

Gestão do Conhecimento: Análise do compartilhamento do conhecimento em uma rede intraorganizacional

Vanessa Bertoni (UFRGS) bertonibecker@yahoo.com.br
Andressa Becker (ULBRA) dessbecker@gmail.com

Resumo:

Analisamos a gestão do conhecimento e a teoria das redes sociais e as aplicamos a um estudo de uma rede intra-organizacional dentro de um departamento de vendas de uma empresa multinacional. Propomos uma abordagem teórica para entender como funciona uma rede social e como o conhecimento flui pelos seus nós. Este estudo tornou-se da necessidade da empresa de entender as características da rede social informal, onde há compartilhamento de conhecimento e atividades de resolução de problemas, que envolvem os atores. Inicialmente, uma revisão da literatura foi realizada. Em segundo lugar, uma pesquisa quantitativa exploratória foi realizada por meio de um estudo de caso, mostrando como a rede social desta empresa está dividida e os principais atores que a compõem, bem como destacando seu papel dentro da rede. Os resultados da aplicação mostram que existem 60% de oportunidades de interação entre atores. Isso evidencia que a rede não está usando todo o seu potencial, e pode ser atores sobrecarregados.

Palavras Chave: rede intraorganizacional; análise da rede social, gestão do conhecimento, transferência do conhecimento

Knowledge Management: Analysis of knowledge sharing inside an intraorganizational network

Abstract

We analyse the knowledge management and social networks theory and apply them to a study of an Intraorganizational network inside a sales department of a multinational company. We propose a theoretical approach to understand how a social network work, and how the knowledge flows into its nodes. This study became from the company's need to understand the informal social network characteristics, where there is knowledge sharing and problem solving activities, which involve the actors. Initially, a literature review was carried out. Secondly, an exploratory quantitative research was conducted by means of a case study, showing how the social network of this company is divided and the key players that composes it, as well as highlighting their role inside the network. The outcomes of the application show that there are 60% of opportunities for interaction between actors. This evidences that the network is not using all its potential, and may be actors that are overloaded.

Key Word: Intraorganizational Network. Analysis of the Social Network. Knowledge Management. Knowledge Sharing.

1. Introduction

The knowledge transfer in an intra-organizational network is a complex process, and companies connected internally share ideas and knowledge, generating more economical advantage form of profit than with the assets traditionally used, as raw material and capital, which are no longer

representing the value of the company (SROKA; CYGLER; GAJDZIK, 2014; STEWART, 1998). Cabrera and Cabrera (2002) define knowledge sharing as the exchange of information between employees. According to the authors, the organizational knowledge grows in value when shared. Such competitive advantage of knowledge can be helped by the informal social networks (ISN) composed by workers. Thus, companies focused on knowledge management (KM) should take a differentiated approach inside the organizational environment. This new stance brings up issues related to the internal network of actors, and for the change to be effective, you need to evaluate how is the relationship between employees and how happens the sharing of knowledge in the network (KLEINDORFER; WIND, 2012). Given that, one of the tools used to understand the flow of information is the study of the informal social network of an organization; it is noted that, if used properly, it can influence people's behavior and improve the performance of products and services. In addition, by knowing the organization chart, there are great opportunities for organizations to promote organizational flexibility, responsiveness and competitive advantage gain (GLADWELL, 2009; CROSS; THOMAS, 2009). It is in this context of better organizational performance that the intra-organizational network formed by company employees is shown in favor of the company. Since it is through it that managers begin to understand the needs and benefits of exploiting the RS for the creation, development and sharing of knowledge (GLADWELL, 2009; CROSS; THOMAS, 2009). Therefore, this article refers to the case study of a particular company, and aims to map the social network to see how the sharing of knowledge occurs. The multinational corporation studied has a branch in the south of Brazil, and the research was conducted in its sales department.

