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UNIVERSITY-INDUSTRY ANTECEDENTS FOR INNOVATION ACTIVITIES: AN ANALYSIS OF THE ALUMNI ROLE

ANTECEDENTES DA RELAÇÃO UNIVERSIDADE-EMPRESA PARA ATIVIDADES DE INOVAÇÃO: UMA DISCUSSÃO SOBRE O PAPEL DO EGRESSO

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Abstract

The joint development of research and innovation projects between University-Industry, towards regional development, is a topic of broader debate. This investigation aims to propose a new discussion and research agenda, where the University Alumni are a critical role to sustain the relationship University-Companies in these projects. Using a qualitative approach, this study analyzed University Alumni who act as leaders in the productive sector, analyzing their perception, expectations and positioning dimensions towards the University-Industry relationship. As results, it was founded that the Alumni have the potential to act as an important relationship asset and link, due to his/her previous experiences in University, that help to build thrust between organizations. With this analysis, is proposed a theoretical model considering which attributes or antecedents this Alumni needs to maintain in order to sustain the relationships between University-Industry, leveraging research and innovation initiatives.

Keywords: University-Industry; Innovation; Alumni.

Resumo

O desenvolvimento em conjunto de projetos de pesquisa e inovação entre Universidade e o setor produtivo é objeto de ampla análise e discussão. Este estudo propõe uma nova reflexão e agenda de pesquisa, em que o egresso da Universidade é um componente essencial para o estabelecimento das

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relações entre estas organizações. Com uma abordagem qualitativa, a partir de entrevistas com egressos da uma Universidade e que atualmente atuam como lideranças do setor produtivo, analisaram-se as dimensões de percepção, expectativa e posicionamento em relação a seu entendimento na relação Universidade-Empresa. Como resultados, verifica-se que o egresso da Universidade tem potencial para atuar como importante elo de relacionamento, dadas as suas experiências prévias, as quais auxiliam na construção da confiança entre as partes. Deste modo, a partir desta análise, é proposto um modelo teórico sobre quais atributos ou antecedentes este egresso possui e que fortalecem as relações Universidade-Empresa, potencializando iniciativas de pesquisa e inovação.

Palavras-Chave: Universidade-Empresa; Inovação; Egressos.

Introduction

The established and necessary relations between the University and the community in which it is inserted, aiming at the regional development, are topics of permanent debate. Discussions both in the academic environment and in organized society. The evaluations regarding these relationships are intensified by facts, historical periods and cultural, economic or technological development processes. The social and productive relationships with University and Industry are driven by the needs to approach scientific production and the generation of knowledge to address new demands. The current moment of economic and technological development in the world is one of these catalysts. It highlights the need for such a collaboration models of University and Industry since the demands for the application of technology in the current way of life and companies expose the increase need of this relationship. (COUTINHO; SILVA, 2017; BRUNNER, 2008; ANDREASSI, 2007, PLONSKI, 1995).

Regarding production processes, these are currently based on the intensive use of knowledge, and they are fundamental in creating differentiation and competitiveness. Unlike other historical moments, where factors like brute workforce number, military power or capital were great differential of people or nations. Today, even small countries have edge cutting technology and create great economy value with them. As Christensen and Overdraf (2000) and Porter (1990) argues, when a greater degree of economic, political and technological interdependence is reached between the different economic agents and countries in the world, technological innovation becomes a key element of the national and international competitiveness. Hence, to the point of stating that a nation's competitiveness depends on the innovation capacity of its industries (GAWER; CUSUMANO, 2014; ETZKOWIT and LEYDERSDORFF, 2014).

In the context of personal and social relations, humanity experiences a moment of conflict of values, customs, principles and standards considered inflexible decades ago. Today they are treated as part of the necessary and irreversible change, thus experiencing a moment of restlessness and discovery (MASI, 2013). In this paradigm, academic research, translated into scientific and technological knowledge, are even more necessary. Either so that universities can understand and intervene in current phenomena of this changing society. Or to prepare the new professionals who will be inserted in this context, or to maintain themselves always present and under evaluation the relations between the present and the past (CIMINI; GABRIELLI; LABINI, 2014). This knowledge to solve problems were being generated by traditional academic circles, however it can and should be generated largely in conjunction with society itself and the productive sector. With specific interests in its applications, which shows that knowledge and technologies have no time nor a specific place to develop. They can be induced in an organized way and in environments that promote their use and application (SPOLIDORO; AUDY, 2008).

