

**TYPOLOGY OF COMPANIES NETWORKS FOR COMPETITIVE ASSESSMENT:
An Application in Higher Education Institutions**

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ABSTRACT

Taking into account the changes in the market scenario by virtue of globalization, Institutes of Higher Education (IES) as well as other organizations seek their competitive stability. For that reason, it is up to organizations to adopt innovative models of management for their operations aimed at improving results. Company networks consist of a model that is perfect for uniting efforts through cooperation among partners in a given business, which can involve ties of different natures. This paper shows the development and the application of an auxiliary technique to analyze the intensity, nature and importance of internal and external relations in the formation of results for a company network. For such, a multiple case study was conducted at two IES in the State of São Paulo and their networks of partners and employees in order to observe their specificities and organizational strategies. The study demonstrated the existence of specific performance criteria (pillars) for each IES and its network, resulting from its competitive reality. It reveals evidence that the education pillar is strengthened in both cases, and the research pillar is growing, although it is the weakest. The outreach pillar is the most robust in the public IES and the financial sustainability pillar is relevant for the private IES, and it was only detected in this IES.

Keywords: *Intercompany networks; Institution of Higher Education; Network Typology; Intensity of relations; Nature of relations*

1 INTRODUCTION

The contemporary world has been a stage for important economic, social and political milestones, which demands a vigorous position by organizations. As a result of the scenario presented herein, education is a relevant factor for a country's economic development. From this perspective, it is up to the IESs - Institutes of Higher Education to prepare professionals able to work in organizations who are challenged to survive in markets avid for new products and services. In Brazil, support for IES occurs through public authorities or through private capital. Thus, the public IES present a broad range of strategies that involve research and technological development and, on the other hand, the private ones also focus on preparing trained personnel, and provide a very strong bias to the formation of financial return for their activities. In Brazil, there is a diversity of educational structures that contemplate market demands, thus characterizing the competition among these organizations.

In short, the subsistence of the organizations is tied to the adoption of new management models that enable obtaining satisfactory results in their competitive dimensions. For such, this paper seeks to present the application of concepts typically of company networks in order to subsidize the obtaining of information for

evaluating the relative position of each of the players involved, as well as their impact on the conducting of their operations. Therefore, in this study, sustainability is considered essential for supporting the manager for intelligent management and decision-making, because it involves the definition of strategies and the directing of business aimed at organizational success.

The objective of this paper is to show the development and the application of an auxiliary technique to analyze the intensity, nature and importance of internal and external relations in the formation of results for a company network.

Conducting the case study at two different academic organizations, both from the state of São Paulo, made it possible to study the types of business explored by the networks and their conditions of success and, from there, to observe the impact of the competitive aspects of each IES network.

Throughout this paper, management pillars are proposed to make a connection between the IES' strategic competitive aspects and its operational realities. Furthermore, it becomes possible to obtain subsidies that permit a comparative analysis using the performance criteria adopted by the studied Institutions.

Thus, through the evaluated cutouts in analyzed networks, the information obtained provides evidence for the existence of excess concern with the didactic-pedagogical aspects, thus reinforcing the education pillar. In relation to the research pillar, the intensity of the force is relatively similar in both cases. With regard to the outreach pillar, the public IES, due to its institutional objectives, points to greater robustness when compared to the private IES. The financial sustainability pillar, specific of the private IES, is an essential element to the institution. As such, the researched IES is seen to grant the fitting importance to this item.

2 METHOD OF RESEARCH

This study is based on three technical procedures: referential research, documentary research and, finally, the case study.

In referential research, an attempt is made to explain a problem through published theoretical references (GIL, 2010), which were used in books and scientific material aimed at gathering information and knowledge about the subject in question. Documentary research should be founded on materials that have not undergone analytical treatment (GIL, 2010).

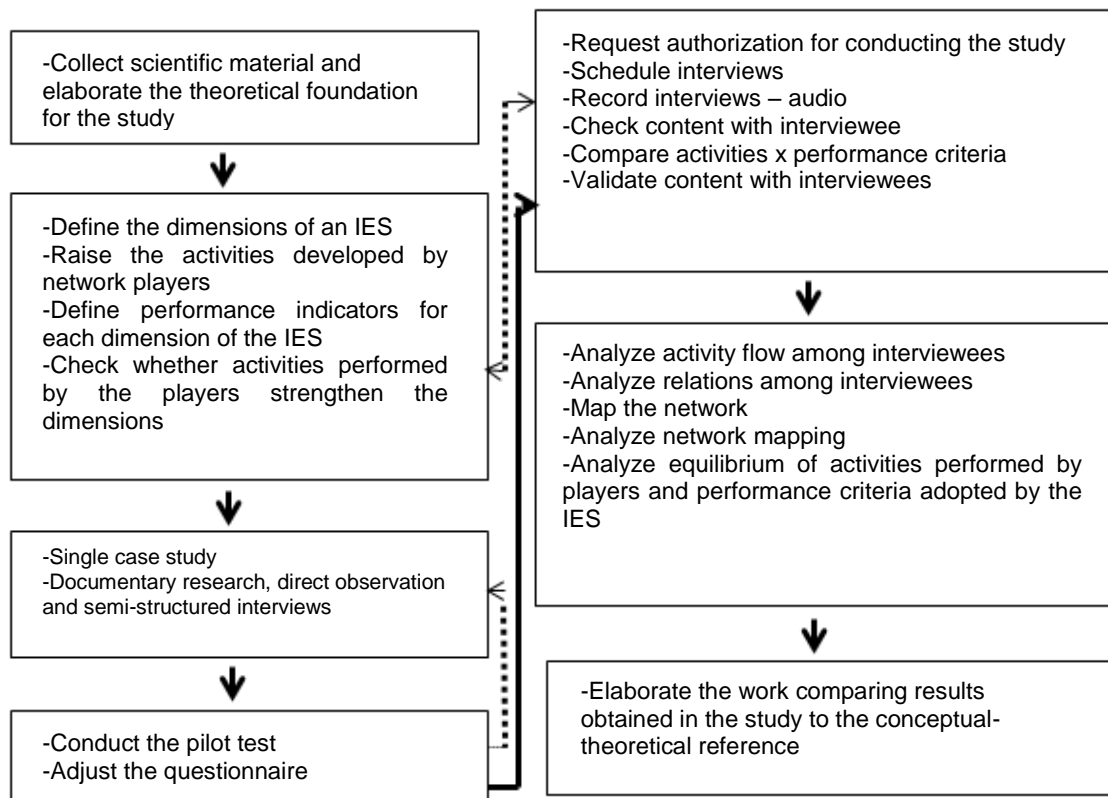
In relation to the case study, according to Yin (2010) and Miguel (2010), this procedure becomes more relevant as the study seeks to explain how or why some social phenomenon functions, in order to demand an in-depth analysis of this phenomenon. Thus, this study analyzes how the application of the company network concept, in a real context, at two IES, may favor the conducting of these institutions' operational processes as they seek desired results.

