



INCUBADORA DE BASE TECNOLÓGICA E UNIVERSIDADE: UM ESTUDO DE CASO NA REGIÃO DO VALE DO ITAJAÍ

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Resumo

Ao compreender as organizações em profundidade, é possível perceber algumas interações das organizações com outras organizações e com seu ambiente. Esta pesquisa visa compreender as dimensões que explicam a rede de relacionamento existente entre uma incubadora de base tecnológica e uma universidade localizada na região do vale do Itajaí. Metodologicamente este estudo caracteriza-se como descritivo em relação a seu objetivo, quanto aos procedimentos pode ser considerado como pesquisa aplicada a partir do levantamento de dados primários e qualitativa em relação à abordagem do problema. Assim, os principais resultados identificaram que a principal relação entre a incubadora e a universidade reside na estrutura do conselho de administração da incubadora, onde o pró-reitor de administração é o presidente do conselho da incubadora. Portanto, embora existam algumas deficiências nas relações entre as instituições, pode ser considerada como a ponte do sucesso.

Palavras-chave: Redes de Relacionamento; Universidade; Incubadora de Base Tecnológica.

TECHNOLOGICAL BASED INCUBATOR AND UNIVERSITY: A CASE STUDY IN THE REGION OF ITAJAÍ VALLEY

Abstract

By understanding organizations in depth, it is possible to perceive some interactions of organizations with other organizations and with their environment. This research aims to understand the dimensions that explain the relationship network existing between a technology-based incubator and a university located in the region of the Itajaí valley. Methodologically this study is characterized as descriptive in relation to its objective, as for

the procedures it can be considered as applied research from the survey of primary data and qualitative in relation to the approach of the problem. Thus, the main results have identified that the main relationship between the incubator and the university lies in the structure of the board of directors of the incubator, where the dean of administration is the chairman of the incubator's board. Therefore, although there are some deficiencies in the relations between institutions, it can be considered as the bridge of success.

Keywords: Relationship Networks; University; Technological Base Incubator.

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1. Introduction

Business organizations are not separate entities they could be interpreted as an open systems consisting of a combined set of resources and actors. The concept of business activity does not, therefore, arise from the simple sum of assets but from their combinations (functional, income, financial, strategic, relational, etc.) in a specific environmental context in which they influence and are influenced by the external environment (Barile & Polese, 2010; Simone *et al.*, 2018). By understanding organizations profoundly, it is possible to perceive the interactions of organizations with other organizations and with their environment. In this sense, the Network Theory provides elements to understand the relationships between companies and higher education institutions - HEIs, technological incubators, research centers, governments, among others (Gallon *et al.*, 2009). The relationships generated between these institutions allow the accumulation of several benefits, including the dissemination of information, learning, minimizing uncertainties, increasing flexibility and cooperation (Martins *et al.*, 2014).

To analyze the relationship between organizations, we go back to the 20th century, more precisely in 1950, in Systems Theory, proposed by Ludwing Von Bertalanffy (Von Bertalanffy, 1968). However, there are several links between Network Theory and Systems Theory, especially when organizations are treated as an open system, dependent on the contingencies of their environments (Motta, 1971). The Systems Theory highlights that it is not possible to analyze organizations in isolation, but in a systemic way, keeping in mind the members of the network of relationships of these organizations (Granovetter, 1985).

Studies of Network Theory in social sciences and inter-organizational networks began in 1970. Thus, in organizational studies, analyzing relationship networks focuses on identifying intra and inter-organizational relationships in addition to among other organizations (Martes *et al.*, 2008). When dealing with the relationship between university

and incubators, it is clear that organizations are immersed in each other, both companies incubated in incubators and incubators in HEIs, and so the information flows are characterized as intense (Carodoso, 2012).

We contribute to the study by Cardoso (2012), who analyzed the interactions based on the theory of existing networks between incubators and HEIs, this article uses that same theory studying a university and a technology-based incubator located in the Vale do Itajaí region, Santa Catarina Brazil. In this sense, working on these themes, network theory and relationship networks, is justified by the intention of dealing with these reflections at the regional level, contributing to the approaches already existing in the current literature. Therefore, it is justified that the network theory permeates organizational studies in several areas of knowledge. In this sense, the justification theory is based on the fact that, developing research on these two themes contributed even more to the current literature in addition to institutional and social purposes.