2 Literature Review

2.1 Knowledge management (KM) and knowledge sharing (KS)

The sharing of knowledge occurs cyclically and unconscious in organizations (DAVENPORT; PRUSAK, 2003). This, however, does not mean that organizations do not have to worry about the transfer, since these everyday transfers of knowledge are part of organizational life (DAVENPORT; PRUSAK, 2003). KM proposes that the transfer is systematic and conscious, although not extremely rigid. People should have autonomy in the process, and organizations must define what and for whom the knowledge must be disseminated (PROBST; RAUB; ROMHARDT, 2002). KS contributes to the creation of new knowledge and, also, points out that everyone in the organization is affected by knowledge and by the colleagues interaction due to the exchange of knowledge among employees, which is the main component for the creation and management of collective knowledge, because organizational knowledge grows in value when shared (CABRERA; CABRERA, 2002; KIM, 2005; HUTZSCHENREUTER; HORSTKOTTE, 2010). For the sharing process actually occurs, it is necessary to have an environment where there is knowledge (PROBST *et al.*, 2002). However, it is not enough to have knowledge, it is imperative that it circulates through the network in order to benefit the organization as a whole (GROTTO, 2002). The act of spreading or transmitting knowledge is presented as a basic requirement for a company to obtain sustainable competitive advantage (NONAKA; TAKEUCHI, 2003; KANG; KIM, 2010). Davenport and Prusak (2003, p.123) point out that two actions must occur for there to be KS: the first is the "transmission", sending or presentation of knowledge to a potential receiver; and the second is the "absorption", by a person or group, of what was transmitted. However, the provision for transmitting what is known is important for the organization's value chain; if the generated knowledge is not assimilated by the organization, it becomes difficult to recover it, and thus can be overlooked (KIM, 2005).

2.2 Social networks (SN)

"Networks are present everywhere. All we need is an eye for them." (BARABÁSI, 2002, p. 7). The increasing importance of networks creates challenges and opportunities for organizations, in other words, "the entire organization is affected by the advance of networks" (KLEINDORFER; WIND, 2012, p. 7). The use of the term "network" applies to several areas, showing the idea of circulation, interconnection, for instance, when defining technological aspects (wireless and computer networks), geographic (river networks and railway networks) and biological (neural networks and networks of blood vessels) (LESKOVEC; ADAMIC; HUBERMAN, 2007). However, for this study, the term network should be understood in the social context of an organization as a data repository that stores information and allows the exchange of these between network users. Networks can be defined as a set of nodes connected by ties or links representing some relationship or lack of relationship between these nodes. It refers to nodes as the actors who can be individuals, company departments or even organizations. However, for this work, "nodes" refer to the employees studied, and the links are the connections between employees, explaining the term SN in this study (GOLBECK, 2005; TSAI, 2002; BRASS; GALASKIEWICZ; STRIKE; TSAI, 2004; SIMON; TELLIER, 2011).

2.3 The Importance of Social Networks for KM

Intraorganizational networks are extremely important for spreading new ideas and information between the actors (LESKOVEC *et al.*, 2007; TSAI, 2002; SIMON; TELLIER, 2011). These networks integrate individual knowledge, making them easily available to other members directly. To occur the transfer and absorption of knowledge, there must be interaction between the actors; when the process of search and information sharing is eased, the interaction provides individual learning, which can be disseminated and applied to the organization (CROSS; BORGATTI; PARKER, 2002; CROSS; PRUSAK, 2002). Social networks in companies are dynamic and conditioned by strategies for the infrastructure and for their work (CROSS; PARKER, 2002). The network is considered to be dynamic due to the behavior of the actors that compose it: the entry and exit of employees and, consequently, the change of the connections between the elements. Networks exert direct and indirect influence on the strategies and skills of the company. They "transform markets and many of the most important ways in which organizations generate value and take risks, ensure its viability in the long term and interact with their environment" (KLEINDORFER; WIND, 2012, p. 8). Social Networks play an important role in how management decisions are executed. A "good" decision is of little value if it is not accepted or influenced by the employees and, hence, the informal network of them. Senior management typically recognizes the power of networks, but fails to leverage its use, relying only on the formal structure of the organization. That is, it does not consider the interaction between employees (CROSS; THOMAS; LIGHT, 2012). Moreover, executives establish decision-making processes with defined responsibilities with the conviction that they are forming an organization with a more flexible and adaptable network. Nevertheless, the informal network must adapt to this imposed structure, or every effort will be counter productive. The change of culture and actions is very challenging to mature and consolidated companies, as managers are wondering how to go from the theory of network effects to the implement of their concepts and analysis (CROSS *et al.*, 2012; CROSS; PRUSAK, 2002). However, managers can make use of the tools of the social networks analysis (SNA), to evaluate and foster important connections in the organization. It is, in brief, advantageous for the organization to improve this understanding of how they are using their social network for getting better results than only leaving it to chance (CROSS; PARKER, 2004). Therefore, understanding the SNA through its basics concepts, as well as mapping the relationship between the actors of an organization, can contemplate the growing complexity existing in the organization and are valid for this study.