When defining the conceptual-theoretical structure, subjects were considered such as the panorama of the IES in Brazil, the importance of formulating strategies for competitiveness, the company network process and education. Then, the steps were defined for proposing an approach that analyzes the dimensions of control and monitoring (pillars) of an IES' operations. It should be underscored that the NETPRO group explores the application of the company network concept in IES and tries to understand whether activities that comprise an IES' relations reflect the performance criteria adopted by the Institution.

At first, the NETPRO group, based on pertinent legislation, defines the education, research and outreach pillars, common to all institutions, but it may present another pillar that is specific to its reality. Since they are different IES, the strategy adopted could have a different impact on each pillar's strength.

Data was raised through semi-structured interviews and direct observation, adjusting the questionnaire according to Miguel's proposal (2010). There was also the precaution to validate the content obtained from the interviews to avoid any wrong interpretation of the data obtained. Figure 1 shows the steps suggested by Miguel (2010) to provide the study with methodological support.

Figure 1 - Application of the method and technique proposed by Miguel (2010)



Source: the authors.

Besides the general raising of data presented, the data collection phase permitted designing the monitoring and control dimensions for operations adopted by the IES' studied to establish a better position compared to other education units. Thus, Figure 2 shows a synthesis of the dynamic explored in the study.

Figure 2 - Research guideline



Source: the authors.

The software Ucinet© 6.408 was used to map the company network, based on data collected in the study. In both cases, the approach was restricted to the most visible players in the Education network, which encompasses the most cited in initial interviews, ascertaining the importance of inserting new players detected during the study or necessary for concluding the studies proposed.

3 COMPETITIVENESS AND COMPETITIVE STRATEGY

Competition is at the core of the companies' success or failure, determining the fitness of activities that can contribute to their performance, such as innovations, a cohesive culture or good implementation (PORTER,1989, pg. 1). In face of this assumption, changing the bases for conducting operations is inevitable, the reason for which Christopher (2007) says “it is inadmissible to suppose that good products sell themselves, which is why the manager must seek a sustainable and defensible competitive advantage in face of market reality.”

In his studies, Porter (1989) postulates that every organization must define its competitive strategy according to its competitive position in face of the competition. Christopher (2007), in turn, says the philosophy speaks about “survival of the fittest” is tied to corporate strategy.

Jarillo (1998) affirms that the foundation for an organization's competitive advantage consists of defining its own strategy, considering its own characteristics and the nature of its “*core business*”, heritage, culture, society, that is, sufficient coordination and motivation for crossing borders.

Teixeira et al. (2007, p. 191) and Slack et. al (2007, p. 74) define strategy as the standard, model or plan that integrates the main goals, policies and sequences of actions that position an organization in its environment and try to achieve its long-term objectives. According to Teixeira Filho (2000, p. 33), strategy means a pattern of behavior to be implemented at the organization in order to act and react in face of situations; therefore, it is about educating the organization to behave according to given guidelines. Gattorna and Walters (1996) mention that an important aspect of strategy is its role in building relations with suppliers and clients.

4 COMPANY NETWORKS

In the past, managerial strategies and government policy focused on the organizational ambit (AMATO NETO, 2008). However, when considering today's scenario, it becomes indispensable to respond quickly to the market, hampering isolated action by companies. For this reason, a new model of cooperation among companies emerges to improve their competitive performance. According to Porter (1998), the concept of company networks should be viewed as a method or means to organize economic activities through inter-company coordination and/or cooperation.

From Britto's (2002, p. 347) perspective, networks are inter-organizational arrangements based on systemic ties that, at times, occur among formally independent companies, which give origin to a particular way of coordinating economic activities.

Inter-company networks began in northern Italy, when family companies and manufacturers bet on improved results by associating their businesses. It is collective and interdependent perspective. This organizational structure was adopted by other countries, such as Portugal, United Kingdom, Spain, USA and Canada. Underscoring the importance of the experiences mentioned, Castells (1999) corroborates the prosperity of companies in East Asian networks, in various institutional and cultural contexts of Europe and the United States. For the author in question, big companies organized in a vertical hierarchy find difficulties in surviving the global economy.

It must be underscored that company networks have morphological elements known as nodes, links, positions and flows. The nodes can be described as companies or activities among companies. Positions define company locations or activities in the work division structure of different agents, needed for producing goods, involving the integration of operational capacities, competences and technologies. The links, connections or linkages determine the relation between companies in qualitative aspects, the degree of density or the quality of the relation of a network's agents. Tangible flows or flows of goods (inputs and products) and intangible flows, or information, flow through links (BRITTO, 2002; SACOMANO NETO, 2004).