Thus the present study is aimed to answer to the following research questions:

RQ1) *From a structural dimension, how do the relationship and control structures between the technology-based incubator and the university?*

RQ2) *Regarding the relational dimension, how does the flow of information and social access to resources occur between the technology-based incubator and the university?*

RQ3) *How does contagion and environmental influence occur between the technology-based incubator and the university, in the cognitive dimension?*

In view of this introductory statement, the article is structured as follows: in the next section, the methodology used in the research is described; in the third section the literature review is presented, addressing concepts about the theory of networks, relationship networks and business incubators and HEIs; in the fourth section, the peculiarities of both the incubator and the university are presented, in addition to the results and discussions on the researched topics; in the fifth section, the final considerations of the study are made, including its limitations and suggestions for future research.

2. Overview of The Study

2.1 Theory of Networks and Relationship Networks

Studies of network theory in social sciences and in the context of organizations began to peak in 1970. Over time, the development of network theory has increased significantly scientific studies, which according to Rowley (1997), in part because of his emphasis on

explaining and predicting how an organization works in relation to its relationships. For Nohria, Eccles, & Press (1992), there are three reasons for the interest in networks in organizational studies: 1) Competitiveness of organizations, the previous model of large and highly vertical and hierarchical organizations is old, the competitive environment requires lighter organizations, flexible with intra and interfirm relationships; 2) The emergence of Information and Communication Technologies - ICTs, with data sharing and organizational intranets; 3) Analysis of networks as an academic discipline, not restricted to some groups of sociologists, but with interdisciplinary organizational studies.

In this context, networks can be conceptualized according to Powell, Smith and Doerr (1994), as a set of relationships or ties between actors, individuals or organizations. A bond between actors has a type of relationship and a form that can be characterized as strength or intensity of the relationship. As for these relationships, Granovetter (1985), points out that there are two types of ties, the weak and the strong, the first providing people with access to information and resources in addition to those available in their own social circle, the second is more motivated to help and are more readily available. Thus, for Castilla and Hwang (1998), these relationships can be considered as social networks, defined as a set of nodes or actors, people or organizations, linked by social relationships or ties of specific types.

In this sense, to analyze these relationship relations, by following Granovetter (1998), Cardoso (2012), has highlighted some perspective we considered in our result systematization. Thus, in the structural perspective, there are relationship structures that compose in the form of connectivity, housing the different interests of the authors in a network of organizations. As far as the structural perspective of control is concerned, this perspective can be verified through standards, forms of governance, reports, income statements, accountability, and audits. From the analytical perspective of the relational perspective, the information flows within interorganizational networks are decisive for the functioning and the relationship of the actors in the network that are inserted.

Finally, from cognitive perspective, Pfeffer & Salancik (1978), one of the seminal authors of the resource dependency theory, highlights in a constitutive definition that this perspective makes the interorganizational network a unique unit of analysis with its characteristic elements. These elements are favored by the approximation between the organizations that are part of the network, which can be called contagion and environmental influence, in addition to social identity, reduction of uncertainties and sharing of unique

spaces. In this way, in contagion when ties are analyzed globally, the actors are mutually influential, thus creating homogeneity within the network (Harrison & Carroll, 2002).

Therefore, in order to understand this relationship that exists between a technology-based incubator and universities, it is first necessary to understand in a conceptual way the role of these two types of institutions.

2.2 Technology Based Incubator and Universities

Incubators have become an international phenomenon, this increase in the level of activity has been stimulating important discussions and academic dialogue about this. In addition, such initiatives by universities and incubators have benefited the performance of organizations, universities and regions (Phan *et al.*, 2018). Therefore, technology-based incubators are institutions that transform the social environment, a business idea can become an economically efficient organization. Thus, technology-based incubators are property-based initiatives that provide leasing companies with a portfolio of infrastructure and support for new ventures, including: commercial services, networks, access to professional services and university resources.