Therefore, universities assume themselves as critical actors in the process of generating knowledge by carrying out research and training qualified researchers (KARLSSON; ZHANG, 2001). In this context, these environments of knowledge production and innovation generation, are subjects to social interactions. It is important and possible to evaluate the importance that these social and cultural relations have an influence on social, economic and innovation development, within the scope of nations and organizations in the world market (SCHREIBER; THEIS, 2017).

For Demo (2004), therefore, the central challenge of the University is the production of its own scientific and technological knowledge with formal quality, method and policy, capable of

promoting development. This is only possible through research as a strategy for generating knowledge and promoting citizenship. Society places the hope that in the university it will be at the forefront of development, considering it intellectual elite and the importance attributed to science and technology as being the strategies for the emancipation of people (WANDERLEI, 2017). From this point of view, the university and its leaders need to understand and evaluate this expectation and hope, directing their strategic objectives and culturing their teams to this challenge.

Knowledge has come to be identified as a relevant factor in society and higher-education institutions need to observe recent changes and adapt. For Pietrovski (2002), considering the importance of the participation of higher-education institutions in the knowledge society, currently the opportunity that universities can contribute is largely increased. With a solid organizational structure and through research activities, services, multiplying agents and facilitators of the process, this assets can strength the University-Industry interaction. Above all, in partnership with companies, models that meet the expectations and demands generated by society are fundamental in this transformational process.

Therefore, according with Lamas (2007, p. 8)

“today the university assumes a role as an agent of development and commitment to society: its role in regional development is unquestionable; this is an increasing demand from society. In order to fulfill this aim, the university needs to increase in quantity and quality its relations with its stakeholders. The capital gains generated by this relationship are real for the university and for its stakeholders; this is a crucial relationship and we do not doubt that this is how it has to be thought”.

Hence, this requires innovative behavior and detachment from the traditional culture and model. Is important to understand organized society as actors and stakeholders in the development of universities. This principle can create a new model of management and interaction between science, technology and innovation with real field of application (KNOPP, 2011). In fact, this behavior is not at all a novelty or a radical change in this relationship between university and society. Can be considered a more objective way of establishing the relationship between teaching, research, science and its real stakeholders. Even because if it does not, a separation can be created between those who conduct university actions and the society in which they live.

Thus, there is a context and the need for a relationship between the university and the companies, in the sense of developing knowledge generation and innovation. To address this purpose, is recognized a gap to observe: the effect of Alumni in these relationships. Therefore, emerge the need to advance towards the understanding the background of this relationship.

Considering this, this research paper proposes to evaluate the role of the Alumni as a Relationship Asset in the University-Company interaction. In order to propose a model to understand this relationship considering the production and transfer of scientific and technological knowledge. The issue of Alumni is important, and this role and its relationship with the university can be understood from three generations:

a) The traditional view of the Alumni as an “output” of the undergraduate education system: in this way, the role of the University is to train a new professional, with knowledge at a higher level (HECKMAN; GUSKEY, 1998);

b) A more recent view of the graduate in a concept of continuing education, where his link with his HEI is permanent, but restricted to educational products and learning (SHINN, 2013): in this way, a view of relationship is inserted, but not with focus in knowledge construction, but consumption of it;

c) The Alumni, in a concept of Relationship Asset, proposed by this analysis, which has a significant role of interaction between the University and the Productive Sector. Being, therefore, an important point of integration for research and innovation processes. For this study, Alumni is considered one that concluded from undergraduate or graduate courses, in terms of specialization, master and doctorates.

From this delimitation, this study will promote the understanding of: (a) the Alumni as an key element of interaction in the University-Company relationship and (b) the discussion of the essential attributes of this Alumni so that these relationships can be sustainable developed. Therefore, this study proposes to analyze the bases of the University-Company relationship, and from this theoretical framework, to deepen the discussion on the role of Alumni in this dynamic.

Theoretical background

This work is structured in the topics of University-Company Relationship and in the Triple Helix and Interaction Agents.

University-company relationship

In the University-Company interaction, cooperation between several partners can lead to the establishment of a network and, consequently, the emergence of an organization linked to a web of knowledge. That enables sharing technological skills with heterogeneous actors inside and outside organizations (GUAN; ZHAO, 2013). In fact, this can be said of all the actors with whom the university has a relationship. Each of whom has achieved their benefit, like the company, according to its area of operation and its objectives of operation. It is argued that the university is the only one capable of establishing this relationship with all the actors, considering its position in society. Because through it, and with it, society induces, conducts and benefits from the constant movements of evolution. According to Rodrigues (1999, p. 61): "the University emerges from Society: the members of the University are inserted in different social groups. Consequently, they carry their perspectives, their behaviors and their values inside the University, as people ". The question that can be asked is how a university occupies these spaces and organizes itself to be perceived as such, with relevance and impact.