4.1 Relations with strong and weak ties

In the network theory presented by Granovetter (1983), in the social network approach, friends are called strong links, whereas acquaintances are called weak links. A network is considered low-density when there are relations with weak links, and dense when the relations are with strong links. According to Granovetter (1983), people with weak links are deprived of information from distant parts of their social system, only capturing the news and points of view of their friends. This conception in the organizational environment means the privation of information can represent a threat to an organization's responsiveness in face of the market.

The weak links, according to Granovetter (1983), provide access to information and resources beyond those available in the social circle itself. On the other hand, strong links have more motivation to be useful. They are more available, especially if the strong links represent a very small portion of total contacts. In another study, Granovetter (1973) mentions it is possible to attribute an intensity or strength to relations and, for Lazzarini (2008), this intensity can be measured by considering the number of times two people meet to exchange ideas. The greater the frequency of the meetings, the greater will be the intensity of the relations.

4.2 Typology

Grandori and Soda (1995) present a typology of international networks with the following criteria: types of coordination mechanisms used, degree of centrality and degree of formalization of this network. In the classification, three basic types of network are subdivided into symmetrical and asymmetrical.

In Social Networks, the fundamental characteristic is the informality in inter-company relations, that is, there are no agreements or formal contracts (AMATO NETO, 2008). In Symmetrical Social Networks, all participants have personal contacts and share the same influence. In Asymmetrical Social Networks, there is a central agent who coordinates formal supply contracts (products/services) among companies participating in the network (GRANDORI; SODA, 1995; AMATO NETO, 2008).

Bureaucratic Networks have a contract formalization. In Bureaucratic Networks, relations are based on equal rights and duties among companies of the same sectors (GRANDORI; SODA, 1995; AMATO NETO, 2008; FUSCO; SACOMANO, 2009). In *Asymmetrical Bureaucratic Networks* there is a central, coordinating company that establishes network rules (GRANDORI; SODA, 1995).

In *Proprietary Networks*, the formalization of agreements establishes the right of property among company shareholders (GRANDORI; SODA, 1995; AMATO NETO, 2008). Symmetrical Proprietary Networks are represented by joint ventures (union of two or more proprietary companies and managers of a third). Asymmetrical Proprietary Networks are formed by capital venture associations, where one investor finances the other in the network (AMATO NETO, 2008).

4.3 Balance of relationships

Organizations unite in networks aimed at achieving advantages, increasing competitiveness, stimulating opportunities for enterprises, increasing exports, shaping new bases for capital, creating investment alternatives and reducing costs (FUSCO; SACOMANO, 2009).

Gattorna and Walters (1996) suggest a typology for mapping and evaluating the level of existing relations among players from a network, regardless of whether they are vertical or horizontal. There are four main levels in the mapping model, which classify existing relations in networks by degree of importance of operational transactions of those who provide the service and those who receive (GATTORNA; WALTERS, 1996). The above authors call the extremes of a relation the 'supplier', that is, highly connected, and, on the other side, the 'buyer', because there is a strong probability for conflict and abuse of power in the market, thus representing different degrees of dependency among the players involved. The mapping of relations among players of a network makes it possible to measure interactions and, when confronted with performance indicators, the adherence of activities developed according to the network's strategic objectives.

5 HIGHER EDUCATION

One of the challenges of higher education is to coexist with the modern, which integrates technological advances to education, without forgoing the quality required by global competitiveness (VILELA, 2007). From this perspective, Martins (2000, pg. 42) affirms that the path of promising educational policy should be founded on the system's institutional heterogeneity, where it is necessary to recognize the existence of a multiplicity of institutions with different organizational profiles and academic vocations, while also avoiding homogeneous treatments for academic realities marked by disparity.

According to the Higher Education Census of 2011, released by the Anísio Teixeira Institute of Educational Studies and Research (INEP, 2011), in Brazil, there are 2,365 institutions of higher education, 284 of which are public and 2,081 private. These IES serve 6,739,689 students, 1,773,315 of which are students at public institutions and 4,966,374 are regularly enrolled in private IES. In this context, there is evidence that the IES are like companies, focusing on graduating professionals, with different expectations and competing with each other on several dimensions in order to ensure their survival.

In Brazil, Decree no. 2.306/97, based on LBD/96, establishes the academic organization of Institutes of Higher Education (University, University Center, Colleges and Institutes, Schools of Higher Education or Colleges), while also highlighting their peculiarities. Thus, it is necessary to consider that each IES, given its academic organization, should make maximum effort in the education, research and outreach triad, pondering their actions on the points to be pursued.

6 PROPOSED APPROACH

Based on the supposition that the public or private IES have the **education**, **research** and **outreach** control dimensions (pillars), with other possible variables specific to this institution, they should be in equilibrium in terms of interest among the parties involved and in relation to the performance criteria established to ensure achieving strategic results. With this objective, this paper proposes an approach that permits evaluating the symmetry of power and the degree in which the activities developed at two IES, one public and one private, are

related to the performance criteria established by the referred to institutions. It thus becomes possible to distinguish the strategic pertinence of those activities developed as a result of such relations.

The documentary analysis phase made it possible to raise the mission, objectives and guidelines elaborated by the IES to be studied. The definition of the analytical approach was designed in this phase, during which additional players were inserted who could help improve the characterization of each IES' operations.

The data collected from the players of each IES approach occurred through semi-structured interviews whose content is organized in charts throughout this text. The objective was to know the main activities performed by them and the receivers or players on whom they depend. It is worth pointing out that the definition of the figure of the origin and the receiver of the activity is fundamental for measuring the intensity and the equilibrium of the relations.

Considering Granovetter's (1983) proposition, the intensity of the relations among approach players evaluated from each network should be measured in accordance with each relation's frequency, as shown in Table 1.

Table 1 - Intensity of relations

Player	Receiver	Periodicity
AAA	ZCA	7
	ADC	3
	ABA	2
ABA	ADC	5
	JJA	3
...
ADC	ZCA	4

Source: the authors.