In this sense, the intention is to help start-ups by providing training links to help new businesses survive, expand and grow (Mian *et al.*, 2016). Business incubators represent a capacity for renewal for universities, driving innovation and reinvigorating their goals through the creation of new ventures (Cardoso, 2012). This is legitimate, when it is realized that the focus of these relations between universities / incubator is due to the fact that they are responsible for a large part of the technologically oriented incubators, whether they are in the USA, Europe, and in other countries (Phan *et al.*, 2016; Sestino, 2018). Thus reinforcing the idea that universities are important institutions for regional economies through their incubators (Lasrado, 2016).

Finally, Cardoso (2012), in his study, recites that institutional partnerships must be formed with all market segments, in order to strengthen the university as a whole. In this sense, it can be said that the interactions, connectivity of individuals and organizations are in the context of dynamic, complex and non-linear systems. Therefore, the guiding question to be answered in this study is the following: How the dimensions that explain the relationship network are understood between a technology-based incubator and a university located in the region of the Itajaí valley.

In view of the theoretical expositions, the following section will deal with the discussions and analyzes, bringing the main results obtained from the primary and secondary data.

3. Materials and Methods

Similar to Vergara (2016), and by following Raupp & Beuren (2006), we conducted a qualitative study based on a descriptive approach used in the social studies, and thus useful to describe the relationship network existing between a technology-based incubator and a university located in the region of the Itajaí valley. For Gil (2010), this type of research aims to describe the characteristics of a given population and identify the possible relationships between the variables studied. Case study, as it used a community-based university and a technology-based incubator, located in the Itajaí valley, state of Santa Catarina, Brazil (Sampieri *et al.*, 2013).

The universe or body of research analysis is the entire structure of the incubator and the university, and the sample focuses on the analysis of the relationship network between the incubator and the university. As for the collection of primary data, the technique used was through an interview script, whose interviewees were the dean of administration (university) and the executive director (incubator). The choice for such interviewees was due to accessibility.

Secondary data were consulted on the incubator and university website. The instrument for data collection was adapted from the work of the researcher Rodrigo dos Santos Cardoso (2012), entitled “Networks of Relationships between Incubators of Technology-based Companies and Higher Education Institutions”, which has already been validated and published. The research script is available on the website of the Regional University of Blumenau - FURB (Online Library) for consultation. In addition to the interviews and secondary data, a bibliographic search, consultation of books and articles was used in order to conceptualize some terms and elaborate the theoretical foundation.

As for the treatment of the data, it took place in a qualitative way, through the content analysis of the interview scripts, whose analysis technique is used to interpret texts and interviews. Corroborating, Richardson (2014), says that this technique is justified, above all, because it is an adequate way to understand the nature of a social phenomenon, aspects of reality that cannot be quantified. After exposing the methodological procedures, the next section presents the literature review, addressing the thematic axis of the work.

4. Results and Discussions

The qualitative study, and particularly the analysis of the obtained statements conducted among a sample of executive director of the technology-based incubator and the provost of administration of IES, has shed light on several insights about the relationship between technology-based incubators and universities related to their characteristics and interactions in terms of: 1) Peculiarities of the University and the Incubator; 2) Dimension: Structural - Categories: Relationship Structures - Control Mechanisms; 3) Dimension: Relational - Categories: Information Flow - Social Access to Resources; 4) Dimension: Cognitive - Categories: Contagion - Environmental Influence.

4.1 Peculiarities of the University and the Incubator

According to official data collected from the university's own website, it was the first college in the interior of the state of Santa Catarina, where it was created in 1964, as a result of a community movement, to make access to higher education more comprehensive. In 1986, the HEI was recognized and accredited by the Ministry of Education as a University. And in 1995, through municipal supplementary law No. 80, the University was listed as a higher education institution - IIES created and maintained by a Foundation, included as an autonomous body in the administrative structure of the municipal executive branch, an official institution under public law.

Therefore, IES is a municipal autarchy with a special regime, with full didactic-scientific, administrative and financial and patrimonial management autonomy, according to its Statute. IES's mission is to promote teaching, research, extension and innovation, respecting and integrating cultural diversity, fostering responsible social, economic and environmental development. In this way, IES always seeks to achieve its mission through the vision in which it is based on being a public university recognized for the quality of its contribution and innovation in regional, national and global life.