Thus, one of the critical factors of the university's relationship with its community is the relationship with the productive sector, with the companies. Being covered with many possibilities and relationships that can be established, after all, one of the university's functions is to develop professionals to play their roles in this environment. Consequently, meeting the expectations they are given (ROLIM; SERRA, 2015). Scientific development and research are also part of this context; however, the role of the student and the Alumni in this relationship is undeniable. The models suggest that universities can create the necessary conditions for technology transfer: (a) by providing an adequate workforce; (b) generating the scientific basis and the necessary innovation and development activities; (c) adapting the innovations produced in other contexts to the specific case of each region; and (d) by performing these tasks in close relationship with industrial fabrics (OLIVEIRA, 2014; LEE, 2000; CASTELLS, 1994).

According to Dagnino et al. (2011), in developed countries, the Academy-Industry (or University-Company) relations are generally perceived as positive and their potential for expansion is considered practically unlimited. Evidence from several countries reveals that a growing proportion of university research has been funded by industry since the 1980s. Thus, Dagnino et al. (2011) establish their analyzes and relationships based mainly on the influence of university research with industry. This aspect is quite relevant, but it is not the only one to be observed, as shown in Figure 1.

Figure 1: Benefits of University-Company Interaction

Benefits of University-Company Interaction	
For Universities	For Companies

Encouraging improvement in the quality of university education, considering market and challenges	Access to qualified human resources
Increase the extension function of the University	Emerging new ideas, knowledge and technologies that will serve as a basis for potential new products and processes at lower cost
Obtaining new knowledge that can be applied in the university itself	Contribution to Corporate image and prestige
Increased funds for academic research and laboratory equipment	Conducting and redirecting R&D towards new technologies and patents
Testing and practical application of research	Development of new products and processes
New perspectives in research and technological development	Technical troubleshooting
Vision for research opportunities	Improved product quality
Obtaining knowledge about practical problems useful for teaching	Access to new research, through seminars and workshops
Creating internship and job opportunities for students	Maintaining a progressive relationship with the university to recruit graduates

Source: developed according to Dagnino et al. (2011).

Still, according to Webster and Etzkowitz (1991), among the reasons that would explain the main motivations in the University-Company relations by both companies and universities would be, for companies:

- a) Increasing cost of research associated with the development of products and services necessary to ensure advantageous positions in an increasingly competitive market;
- b) The need to share the cost and risk of pre-competitive research with other institutions that have governmental financial support;
- c) A high rate of introduction of innovations in the productive sector and a reduction in the time interval between obtaining the first research results and their application;
- d) Decrease in government resources for research in sectors that were once profusely fostered, such as those related to the military-industrial complex.

And, according to the authors, the benefits of interaction for Universities:

- a) The increasing difficulty in obtaining public resources for university research and the expectation that these can be provided by the private sector, due to the greater potential for applying their results in production;
- b) Interest of the academic community in legitimizing its work with the society that is, to a large extent, responsible for the maintenance of university institutions.

In this scope of analysis, Andreassi (2007, p.39) reiterates the benefits of this relationship between the university and the company:

“while the Academy seeks companies to obtain practical knowledge about existing problems, incorporate new training into teaching and research processes, obtain financial resources and publicize the university's image, companies, in turn, are interested in highly qualified people and due to the possibility of solving technical problems, there is a need for research, reducing costs and risks involved in R&D processes, accessing new knowledge developed in the academic environment and identifying students for future recruitment”.

Thus, from the motivations on the benefits of University-Company relations, models emerge, such as the Sábato Triangle and the Triple Helix.

Sábato triangle, triple helix and interaction agents

With the objective of contributing to the alignment between knowledge and cooperation, understood as the great challenge of the interaction between university and company, in 1968, Jorge Sábato and Natálio Botana described a model called "Sábato Triangle", which influenced the development of the other models future. Observing the difficulties of interaction and the consequent obstacles that exist in scientific-technological development, the authors described the role of University-Company cooperation in technological innovation and its fundamental importance for the economic and social development of Latin America (CRUZ, 2009; PLONSKI, 1995). The relations described by the Sábato triangle were organized in order to stimulate innovation actions in University-Company interactions. Sábato and Botana (1975) maintain that a scientific-technological infrastructure is necessary for scientific research and that the transfer of research to the industrial sector is given by a triangle of relations between university, company and government. The Sábato and Botana model was represented graphically by means of a triangle, where the government occupies the upper vertex and the productive structure, and the scientific-technological infrastructure occupy the base vertices. The triangle has three types of relationships: interrelationships (between components of the same vertex), interrelationships (established between pairs of vertices), and extra-relationships, when it occurs between a society and the outside (SÁBATO; BOTANA, 1975).