A hypothetical example of relations shown in Table 1; the receiver "ZCA" can be mentioned 7 times in the main activities reported by player "AAA", while player "ADC" can be cited 3 times by the same player. Thus, receiver "ZCA" is considered more important than receiver "ADC", less referenced, demonstrating that the intensity of the relation with "ZCA" is greater than the one established with "ADC". The result obtained permitted the graphic representation of each network through Ucinet.

While pondering the academic organization of each institution, as determined by Decree no. 2.306/97, based on LDB 96, each IES presents its monitoring and control dimensions, called **pillars** in this study. Then, the pillars adopted by the researched institutions were raised and detailed, with the definition of each one's performance indicators. In possession of the main activities carried out by the analytical approach players and of the performance indicators adopted by the IES, the data corresponding to the nature of each activity were raised. The players were instructed to explain which (and how) of the activities were related to the institution's performance indicators, Chart 1. According to the instructions, each player made an X in the row and column intersection, if he or she felt the activity carried out influenced the performance criteria of one or more pillars that support the IES of which he or she belonged.

Chart 1 - Proposal of relations of activities developed and indicators

PLAYER	PILLARS											
	Indicator 1	Indicator 2	...	Indicator 10	Indicator 11	Indicator 12	...	Indicator 15	Indicator 16	Indicator 17	Indicator 22
Activity 1	x	x				x					x	
Activity 2	x			x	x			x			x	
...			x				x		x			x
Activity N	x					x						

Source: the authors.

The analysis of the nature, or the strategic pertinence of the activities, can be seen by comparing the main activities mentioned by those interviewed from each IES researched with the performance indicators corresponding to each pillar. Here, the possibility of reinforcing which activities carried out by the players can contribute positively to the results of the IES network and, therefore, strengthening the sustainability of the operations, is observed.

The sum of activities performed by the players related to the pillars, followed by the same mathematical operation related to the markings made by the interviewees, makes it possible to visualize whether the activities they perform influence the IES pillars with the same intensity. The difference in values obtained in the calculations may characterize whether there is equilibrium among the pillars, or not.

7 INSTITUTIONS INVOLVED

The assumption that IES have a different academic organization, their own performance criteria and means of seeking competitive survival determined the choices of the institutions researched by the NETPRO Group.

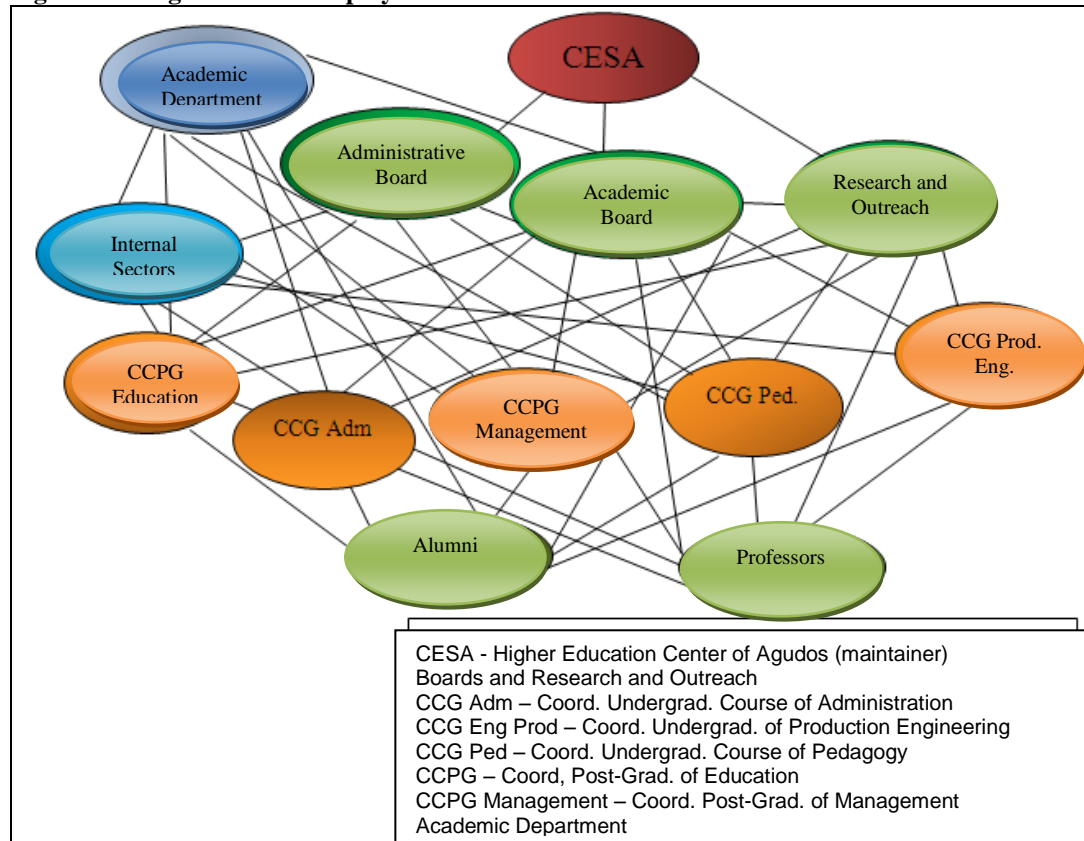
The College of Agudos (FAAG), a small, private institution, was the stage for the first case study. The IES in question has 6 undergraduate courses and non-degree graduate courses, serving 344 undergraduate and 379 graduate students.

The College of Technology of Garça (Fatec) offers 3 associate degree courses and it serves 1069 students. Fatec Garça is one of the education units of the Paula Souza State Technological Education Center (CEETEPS), a municipal entity present in 161 cities in the state of São Paulo, with 56 Fatecs and 211 State Vocational Schools (ETECs) (CEETEPS, 2013).

Initial interviews focused on each IES' strategic level, also having the participation of some players, with the purpose of understanding how much those activities they performed influenced decision-making at the studied institutes.