Today, IES has 54 undergraduate courses, 11 postgraduate courses (11 masters and 3 doctorates) and the technical school. Currently, the HEI has a total of 9,780 students distributed over five campuses. There are more than 690 professors working at the institution, and around 800 administrative technical servers. The university has an annual budget of 225,800 million reais.

As for the incubator, its mission is to promote multisectoral development by stimulating and supporting innovation and entrepreneurship. It is, therefore, a non-profit civil

association that currently acts directly to support the generation of innovative companies and, subsequently, fundraising through projects. Through this line of action, this association enables the generation of innovative companies; consolidating the role of research as a driver of innovation; the improvement and professional development, in addition to social inclusion through the spread of access to new technologies.

Although still very young, having its foundation in 2002, it is the result of the dedication and boldness of a group of professors from the university. The beginning was marked by the development of the business incubator, an extension project of the University's Systems and Computing Department supported by CNPq through the Softex Society, in its pioneer Genesis Project (Generation of New Companies in Software, Information and Services). During this period of existence marked by successful projects, the Incubator consolidated itself within the academic structure and also in the market, generating new companies capable of contributing to the increase in the competitiveness of companies already established through its innovative technologies.

Thus, seeking to understand the existing relationships (relationship networks) between the incubator and the university, the following topics will address the results obtained from interviews with the university's provost of administration and the incubator's executive director, the which report information about the three dimensions surveyed (structural, relational and cognitive).

4.2 Dimension: Structural - Categories: Relationship Structures - Control Mechanisms

In order to answer the proposed objective, at first it was sought to find out how the university is involved inside the incubator, that is, how it is done until then this relationship structure. For the dean of administration, the incubator's statute has been changed since 2015 with the aim of ensuring that the university is included in its board of directors. Thus, it is currently guaranteed that the president of the incubator's board of directors is always the vice-rector of the university, so that this permanent link is created. As the legal structure of the incubator is an institute and has a CNPJ, the vice-rector is also the treasurer.

The incubator's executive director portrays this same information in his speech but points out that the board of directors is not represented only by the university, but by twenty-two other people who represent the triple helix, being a plural board. Among the institutions that are part of this network, which collaborate for the results of the incubator are the Associação Catarinense de Tecnologia - ACATE, UFSC, companies from Vale do Itajaí,

FIESC, Finep, Sebrae, among others. In this context, from the point of view of Granovetter (1992), the university is immersed in the incubator, and in this way, it can be analyzed from the structural aspects. Depending on the arrangement of the actors that make up a given network, there may be disadvantages or advantages, in this case,

In addition, the seven university centers (university units) are represented within the incubator, whose purpose is to make the incubator not only an entrepreneurial association, with a focus on information technology, but also a multisectoral one. So this relationship network occurs, between university and incubator, from the opportunity to connect and be present within the incubator all areas of knowledge of the university, according to the dean of administration.

With the knowledge that other studies were carried out with these dimensions, categories and subcategories, in Cardoso's studies (2012), it was evident that the studied incubators are linked to an institute structure in the HEI, responding directly to its direction, thus, the incubator is an element within the larger structure which is the institute division and this for the HEI. In this case, the results go in parts in sequence, as the incubator is linked to HEIs through an institute, but they are different institutions, with economic and financial autonomy, although they have a relationship network.

When it comes to the benefits of this relationship structure for both institutions, according to the interviews, for the university this exchange is important, as the HEI has an arm in entrepreneurship, so, all those who think about creating new businesses, it is possible be part of the incubator. As far as the incubator is concerned, the benefit lies in the proximity that it has to the university from the students (current students, graduates, etc.) so that ideas can be created that can be incubated and become successful companies in the market.

Thus, for Souza (2010), the bonds that unite incubators and HEI are in the context of dynamic systems, the network is in constant proximity. Thus, for the director of the incubator, the incubator feeds the idea from the university, which is the main breadbasket, strengthening the entrepreneurial culture within the university. Although the university is immersed in the incubator, the number of ties inside and outside is still small and, therefore, a weak structure appears (Simsek, Lubatkin, & Floyd, 2003).