Based on this logic of relations between such actors, the triple Helix model presented by Etzkowitz and Leydesdorff (2001), understands that the generation of wealth and local development can be accomplished through innovation and knowledge management, involving university, industry and government. According to the model, the relations between the three spheres generate an ascending helix of regional development. They are based on the interaction and sharing of knowledge between the university and the company, making it more competitive from products that are richer in knowledge. Under the perspective of the triple helix, the university takes on a new role in the Regional Innovation System, becoming an actor of great importance. From the same perspective, Etzkowitz and Leydesdorff (2001), state that the triple helix can be understood through three distinct stages:

a) Stage I: In this first moment, the spheres (university, industry and government) are institutionally defined. This interaction is developed through industrial relations, technology transfer and official contracts;

b) Stage II: the spheres are understood as distinct communication systems, consisting of market operations, technological innovation and interface control. Interfaces produce new forms of communication linked to technology transfer and supported by patent legislation;

c) Stage III: institutional spheres take on each other's roles. The university starts to have an almost governmental performance presenting itself as an organizer of local or regional technological innovation. In this case, the Triple Helix model, and the intersections between the spheres interfere in theory and practice. Thus, while some new roles are assumed, others are reinforced.

According to Sbragia et al. (2005, p. 20), the "Triple Helix is a spiral model of innovation that takes into account the multiple reciprocal relationships at different stages of the knowledge generation and dissemination process," and that "each helix is an independent institutional sphere, but it works in cooperation and interdependence with the other spheres, through knowledge flows between them". However, since they are institutions with different structures and objectives, the relationship requires attention and methodology. The differences mainly concern temporal needs, established cultural values and intellectual property (ETZKOWITZ, 2009). Temporal needs are defined to the long-term process of academic research, which is characterized by its unpredictability and the freedom to change direction at any time. The projects developed by the companies are specific and guided according to their goals, with a short-term view (DEMAIN, 2001).

It is in this systemic environment of possibilities, needs, expectations, restrictions and opportunities in University-Company relations that there is a very strong potential for connection between academic and business environments, the Alumni of the University (MICHELAN; LUCIANO SERGIO, 2011), as an important agent of interaction in these relationships. It is argued that his performance in the business environment is coated with all these interrelationships and expectations. At the same time, the Alumni is an active participant in society and both spectator and demander from performance of the university itself. Thus, this is an important actor in this process, which can adapt and can help to adapt the circumstances that unite university and company. Particularly in objectives that can generate the growth of this relationship and of all the implicit individual interests (PERKMANN; WALSH, 2007).

Therefore, it is proposed that the Alumni is the individual who can, respecting the vocations, specific objectives and capacities of both the university and the company, adapt the circumstances and strengthen this relationship. This is because, from due his/her academic trajectory, there is greater knowledge about the university's skills, greater knowledge of the people involved, of the structures and their way of operating, and culture. At the same time, Alumni also knows the company in which operates, business, culture, way of conducting interinstitutional relations and expectations in each joint project. In this way, the Alumni is able to act as a knowledge gatekeeper that is, individuals who are characterized by having high connectivity with information sources external to the organization, with the ability to absorb this external knowledge and promote exchanges (FACHINELLI et al., 2013). While having high internal connectivity to their operating organization, so that the knowledge can be distributed and generate learning and innovation.

However, it is argued that such relationships will only be fostered and strengthened by the processes of identifying the Alumni with his Universities of formation, in undergraduate and graduate studies. However, will be critical the Alumni level of positive perception and appreciation, as well as with his motivation and ability to promote this approach, observing meaning in this exchange. In this sense, the interested parties, University and Company, can find a common actor who can play a more than relevant role in the relationship. That is essential for the success and continuity of the joint projects and each of the fields of interest at its addressed in this research.