The study made at FAAG was limited to an approach of 10 players, 9 of which of a strategic level and the biggest player of an operational level in numbers of activities. The approach players are: Sponsor, Academic Office, Administrative Office, Research and Outreach Coordination, three Undergraduate Coordinators, two Graduate Studies Coordinators and Academic Secretary, Figure 3.

Figure 3 - Diagram of FAAG players



Source: the authors.

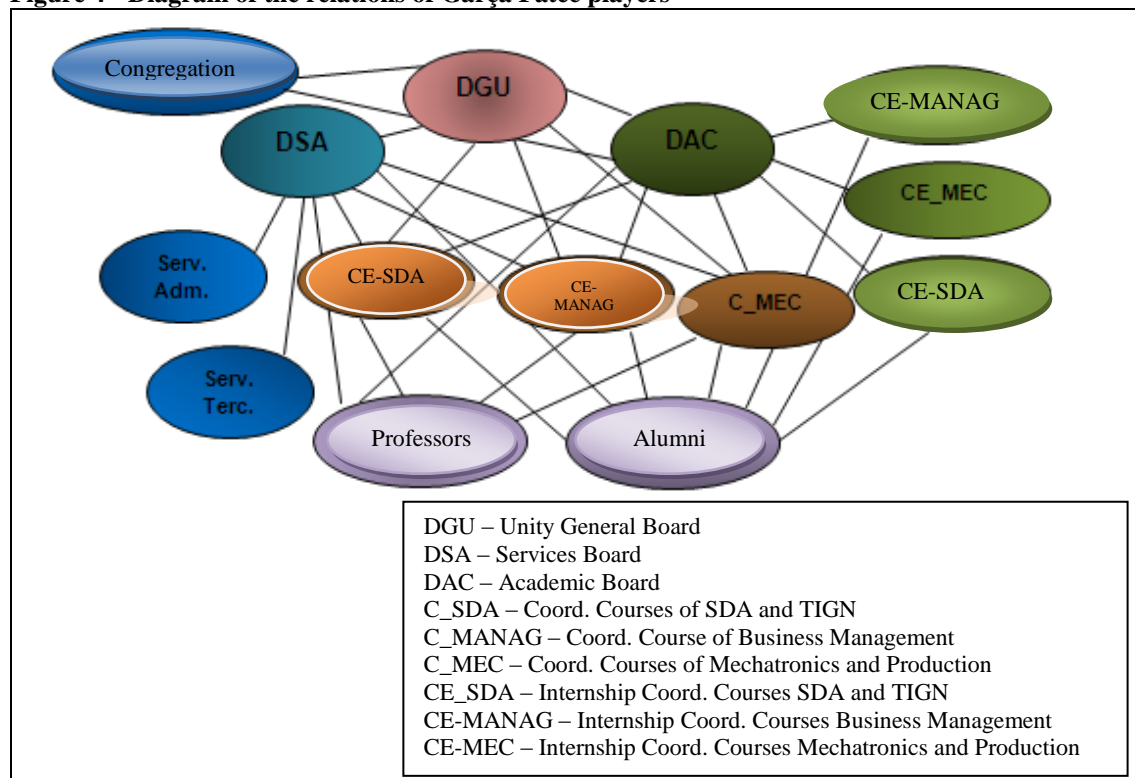
The FAAG analytical approach players are shown in Figure 3, as per the figure's caption. It is important to point out that the internal sectors of the IES, the students and the faculty, were not interviewed.

FAAG is considered a symmetrical bureaucratic network according to the typology adopted in this study, where there is a formal contract to regulate relations among players. In this IES, all interviewed players are part of the same organization, where the main attributions of each sector are defined based on legislation pertinent to the institution and some sort of equality of rights and duties is sought for the players. The approach established for the study totaled 122 players, 10 of whom were interviewed and the others, 9 internal and 103 external, were only mentioned in the interview. Mapping of the approach demonstrated that the network is dense (many connections) in the center and diffuse (few connections) in the peripheral areas. It also revealed that the network's central player is the Academic Office because it has a biggest number of connections of other interviewed players associated with it.

In the case of the Garça FATEC, existing relations among the elements involved can be visualized in Figure 4. The players who comprise the analytical approach are described in the caption for the same figure. In this study, the Garça FATEC is labeled as an asymmetrical bureaucratic network because there are contracts that regulate the relations among the players. The CEETEPS - Paula Souza State Technological Education Center - establishes the regiment and normative regulations in a centralized manner for the activities performed within the ambit of each location served and it handles the attributions of the positions occupied by the interviewed players.

In the network approach for the Garça FATEC, 167 players were determined to exist, 9 players interviewed in this study, 10 internal and 148 external, both not interviewed. The mapping of this approach revealed that, the network is dense at the center (many connections), and diffuse in peripheral areas (few connections). It also became clear that the network's central player is the General Office because it has the highest incidence of relations pointed to it.