Discussing the control mechanisms, which rules govern the university towards the incubator, the dean stressed that, first, there is a resolution approved by the university council, on the ways of inclusion of the university towards the incubator, being thus regulated from

IES internal rules. Second, based on this internal rule, it is ensured that the dean is the president of the incubator's administrative council.

For the incubator's executive director, until then, there was no legal document of transition between the incubator and the university, what existed were contracts that the incubator made to provide services, with the university faculty, mainly, but nothing specific from the point of view. management view, board composition and control. Mizruchi (1996) stresses the importance of the participation of managers of other administrative councils, in this case of the dean, facilitating the exchange of information between institutions. In this case studied, as well as in the studies by Cardoso (2012), there was a lack of more rigid control mechanisms, both exposed by the executive director and by the dean.

As for the management tools shared between the incubator and the university, the dean highlights that until then there were few mechanisms. Therefore, what is concrete in this case is a tool called Cerne - 1 (Reference Center for Support for New Enterprises), which is a specific management system for incubators, even supported by SEBRAE (Brazilian Support Service for Micro and Small Enterprises). The university, using this tool, has a monitoring of the incubated, in this case it is accompanied by the university's provost of administration since he is responsible for the incubator's board of directors.

For the director of the incubator, this is what has existed until then, but there is no different system of CNPJ that is spoken, for accountability, that is, in this case there is no system of open governance, they are autonomous institutions. As there are few control mechanisms between the university and the incubator, Cardoso (2012) points out that the less rigid control mechanisms favor innovations, and incubators are spaces in which the creation and favoring of the expansion of innovative ventures is favored and desired.

4.3 Dimension: Relational - Categories: Information Flow - Social Access to Resources

When asked by the dean about the events that provide interaction between the incubator and the university, it is highlighted that the incubator participates in the entrepreneurship fairs promoted by the university, in addition to the events promoted by the students together with the incubator (example Hackathon University). Cardoso (2012) highlights that there are informal and formal moments for information flows, and that these flows can occur through meetings, events.

There is also always the participation of the university in the lectures and workshops promoted by the incubator. For the executive director, relationship actions range from

institutional visits to university centers to the organization of the global entrepreneurship week (workshop). For Krackhardt (1992), workshops and forums, among other means of information flow, are used to publicize incubators.

As for the advantages and capabilities developed and provided by the university in favor of the incubator, according to the dean, this occurs from the teacher's pre-disposition, to go to the incubator and serve as tutor, helping those incubated in the development of their ideas. In view of the question of which are the main external agents or institutions that help the university and the incubator in this relationship network, for the dean because the incubator is considered an association, the Triple Helix (teaching and research entities, business entities and public authorities). As part of this Triple Helix, access to resources and links mentioned by Granovetter (1992) with other institutions, allow these institutions possibilities of access to resources and information.

Of this Triple Helix, the public sector is represented by the Association of Municipalities of the Middle Valley of Itajaí - AMMVI, City Hall of Blumenau and the Regional Development Agency - ADR. With regard to business entities, it is represented by the Blumenau Business Association - ACIB and the Association of Microenterprises, Small Companies and Individual Entrepreneurs in Blumenau - AMPE. In the research and teaching sector, there is the Regional University of Blumenau - FURB, Federal University of Santa Catarina - UFSC, the Federal Institutes of Santa Catarina, SENAI and SENAC, highlights the incubator's executive director.

4.4 Dimension: Cognitive - Categories: Contagion - Environmental Influence

When asked about the main gains (economic, social, image, etc.) of the university with the incubator, the dean emphasizes, that the visibility is enormous, because where one institution is, the other is also. As for social insertion, it occurs every time that the possibility of any individual to develop their ideas is provided. Financial gain, on the other hand, is linked to the generation of taxes, generation of employment and income.