Research method

This research is configured as being of a qualitative nature and objective exploratory, adopting an in-depth interview strategy for data collection. It's the most appropriate method in the moment to understand the role of Alumni in the relationship between University and Companies, based in the theoretical elements discussed. According to Roesch (2013), the following steps for its development were adopted: a) definition of the type of research, b) definition of the target audience, c) definition of the data collection instrument; d) application of the interview; e) qualitative evaluation of the data through content analysis f) analytical proposal of a model, based on the collected data.

For the in-depth interviews, five entrepreneurs, union leaders and representatives of business classes were selected. The criteria of selection considered those who have a strong proven relationship with the analyzed University and who were able to represent certain segments, such as metal-mechanics and automotive, for example. Still, the experience and representativeness criterion were considered in order not to make the evaluation the result of partial views or the identification of personal needs. The interviewees were identified by the letters A, B, C, D, E. The interviews were recorded and transcribed, from the questioning of the interviewees, but providing the interviewee with an opportunity to expose new insights regarding the topic in question.

For the development of the data collection instrument, a semi-structured script was used to conduct the interview. It considered aspects related to the identification of an Alumni with the university and other relevant aspects of his/her education that highlight and promote this relationship perceived by the participants. The questionnaire was made up of five dimensions that aim to identify, according to the interviewees' perception regarding the potential of identifying the Alumni with the University and their capacity to become active in the University-Company relationship, being evaluated the following aspects:

- a) representativeness of university Alumni in the region's economic and social development;
- b) identification of the Alumni with the university where graduated;
- c) perceived appreciation of the Alumni in relation to the University that graduated;
- d) the ability of the Alumni to bring the University closer to the productive sector, becoming a permanent agent of this relationship;
- e) relevant aspects evidenced by the interviewees in professional training.

The questionnaire was applied in the form of in-depth interviews, giving the interviewee also the opportunity to expose their positions and perceptions without limitations or text to be followed.

Analysis and discussion

The evaluation of the interviews took place through content analysis (BARDIN, 2009) categorizing by: Perception, Expectation and Positioning, considering the analysis of the dimensions previously mentioned.

Perception about identification with the University

All interviewees expressed their recognition of the importance of the University Alumni in the development of the region. Also, recognize the importance of the University and its influence through its role over time. It was noticed that these Alumni, in general, easily express their pride of having graduated from their Universities. It is observed that, the older ones, graduated for a longer time, more easily express a positive feeling and demonstrate their pride. They manifested the sense of identification and appreciation. Were observed that this feeling being a little less accentuated in the most recent graduates, it due the current relationship level with the University. The respondents' statements also agree that, given their prominence in society and companies, they would expect a more constant relationship from the University, which would be positive for both. Thus, from the interviews, a first sense of identification with the University of formation is observed, which generates empathy, trust and makes it possible to stimulate new relationships.

Expectations in relation to the University

From the interviews, it is observed that the notion of maintaining or not relationships is also dependent on their perception of the Institution's general formation since such representatives of the productive sector are employers. The interviewees reported that there is a good level of education at their Universities. They point Universities should consider the profile of micro and small companies in the region, and not just the large ones, as this would expand its range of activity. Still, two of the interviewees (C and D) report the need to expand the technical-scientific and practical basis in training, promoting learning by solving problems and projects, in situations closer to the reality of companies. They also stated that the University developed this approach in a historic moment when it discussed the course curricula with the sectors involved.

Interviewee E points out, at different historical times that the university's Alumni should be prepared to lead people, he even recognizes the professional success of his elders, but feels the difficulty in forming leadership in general by the university. Respondents A, B and D perceive the performance of graduates on issues related to innovation and technology, as companies in the region have this characteristic. However, understand that this must be more profound in training because the challenges of the industry are currently different and the competition international behavior requires other behavior, which requires investment in research, technology and innovation. Interviewee E, at various times, notes that, even though there is greater identification of graduates from the 80s, 90s and 2000s, the university needs to stimulate a new phase of identification and relationship with future graduates, in order to maintain the flow of opportunities and active projects.

In this sense, what is observed is that the need for a relationship goes beyond employability and with more strategic needs. Which denotes the establishment of more structural mechanisms for the University-Company relationship for research and innovation processes.

Positioning about the Alumni role

It was identified that all interviewees agree that Alumni can be active in the relationship between the university and the productive sector. However, it is up to the University to initiate this process and it must have a methodology to make this viable. This is because the Alumni are involved with the daily problems and pressures of companies. Therefore, may not realize the opportunities that the university can offer, and become less aware, as time goes by and the University develops. Thus, it's healthy the movement of the University to seek such organizations and start the relationship and not just wait for the first contact.

