities.

As mentioned previously, UFSC is the protagonist in the construction of the Regional Innovation System in Santa Catarina, where, according to the Brazilian Transparency Portal, in 2016, this university received an investment of R\$1.67 billion, being the university with the fifth largest budget in the country. Santa Catarina also has the Federal University of the Southern Border (UFFS), which is a multi-state institution of the three Southern states (Santa Catarina, Rio Grande do Sul and Paraná). At the state level, UDESC, created in 1965, is headquartered in Florianópolis and stands out as one of the best state universities in the

country.

In 1950s, also began the first efforts to build a public infrastructure of R&D (research centers, provision of technical assistance, and metrology services), but it was in the 1970s that substantial investments were targeted to these areas, as a result of the purpose of the military governments to increase the internal technological capacity, creating a relatively well-developed base of science and technology in the country. The Brazilian Agricultural Research Agency (EMBRAPA), founded in 1972, is largely responsible for the technological advancement of Brazilian agriculture. In light of the positive results achieved through its model, in 2007 the Brazilian System of Technology (SIBRATEC) was created, operated by FINEP, and aimed at promoting an approximation between the scientific and technological community and companies. It is a relatively new system, but it signals in the direction of the advance of innovative practices; it is organized in three types of networks, which are called its components: Innovation Centers, Technological Services and Technological Extension (Portal Inovação, 2017).

Brazil also has a structure of public banks that finance long-term production. The National Bank for Economic and Social Development (BNDES), under the Ministry of Planning, Budget and Management, aims to support projects that contribute to the country's development strategies. There are also public commercial banks such as Bank of Brazil (Banco do Brasil - BB) and a federally controlled savings bank (Caixa Econômica Federal - CAIXA). Regional development banks, such as Bank of Amazonia (BASA), Bank of the Northeast of Brazil (BNB), and the Regional Development Bank of the Far South (BRDE), act as important regional development instruments.

4. Final Considerations

In recent years, the term innovation has been no longer applied only with a focus on the creation of products and services, and has acquired a wider significance, involving factors of the economic and social scenario. Thus, it is necessary to understand new ways of creating, applying and sharing knowledge, since knowledge is one of the main agents in the construction of the organizational strategies for socioeconomic development.

When we talk about China, be it politically, economically or socially, what we see is an impressive picture, with dimensions as large as the country itself. The secret of this emerging power is not associated with the percentage of GDP invested in education, even though it is smaller than in other developing countries, but because of the way China invests and manages its resources. The way education is viewed in the country greatly reflects the Chinese values and the expectations of world leadership in innovation.

The innovation system of any country or region is a key factor for its ability to create and adopt innovations and, therefore, to generate a process of technological and economic development. In the organization of ideas, actions and interests, the most favorable conditions for boosting the local economy reverberate, and this has a direct and positive repercussion on the regional society

In this sense, the regional innovation system can be analyzed and fostered according to some relevant aspects. It is a matter of knowing the features of the national and/or regional environment where innovation is inserted, the role of the university as protagonist of knowledge, the role of industry, the number of patents

in relation to the population size, and the way the public policies interfere in this scenario.

An evaluation of the regional innovation system of Florianópolis, based on the factors presented by Chen (2017), shows that the national environment, although still lacking in efficiency and dynamism among agents, presents a series of legal provisions and institutions that foster innovation, which contributes to the development of the regional environment that has been established in Florianópolis over the last decades. This environment has several institutions engaged in the promotion of innovation that is based on the economy of innovative companies with a technological base. The universities of Florianópolis have an important role in inducing innovation, and the most significant are the UFSC and UDESC, by means of the R&D sponsored by the public administration.

In this sense, the city of Florianópolis has presented a virtuous circle of innovation, as it manages to bring together universities and research institutes that create and share knowledge and develop researches, companies committed to transform knowledge into value-added products, and the support by the municipality to foster innovation policies.

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