For the executive director, this relationship, although with some deficiencies, can be considered as the bridge of success. At the university there are talents and preparation and in the incubator there is the cutting and finishing to take ideas as a product to the market. Thus, for Cardoso (2012) the elements that explain the existing relationship in this relationship network, formed between incubator and HEI, an explanatory network of these relationships can be configured. It is noteworthy that both the university and the incubator play an important role in regional development. Since the creation, more than 200 ideas have been

supported, of which some are highlights in the market today. Examples are LZT Sistemas, which was acquired by LINX for approximately R\$ 30 million; another is SEEKR that merged with Direct Talk,

In all, for the dean, these countless companies hitherto incubated, will generate in 2018, approximately 70 million in revenue, with more than 450 direct jobs and with an estimated value of 13 million reais in taxes. So, finally, the interviewees emphasize that this is only possible due to the countless supports, ACATE, universities, companies, FIESC, Finep, SEBRAE, among others.

Thus, analyzing the categories of contagion and environmental influence, it is clear that the role of incubators and HEIs is very important, considering that it is a unique opportunity to promote and see ideas become a reality for the market (BORGATTI; FOSTER, 2003). Therefore, given the exposure of the results obtained through the interviews, the next topic will address the main final considerations.

5. Conclusion

Network theory can contribute as a basis for understanding the interorganizational relationships existing between technology-based incubators and Higher Education Institutions (Cardoso, 2012). In this paper we attempt to understand the dimensions that explain the relationship network existing between a technology-based incubator and universities, using a setting the region of Itajaí valley (in Brazil). Our results show that as for the relationship between the incubator and the university, which stands out, which is currently guaranteed that the chairman of the incubator's board is always the vice-chancellor of the university, in addition to the board, being composed of twenty-two other people, representing the triple helix, being a plural council (as in some universities activities as shown by Magni & Sestino, 2021).

Although there are some shortcomings, it can be considered as the bridge of success. At the university there are their talents and their preparation and in the incubators there is the cutting and finishing, to bring ideas as a product to the market. All this effort, as can be seen in the numbers, has already been more than 200 ideas supported by the incubator, with some with national prominence, acquired by millions of reais. Thus, these countless companies incubated until then, will generate in 2018, approximately 70 million in revenue, with more than 450 direct jobs and with an estimated value of 13 million reais in taxes.

Therefore, it was noticed during this research, that all the results, although embryonic obtained by this relationship, were only possible due to the support involved, such as with the Associação Catarinense de Tecnologia - ACATE, UFSC, companies, FIESC, Finep, SEBRAE, among other partnerships that are together in this studied incubator / university relationship. Together, it is noted that another category of analysis emerged from these two interviews in this relationship structure, being the differentiated form of governance of the incubator. This category can be considered in future studies, which aim to analyze this type of relationship.

Thus, the wide variety of approaches shows the interdisciplinarity of this field of research (Main et al., 2016). It is suggested as future research that quantitative studies are carried out, in order to also evaluate the economic impact of this relationship network for both institutions (incubator and university).

We contribute to the steam of research about the Network analysis, by showing as in some local territories the strong relationship between universities and incubators could led new business idea, increasing the local development. Moreover, we add knowledge on how, due to aforementioned relationship the corporate structures, in terms of bodies and actors, are constituted. Finally, we contribute to technology transfer research by highlighting how some synergistic collaborations at the network level as parts of a large and complex system, can bring better and higher quality innovations than individual business activities.

However, this work is not without limitations. Despite our results are quite consistent the applied methodology provides insights form a single case study, thus invalidating the replication of the results except for contexts with similar features in terms of institutions, actors, characteristics. Indeed, our study has been conducted using a setting the Itajaí valley in Brazil: Future research could analyze by following the same research methodology and investigation approach different realities based on similar orthogonal characteristics, in the attempt to provide a solid framework to diagnostically analyze and drive the relationship between universities and incubators, useful for managers and professionals to stategically manage the networks.