Interviewee D cites the Triple Helix as a model and notes that the university's graduates are in both the private and public sectors, which facilitates this relationship. However, again he sees the university as the actor who must take the initiative in an organized and systemic way, due to its

position and plurality in society. Interviewee D notes that this view of the role of Alumni, from the perspective of research and innovation, is what differentiates the University from Institutions oriented only to teaching, mainly of a private nature and for profit. Thus, the development of graduates as agents of University-Company relations is a perspective that had not yet been perceived by them, but was manifested as essential, from the development of the study.

Analytical Proposition of a Model of Alumni as a Relationship Asset

In this way, the in-depth interview process showed that, (a) there is a perception of positive identification of these Alumnus, leaders in the productive sector, towards the university; (b) whether there is a positive expectation in the University-Company relationship for research and technological development and innovation projects and processes are increased; and (c) there is a common understanding that the Alumni is a key actor in the relations between the University, the Company and the Public Sector. Such findings lead to a new reflection.

The aspect that emerges, in view of this discussion, is that if the Alumni is perceived by the actors in the productive sphere as a potential agent of University-Company-Government relationship, the question that is punctuated is: *what maximizes the Alumni capacity for interaction, to promote research, technological development and innovation initiatives?* In other words, **what are the factors that explain the ability of an Alumni to interact, configuring as a University-Company Relationship Asset, promoting greater capacity for innovation?** As noted, the Alumni, as he moves away from the University, becomes unaware of it due operational demands, and the relationship for innovation initiatives, more than contractual, is a relationship made by people, and demands communication and integration. In this way, the development of relationship approaches becomes fundamental.

In this analysis, the perspective of Relationship Marketing in Organizational Networks is contributory. It analyzes relational exchanges from the perspective of cooperation and the construction of social capital and the necessary trust to sustain the interaction between the actors (GUMMESSON, 2017; PINHO, 2013, PECK et al. 2013). In other words, to assume the Alumni as a Relationship Asset is to assume, at first, that the development of trust relationships between him/her, in his organization / company, with the University is fundamental. This is what will increase your ability to interact, and connectivity to exchange knowledge. Interaction capacity, in this context, means the graduate's ability to facilitate a relationship and systematic interactions that affect business opportunities between the University and the Company, in a bilateral perspective (JANSEN, 2017). However, what leads the graduate to have a greater capacity for interaction? At this point in the analysis, eight hypotheses will be discussed, considering the relationships identified in the literature between constructs and their relationship with innovation in the University-Company context, expanding this discussion to the Alumni role.

In order for this interaction or exchange to be facilitated, it is necessary, in the first instance, for the Alumni to have confidence (level of social capital) in relation to his University, since a relational exchange is not sustained if there is distrust between the parties. **Thus, it is argued that the higher the degree of trust of the Alumni with his University and with his Company, the greater his potential for interaction** (HU; RANDEL, 2014; SANCHEZ-FAMOSO; MASEDA; ITURRALDE, 2014).

In a second moment, it is necessary for the Alumni to perceive a positive Identity with the University. This implies a positive reference and remembering their competences and brand perception in the need to search for solutions. **Therefore, it is argued that the greater the level of identification of the Alumni with the University, the greater its potential for interaction** (BOH; DEHAAN, STROM, 2016; ROBERTS; MURRAY, 2015).

In a third moment, as mentioned in the interviews, the routine activities of organizations can lead the Alumni to ignore the new skills developed by the university. Thus, the bilateral exchange of information is a critical component for learning the needs-competence relationships for future developments. **Therefore, it is argued that the greater the bilateral exchange of information between University-Graduate-Company, the greater the capacity for Alumni interaction** (BLANK; NAVEH, 2015; VICK; NAGANO; POPADIUK, 2015).

In a fourth moment, it should be noted that, if the Alumni is a link between the University and the Company, where and how he/she is now, if it is at this same company that have innovation opportunities. So, what motivates to seek research, technological development and innovation

solutions together? A critical aspect of this process is the Alumni level of organizational commitment (affective, instrumental and normative). Thus, even if the Alumni has previous confidence and identity with the University, a low level of organizational commitment would lead him to see no benefits in this exchange. Mainly because innovation projects tend to have more risk and a longer time span in the company. This issue is also associated with the potential for recognition of the Alumni by the company. That is, as the Alumni realizes that the organization recognizes the search for solutions in partnership with the University, a higher level of organizational commitment is expected. **Thus, it is argued that the higher the degree of organizational commitment of the Alumni, the greater his/her ability to promote University-Company interaction** (PERRY; HUNTAR; CURRAL, 2016; HOGAN; COOTE, 2014).