2.4 Analysis of the Social Network intraorganizational

The mapping of networks reveals relationships, positions and roles of the actors inside networks, which enables the organization to understand the characteristics and divisions in the organizational structure. An important feature of SNA is that it allows managers to establish or develop the fabric of the overall network, where appropriate. For Cross and Prusak (2002) and Cross and Parker (2004), allow managers to focus their attention on the network points that are fragmented and then strategically restructure or create important connections. In short, ARS helps to identify bottlenecks in information flows in a network, so that an intervention can strategically transform the network into a support to validate projects and processes more easily. For Cross and Prusak (2002), the actual work, in most organizations, is carried out through informal networks. According to the authors, managers seek, in relation to people, information and resources necessary for the work to happen (CROSS; PRUSAK, 2002; HAMRA; WIGAND; HOSSAIN; OWEN, 2014). However, in most organizations, these networks are an invisible threat, simply because they are not managed and, therefore, ignored. Even for the authors, ignore the existence of networks is not easier than managing them, since it is entirely possible to develop systematically the management of informal SN by applying simple questionnaires, for instance, like who knows who and what general knowledge that person has (CROSS; PRUSAK, 2002). Through informal organizational structure, the company can also understand why an employee is being late with their activities, because he may be overloaded for answering questions from colleagues, and being the most connected. The company, understanding this, should take some action aimed at reducing the work of this employee, or provide him some action that eases the burden by the questions from colleagues (CROSS; PARKER, 2004).

2.5 Terminology Indicators of Social Networks Analysis

The mapping of intraorganizational informal SN presents the main members of a knowledge group. From this, it is possible to evaluate the quality of the connections, and, consequently, develop actions to encourage interaction between members or even understand where this knowledge is generated and by whom it is exchanged, as well as defining strategic issues for the organization. Furthermore, SNA allows evaluating the integration of knowledge of a team and the effectiveness of interfaces with other groups within the organization (CROSS; PARKER, 2004). SNA is therefore a strategic tool that can help understand and control the process of creation, exchange and dissemination of knowledge in informal networks. In addition, it identifies key players in an organization, so managers have accessible groups and the effective collaboration to achieve the strategies to which the organization is proposed. The analysis is performed by studying the flow of information and forms of connections between the actors involved. SNA is important for purposes ranging from the diagnosis of real situations to the prediction of future behavior of a group of individuals or an organization (CROSS *et al.*, 2002; LEE, 2015). Based on this assumption, it is necessary to understand the terminology used to the conclusions of the SNA. Showed the definitions that are used for the analysis of networks, the links presented are possibilities of relationship between individuals that form the SN, and, since these relationships are unlimited, they should be formulated according to the needs of each organization. Four important roles played by the actors of the networks are identified, which are as follows:

Important Role	Activity
Central connector	connecting most actors from the network with each other.
Border expander	are actors linked to actors from other organizations or even other sectors within the company.
Information broker	are actors that make the connection between different subgroups of the network; prevent the flow of information getting interrupted due to fragmentation of the network.
Peripheral expert	are actors with specialized knowledge, for whom other actors search when they need that kind of specific information.

Table 1: Roles played by actors

Source: prepared by the authors (2015)

It is valid to note that the terminology is used to support the analysis of the social network. Therefore, it is valid to understand how KT falls into the social network.