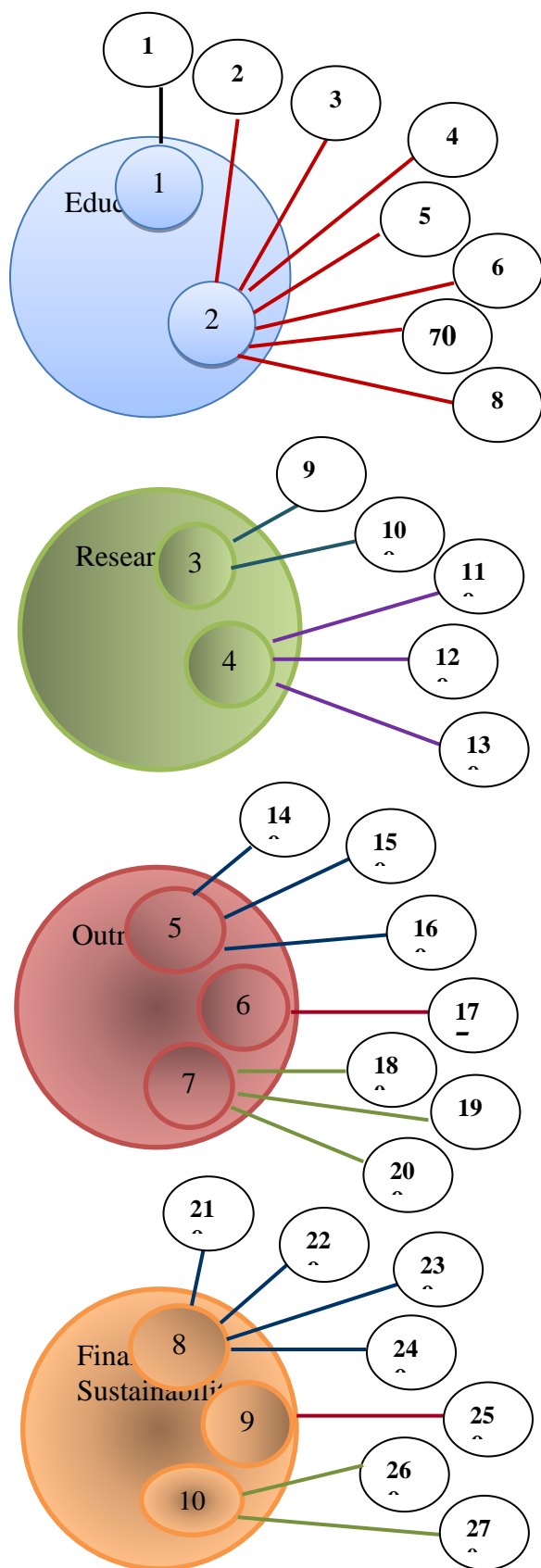
Figure 4 - Diagram of the relations of Garça Fatec players



Source: the authors.

When designing FAAG's pillars, besides the three that are common to all IES (education, research and outreach), an additional pillar was detected, called **financial sustainability** because the IES is private. The objectives are described in the Institution's Master Plan. The indicators pointed to the Administrative Director, Figure 5.

Figure 5 - Relation of Pillars with the FAAG performance indicators.

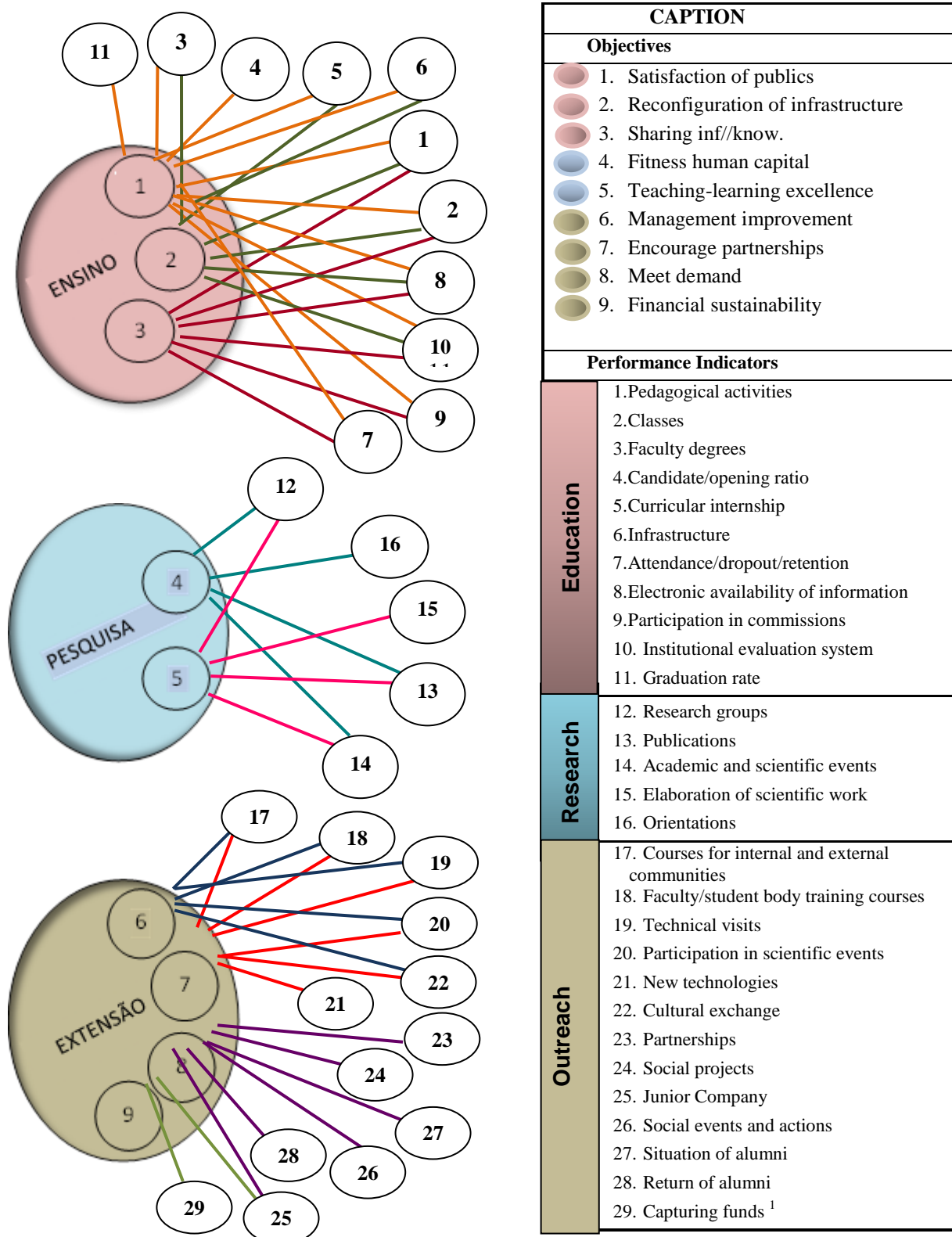


Source: the authors.