Another point to be noted in this relationship is that it is necessary for the Alumni to have conditions or an operating environment in the company for this relationship. Since he may be committed to the Organization, however, may have limitations in terms of the responsibilities and scope of action. That affect possibilities of the relationship, intervention and development, given its position in the organizational structure (strategic, tactical, operational) and decision making. **Thus, it is argued that the greater the responsibilities and scope of action of the Alumni in the Organization, the greater the capacity for University-Company interaction** (ASHKENAS, 2015; MATIS, 2014).

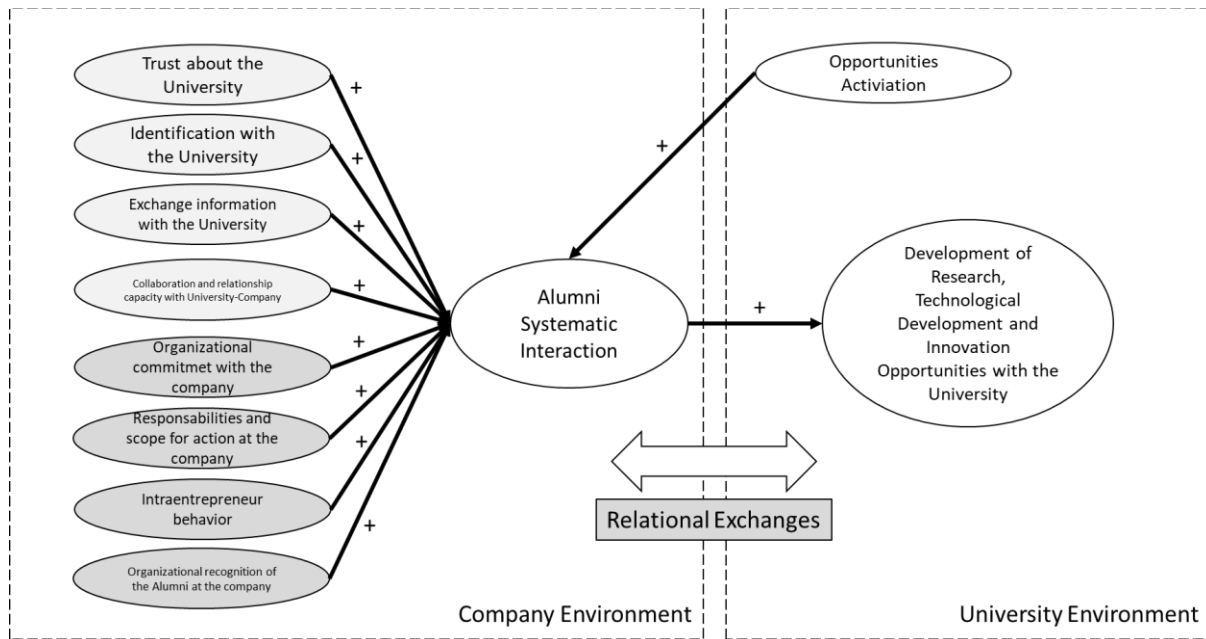
A sixth factor to be observed in the organizational context is the Alumni intra-entrepreneurial behavior. Which is the ability to identify opportunities and problems to be solved in his acting company, as well as pro-activity to develop solutions. These factors are also configured as an influencing factor. **Thus, it is argued that the greater the Alumni intra-entrepreneurial behavior, the greater his capacity for University-Company interaction.** (BALDISERA; CERETTA; DOS REIS, 2017; BERGMANN; HUNDT; STERNBERG, 2016).

Finally, in the case of University-Company interaction, a relational and collaborative capacity of the Alumni is required, given the nature of the type of exchange involved. Research, Technological Development and Innovation projects require the creation of networks and identification of essential actors (internal and external), which demands both a greater sense of collaboration and an ability to identify new relationships between organizations. **It is argued, therefore, the greater the degree of collaboration and relationship capacity of the Alumni, the greater their capacity for University-Company interaction** (HOWARD, 2016; UN; ASAWKA, 2015).

Thus, based on this rationale, it is possible to argue that the explanatory model of Alumni as a Relationship Asset is multidimensional and complex since it deals with individual dimensions (entrepreneurial, collaborative, relational profile), organizational (commitment, scope of action, recognition and interorganizational (trust, identity, networking)).