2.6 Knowledge Transfer in Informal Social Networks

Reagans and McEvily (2003) understand that intraorganizational informal networks play a critical role in the KT process, because the networks promote the transfer, enabling employees of the organization to learn from the experience of others, and thus retain new knowledge (GUBBINS; DOOLEY, 2014). To this end, Cross et al. (2002) argue that in order to pass the sharing of individual knowledge in groups and organizations, the creation of SN is required. Networks in which people share their knowledge, creating consequently a mechanism for communication and dissemination of experiences that would assist the development and improvement of professionals who make up the company. The network integration is crucial to the flow of knowledge, because they are valued spaces for sharing information and retaining knowledge (KATZ; LAZER, 2003).

Networks are considered open structures which can expand without limit when they share the same knowledge (CASTELLS, 2000; SIMON; TELLIER, 2011). Networks are appropriate instruments for a capitalist economy based on innovation, globalization and decentralized concentration, for work, workers and companies targeting flexibility and adaptability (CASTELLS, 2000; KATZ; LAZER, 2003). Companies as a whole, including the members of sales teams, should share the acquired knowledge with the group or team they belong to, so therefore the knowledge go through all the knowledge spiral combinations (NONAKA; TAKEUCHI, 2003). The difficulty of knowledge-based companies is to distribute and make available the knowledge to the right people or make it available at the instant it is needed (PROBST *et al.*, 2002). One factor that makes sharing important is the fact it affect the competitiveness of an organization, and, accordingly, it is necessary to occur his transfer to the organization (PROBST *et al.*, 2002). Nonetheless, in order that sharing occurs, in addition that the company must provide an environment that encourages it, it is necessary that the sales staff realize in this an advantage. The spontaneous and unstructured knowledge transfer is critical for companies (DAVENPORT; PRUSAK, 2003). Although KS imply to be in a formalized way, one of the determining factors is the development of strategies that encourage it being spontaneously. The act of transmitting knowledge is part of the daily routine inside the organizations. Nevertheless, their quality and importance are revealed by the various capabilities that the company has as a result of this knowledge (CHOO, 2003). Probst et al. (2002) assert that people do not pass on their knowledge to other automatically, because employees recognize their personal knowledge as part of the power in the company, or as something personally yours. In contrast, Davenport and Prusak (2003) argue that much of the transfer happens because people are constantly questioning each other, through informal networks, 'who understands this process' or 'who knows that product'. Informal networks of employees who work in direct customer service are responsible for transmitting the knowledge

through the organization, as they have access to the most updated information in terms of market, technology and competitors.

3 Methodology

The mapping and measurement of the studied social network was made with the programs UCINET 6 and NETDRAW 2, which enabled the creation of matrices and graphical network maps. Data were entered in UCINET in a square matrix format; in the adjacency matrix (main matrix where relations between the actors are recorded), relations were converted into a set of binary numbers: "0" represents the absence of connection; and "1", the existence of relationship between actors (LESKOVEC *et al.*, 2007). The planning of the network was based on the question: "Of the following people listed below, who you know personally and exchange information relating to the work in the company?" In addition, if there was someone who, beyond the analyzed segment, was contacted by actors, these should be mentioned in a specific field in the questionnaire. As all 119 respondents were part of the same sales segment, made up of nine teams, it was not necessary a list of the jobs and external sectors of the sales area, because there was no analysis of external networks.

4 Network Analysis Results

From the answers, a binary matrix of order 119 was obtained. The matrix is classified as an adjacent square matrix in which the rows and columns represent the actors, and a individual cells show if a couple of individuals are related through common associations. Network interfaces possibilities are identified by the formula $k * (k-1)$, where k is the size of the network (BARABÁSI, 2002; LESKOVEC *et al.*, 2007). So, for the studied network comprises 119 nodes, it became possible 14,042 interactions between the actors that compose it. Using UCINET / Netdraw software, the network was enclosed in relations among employees, indicated in this sociogram in Figure 1. The result generated by UCINET shows that the network was left with a low density of 0.407. This means that only 40.7% of the potential interaction is being used; between 14042 possible relationships between the actors, there are 5715. In other words, from the total possible interaction of the intersection of columns with the lines, in 40.7% of cases there is a relationship. Consequently, there is an opportunity to improve the relationship between the actors by approximately 60%. Even if the figure 1 appears to have high density, due to the concentration of 5715 relations represented in a small space, the fact is that the network density is relatively low considering its potential. Nevertheless, as a group grows, its density tends to be reduced, while new groups may emerge (SIMON; TELLIER, 2011; BRASS *et al.*, 2004; CROSS *et al.*, 2002; PRUSAK; CROSS, 2002).