6. Referências

- Barile, S., & Polese, F. (2010). Linking the viable system and many-to-many network approaches to service-dominant logic and service science. *International Journal of Quality and Service Sciences*.
- Cardoso, R. S. Redes de relacionamento entre incubadoras de empresas de base tecnológica e instituições de ensino superior. 2012. 200 f., il. Tese (Doutorado em Ciências Contábeis e Administração), Universidade Regional de Blumenau. Disponível em: <http://www.bc.furb.br/docs/TE/2012/359891_1_1.pdf>. Acesso em: 28 abr. 2021.
- Gallon, A. V., Ensslin, S. R., & Silveira, A. (2009). Rede de relacionamentos em pequenas empresas de base tecnológica (EBTS) incubadas: um estudo da sua importância para o desempenho organizacional na percepção dos empreendedores. *JISTEM-Journal of Information Systems and Technology Management*, 6(3), 551-572.
- Gil, A. C. (2010). *Como elabora projetos de pesquisa*. 5. ed. São Paulo: Atlas.
- Granovetter, M (1992). Problems of explanation in economic sociology. In: Nohria, N., & Eccles, R. G (Eds.). *Networks and organization: structure, form and action*. Boston: HBS Press, p. 25-56.
- Granovetter, M. (1985). Economic action and social structure: The problem of embeddedness. *American journal of sociology*, 91(3), 481-510.
- Granovetter, M. S., Castilla, E. J., & Hwang, H. (1998). Social Networks in Silicon Valley. In: Miller, W.F., Hancock, M.G., & Rowen, H. S. *The Silicon Valley edge: a habitat for innovation and entrepreneurship*. Stanford: Stanford Business Books, p. 217-424.
- Gulati, R. (1998). Alliances and networks. *Strategic management journal*, 19(4), 293-317.
- Krackhardt, D. (1992). The strength of strong ties: the importance of philos in organizations. In: Nohria, N., & Eccles, R. G (Eds.). *Network and organizations: structure, form and action*. Boston: Harvard Business School Press.
- Lasrado, V., Sivo, S., Ford, C., O'Neal, T., & Garibay, I. (2016). Do graduated university incubator firms benefit from their relationship with university incubators?. *The Journal of Technology Transfer*, 41(2), 205-219.
- Martins, C., Silveira Fiates, G. G., Dutra, A., & Venancio, D. M. (2014). Interaction Networks from Technology Based Incubators: Collaboration Generating Innovation. *Revista Gestao & Tecnologia-Journal of Management and Technology*, 14(2), 127-150.
- Mian, S., Lamine, W., & Fayolle, A. (2016). Technology Business Incubation: An overview of the state of knowledge. *Technovation*, 50, 1-12.
- Motta, F. C. P. (1971). The general theory of systems in the theory of organizations. *Journal of Business Administration*, v. 11, n. 1, p. 17-33, 1971.
- Nohria, N., Eccles, R. G., & Press, H. B. (Eds.). (1992). *Networks and organizations: Structure, form, and action* (Vol. 367). Boston: Harvard Business School Press.
- Pfeffer, J., & Salancik, G. (1978). *The External Control of Organization: a resource dependence perspective*. New York: Harper and Row.

- Phan, P., Siegel, D. S., & Wright, M. (2016). Science parks and incubators: observations, synthesis and future research. *Technology Entrepreneurship and Business Incubation: Theory• Practice• Lessons Learned*, 249-272.
- Raupp, F. M., & Beuren, I. M. (2006). Metodologia da pesquisa aplicável às ciências. *Como elaborar trabalhos monográficos em contabilidade: teoria e prática*. São Paulo: Atlas, 76-97.
- Richardson, R. J (2010). *Pesquisa social: métodos e técnicas*. São Paulo: atlas.
- Sampieri, R. H., Collado, C. F., & Lucio, P. B. (2013). *Metodologia de Pesquisa*. 5. ed. São Paulo: Penso.
- Sestino, A. (2018). Le start up, l'ecosistema sinergico dell'innovazione e la rilevanza della R&S (The Synergistic Ecosystem of Innovation and the Relevance of Research and Development). *Available at SSRN 3289964*.
- Simone, C., Barile, S., & Calabrese, M. (2018). Managing territory and its complexity: a decision-making model based on the viable system approach (VsA). *Land use policy*, 72, 493-502.
- Uzzi, B. (1997). Social structure and competition in interfirm networks: The paradox of embeddedness. *Administrative science quarterly*, 35-67.
- Vergara, S. C. (2016). *Projetos e relatórios de pesquisa em administração* (16o ed). São Paulo: Editora Atlas.
- Von Bertalanffy, L. (1968). General system theory. New York, Vol. 41973, n. 1968, p. 40.