A visual representation of this model is presented in Figure 2. From it, related attributes are verified in the Alumni-university processes (trust, identification, information exchange), in the University-Alumni-Company information bonds (collaboration and relationship) and in the processes / aspects between Alumni-company (commitment, performance, intraentrepreneurship, recognition). As these dimensions are more evolved, more strength is the Alumni systematic interaction, keeping up the development of research, Technological development and Innovation Opportunities with the University. The model also argues that its up to University to activate the opportunities with Alumni as a strong point of contact.

Figure 2: Proposed Model of Alumni as a Relationship Asset for University-Company Collaboration



Source: proposed by the authors

Therefore, it is understood that the systematic interaction of the Alumni is dependent on such antecedents or determinants. Regarding the University-Company relationship for joint research, technological development and innovation opportunities, can be argued that relational exchanges will benefit if all factors are positive. That means the Alumni, in this system, perceiving value in these exchanges from the understanding of his current role, as well as his history and experiences at the University. These are the determinants that enhance your ability to act as a knowledge gatekeeper in this system of relationships. Still, as exposed by the interviewees, the activation of opportunities by the University is an important movement, given that the Alumni is often focused on the organization's daily operations.

Consequently, this aspect is considered in the model since it acts as a trigger for these relationships, but whose development depends on the role of the Alumni from such background. It is possible to observe, for example that if a University starts a Research and Development opportunity with a Alumni who: (a) lacks confidence and identification with the University; (b) is out of date on the competences of his/her University; (c) has a low capacity for collaboration and relationships; (d) it faces a phase of low organizational commitment, scope of action / environment of operation and recognition by the company; (e) has a low entrepreneurial orientation, being concerned only with his tasks, and (f) low collaboration and networking capacities, the most likely scenario is that the relationship networks will not be sustainable for the development of these opportunities and projects. And that increase the chances of abandoned projects or lower the chances of starting new projects. Thus, the proposed model is a result of the process of qualitative analysis and discussion, providing a set of new reflections in the field.

Conclusions

The objective of this research was to discuss the perspective of reflecting on Alumni as a Relationship Asset in the University-Company interaction, given the potential of this model in regional development. Many approaches understand Alumni as an "output" of the training process, or that their long-term relationship is through Continuing Education, as a consumer of educational products. The purpose of this study is to promote a broader view of an important role, usually not discussed, in the explanatory models of University-Company relations, such as the Triple Helix.

Due to the emerging character of the theme, a qualitative and exploratory research approach was adopted to promote initial insights about the phenomenon. As limitation of the method, a qualitative approach that does not allow statistical generalizations. However, the analytical generalization obtained from data collection and content analysis allowed a deeper understanding of the theme. That culminate in the proposition of an explanatory model about the interaction potential of this Alumni in this University-Company relationship, and especially in the context of developing

joint innovation initiatives. Thus, the objective with this study is to advance the discussion: if the Alumni is a component that improves University-Business interaction, what factors should be developed in this Alumni. As noted, a first structural point is that, through their experience in undergraduate and / or graduate courses, graduates start to build knowledge and confidence at the University, understanding their skills. Being in the company, this perspective is a starting point for establishing the necessary relationship networks between these organizations. However, the interaction will only be strengthened by the development of some essential factors and antecedents in addition to this trust. The identification and exchange of information and updates with the University, its level of organizational commitment, recognition and performance space in the company, and its intra-entrepreneurial behavior and collaborative and relationship capacity.

Therefore, new discussions with this model emerge about a University-Society relationship, also in the light of Brazilian culture, due to its high relational characteristics. In addition to the promotion and innovation gains that can be considered through University-Business development partnerships, indicate whether the opportunity for future studies. Is recommended a greater understanding of the indicators of each dimension and the validation of the proposed model of the Alumni a Relationship Asset.

Thus, in the theoretical perspective, there is opportunities for new contributions to validate the model, scale and its application in different University-Company relationship scenarios, contributing to the Relationship Marketing area in the higher education educational context. Also, since the study focused in University-Company, the analysis in University-Government Alumni is also an opportunity, to understand new dimensions at University-Company-Government relationship. Still, as the research agenda matures, this is reflected in managerial implications, based on a better understanding of mechanisms and strategies that develop these factors, both individual graduates, as well as organizational and relational ones, can improve management models University-Alumni-Companies. These models can help Universities and Companies to select best project leaders for innovation activities. As a result, in a perspective of expanding business competitiveness and focusing on innovation, with the need for a greater relationship between University-Company, it is understood that deepening the discussion on the role of Alumni in this system is a timely and future investigation field.

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