CAPTION	
Objectives	
● 1	1 Arouse the permanent desire for cultural and professional improvement
● 2	2 Stimulate the knowledge of world problems and provide specialized services
● 3	3 Stimulate cultural creation
● 4	4 Encourage scientific research and investigation
● 5	5 Prepare human resources in knowledge areas and insert them in professional sectors
● 6	6 Promote the disclosure of cultural, scientific and technical knowledge
● 7	7 Promote outreach and scientific and technological research
● 8	8 Charge for the education service and maintain the institution's profitability
● 9	9 Promote courses and specific external training to institutions for capturing funds
● 10	10 Guarantee the use of resources in order to generate profitability
Performance Indicators	
EDUCATION	1 Student satisfaction
	2 Participation in events (academic/scientific)
	3 Lectures
	4 Courses (undergraduate, graduate and outreach)
	5 Faculty degrees
	6 Publication of didactic material
	7 External evaluations (MEC, ENADE)
	8 Internal evaluations
RESEARCH	9 Events (cultural and scientific)
	10 Orientations
	11 Scholarship holders
	12 Publication (students and faculty)
	13 Funding Agency Resources
OUTREACH	14 Alumni working in the area
	15 Former students taking graduate courses
	16 Technical visits
	17 Advertising campaigns (events and institutional)
	18 Social projects
	19 Community users (Library/Laboratories)
FINANCIAL SUSTAINABILITY	20 New technologies
	21 Monthly Payments
	22 Determination of Costs (student, class, classroom)
	23 Dropout rate
	24 Coefficient of default
	25 Courses/Training
	26 Acquisition of resources (didactic and pedagogical)
27 Payment of expenses	

At the Garça Fatec, 3 pillars (education, research and outreach) were determined, as shown in Figure 6. Initially, because of the aforementioned IES' concern with social demand, there was the suspicion of the existence of another pillar, activities incorporated in the outreach pillar. Figure 6 explains the pillars with the performance indicators defined by the General Office.

Figure 6 - Relation of Pillars with the Garça FATEC indicators



Source: Elaborated by the authors.

¹ Establishment and maintenance of partnerships

8 - COMPARATIVE ANALYSIS

Upon analyzing the results obtained in the Chart 1 application, considering each IES' specific pillars, it is possible to see the strength of each and to weave comparisons between studied institutions, as well as to evaluate each pillar's representativeness, and therefore each activity developed for them, Table 2.

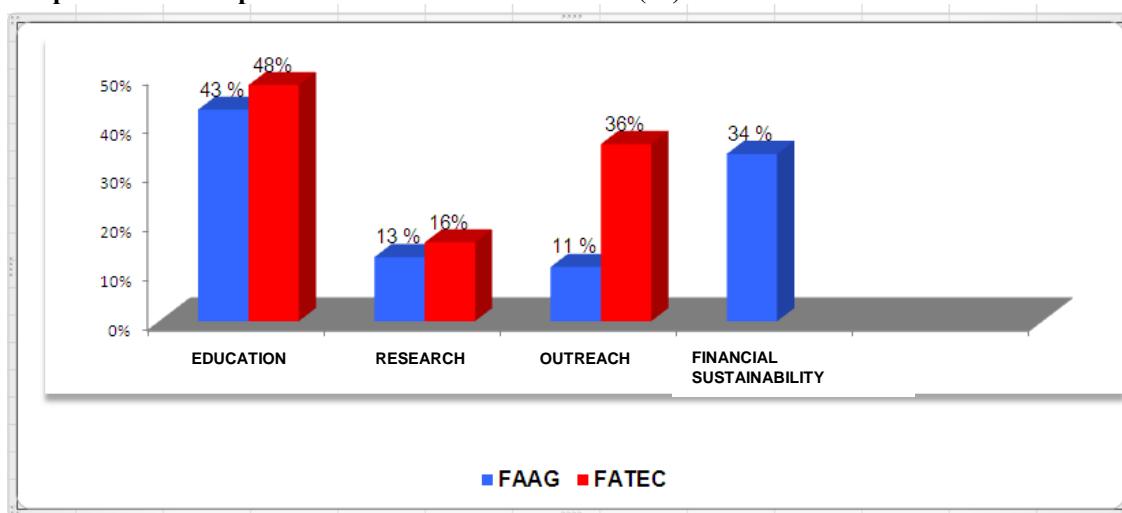
Table 2 - Representativeness of IES pillars

Pillars	Sum of relations between Activities and Performance Indicators	
	FAAG	FATEC
Education	226	380
Research	69	124
Outreach	57	289
Financial Sustainability	176	-
Total	528	793

Source: the authors.

In Table 2, observe the sum of indications of players interviewed for each pillar detected at the studied IES and notice the strengthening of the pillars. The analysis of appointments by all players interviewed permits converting the values expressed in Table 2 into percentages, as shown in Graph 1.

Graph 1 - Activities performed X Performance criteria (%)



Source: the authors.

The information raised in Graph 1 points to some aspects of the approach evaluated at each institution studied. Because of the nature of the operational activities at the two studied IES, some observations can be made concerning their similarities and discrepancies. Observe that the nature of the relations permits an evaluation considering competitiveness variables adopted in each IES.

In relation to the **education** pillar, the two IES seem more concerned about the didactic-pedagogic aspect, which is also established in the mapping of the two networks' approaches. Meanwhile, an important aspect concerns the curricular internship and the infrastructure, which are so important to a technological IES.

Upon analyzing the **research** pillar, it is clear that the two IES adopt similar performance indicators and have an analogous percentage related to relation frequency, even though one is public and the other private.

In relation to the **outreach** pillar, several performance indicators are common to both IES; however, at the Garça Fatec, some variables are treated rigorously, such as courses for the internal and external community, partnerships, cultural exchanges and establishment and maintenance of partnerships for enabling the provision of public services.

The **financial sustainability** pillar detected in this study at FAAG, a private IES, aims at profitability and capturing funds through courses, diverse fees, with the objective of covering eventual defaults and expense

payments. In the specific case of the Garça FATEC, the "courses and training" performance indicator comprises the outreach pillar and the "evasion" indicator belongs to the education pillar.

The analysis of adopted performance criteria, as well as the actions executed within the internal ambit of each IES, provide evidence that permits evaluating pillar robustness, or, the deficiencies the analyzed IES may present in relation to its competitive aspects translated into performance criteria. From the same perspective, another study conducted by Macedo and Barbosa (2013) uses different variables to check the IES' potential and the difficulties faced to improve its market action.

CONCLUSIONS

This paper demonstrated the development and application of an auxiliary approach or technique to subsidize the analysis of strategic intensity and pertinence of internal and external relations to the two IES' networks. The decision was made to conduct a case study at two IES from different academic organizations, permitting the study of the types of business explored by the networks and their conditions for success. The study conducted also provides information for reflection on the network's competitive aspects at the researched institutions. In this sense, raising the objectives of each IES, the performance indicators adopted and the activities developed by the players and related to the criteria mentions, provide information to visualize how each strategic pillar is strengthened. Thus, the study enables the manager, according to a ranking of potential impacts on institution results, to analyze and make decisions regarding actions to be pursued.

As an exception, it is important to mention that, although the results obtained in the cases presented may, in a first glance, suggest some lack of balance between the actions, it becomes necessary to proceed with a more large and accurate evaluation of these institutions, focusing the diversity of the strategic objectives and business explored itself.

Finally, when considering higher education with its variables from a perspective of company networks, new studies can be elaborated aimed at improving the proposal presented, while also incorporating other aspects relevant to competitiveness and not covered by this study.

REFERENCES

- AMATO NETO, J. *Redes de cooperação produtiva e clusters regionais: oportunidades para as pequenas e médias empresas*. São Paulo: Atlas: Fundação Vanzolini, 2008.
- BRITTO, Jorge N. P. *Cooperação interindustrial e redes de empresas*. In: KUPFER, David; HASENCLEVER, Lia (Org.). *Economia industrial: fundamentos teóricos e práticos no Brasil*. 2. ed. Rio de Janeiro: Campus, 2002.
- CEETPS. Available at: <<http://www.centropaulasouza.sp.gov.br/>>. Visited on: July 16 2013
- CHRISTOPHER, M. *Logística e gerenciamento da cadeia de suprimentos: criando redes que agregam valor*. Translation: Mauro de Campos Silva. São Paulo: Thomson Learning, 2007.
- FUSCO, J. P.; SACOMANO, J. B. *Alianças em redes de empresas*. São Paulo: Arte & Ciência, 2009.
- GATTORNA, J. L.; WALTERS, D. W. *Managing the supply chain: a strategic perspective*. London: MacMillan Press, 1996.
- GIL, A. C. *Como elaborar projetos de pesquisa*. 5. ed. São Paulo: Atlas, 2010.
- GRANDORI, A.; SODA, G. Inter-firm networks: antecedents, mechanisms and forms. *Organization studies*, v.16, n. 2, p.1-19, 1995.
- GRANOVETTER, M. The strength of weak ties. *American Journal of Sociology*, Chicago, v. 78, n. 6, p. 1360-1380, May 1973.
- _____. The problem of embeddedness. *American Journal of Sociology*, Chicago, v. 91. n. 3, p. 481-510, nov. 1985
- INEP – Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira (Brasil). Available at: <<http://portal.inep.gov.br/superior-censosuperior-sinopse>>. Visited on: July 10 2013
- JARILLO, J. C. *Strategic networks: creating the borderless organization*. Oxford: Butterworth - Heinemann, 1998.
- LAZZARINI, Sérgio G. *Empresas em rede*. São Paulo: Cengage Learning, 2008.
- MACEDO, S. M. S.; BARBOSA, R. R. Information Management, information technology and behavior and values relation to information in higher education institutions (HEI) of Belo Horizonte. *Brazilian Journal*. v. 7, Special Number, p. 129-143, 2013..
- MIGUEL, P. A. C. Adoção do estudo de caso na engenharia de produção. In: MIGUEL, Paulo A. Cauchick (Org.). *Metodologia de pesquisa em engenharia de produção e gestão de operações*. Rio de Janeiro: Elsevier, 2010.

- PORTER, M. E. *Vantagem competitiva: Criando e sustentando um desempenho superior*. Trans. Elisabeth Maria de Pinho Braga. Rio de Janeiro: Elsevier, 1989.
- SACOMANO NETO, Mário. *Redes: difusão de conhecimento e controle - um estudo de caso na indústria brasileira de caminhões*. 2004 Thesis (PhD in Production Engineering) – Graduate Studies Program in Production Engineering, Federal University of São Carlos, São Paulo.
- SLACK, N. et al. *Administração da produção*. Revisão técnica Henrique Corrêa, Irineu Giansi. São Paulo: Atlas, 2007.
- TEIXEIRA, E. B. et al. Cooperação estratégica, redes de cooperação e desenvolvimento regional: o caso Unijui/sedai. *Desenvolvimento em Questão*. v. 5, n. 10, p. 187-210, 2007. Available at: <<http://redalyc.uaemex.mx/redalyc/pdf/752/75251008.pdf>>. Visited on: Aug 8 2011
- TEIXEIRA FILHO, J. *Gerenciando conhecimento: como a empresa pode usar a memória organizacional e a inteligência competitiva no desenvolvimento dos negócios*. Rio de Janeiro: Senac, 2000.
- YIN, R. K. *Estudo de caso – planejamento e métodos*. 4. ed. São Paulo: Bookman, 2010.