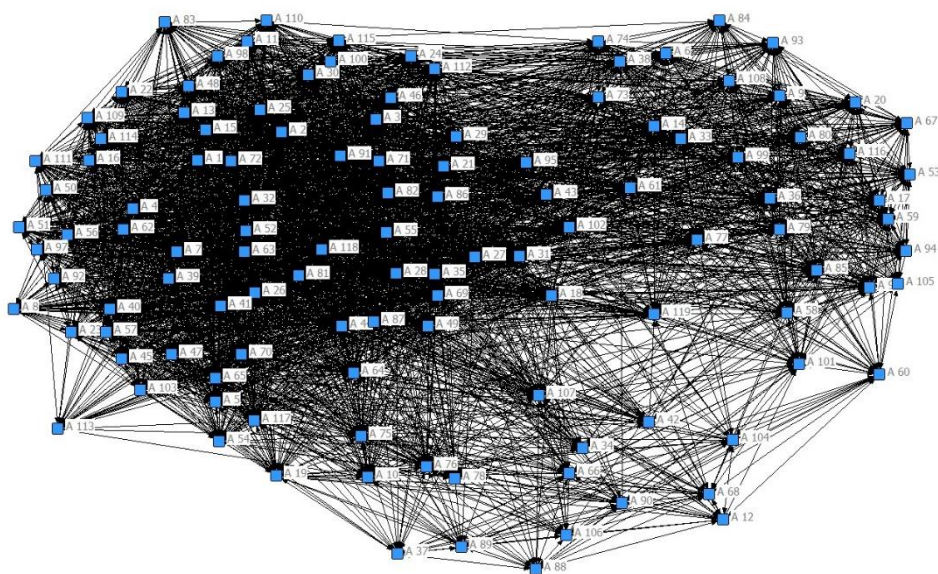


Figure 1 - Sociogram of social networking among employees

Source: Extracted from UCINET Software (2017)

4.1 Analysis of the Informal Network Actors

Regarding actors that are border expanders or connectors, the Bi-component routine found no cutoff. As the network consists of a single block, the withdrawal of an actor would not decrease it. That did not happen because, in the questionnaire, people from other segments have not been addressed. The average of centrality degree of the network is 48.03 degrees, as well in relation to the central output as the input, then there are interactions on average between 48 and 49 people. Routine Degree generated the centrality degree of input and output of each actor, in absolute numbers and percentages. Thus, it is clear that the critical actors of this network, regarded by colleagues as more known, in percentage are: A (actors) 69 (80.50%), A43 (67.79%), A31, A55 and A28 (66.94% each). Table 2 presents the results of relevant stakeholders for the analyzed network.

Actors	Output	Output %	Input	Input %	Bonacich	Intermediation	Intermediation %
A 28	77.00	65.254	79.00	66.949	18.28	195.583	1.417
A 31	107.00	90.678	79.00	66.949	20.441	442.749	3.207
A 35	86.00	72.881	78.00	66.102	19.19	259.733	1.881
A 43	88.00	74.576	80.00	67.797	18.30	340.065	2.463
A 55	84.00	71.186	79.00	66.949	18.58	179.335	1.299
A 69	83.00	70.339	95.00	80.508	19.41	329.327	2.385
A 87	93.00	78.814	69.00	58.475	18.49	271.547	1.967
A 102	83.00	70.339	66.00	55.932	16.28	29.9.23	2.167

Table 2: Results network analysis

The centrality of output displays how many people each actor indicated as known; individuals cited on average 48 they known. However, the actor A31 quoted 107 known, therefore has a higher percentage than the rest, 90.68%, demonstrating thereby its expansiveness on the network. Regarding the centrality of Bonacich, the Eigenvector routine ranked as core network connectors (critical) the following actors: A31 (20.44%), A69 (19.41%), A35 (19.08%), A55 (18.58%) and A87 (18.49%). Finally, for critical actors in the role of transactional content broker, the centrality of intermediation was used, which refers to the possibility that an actor

has to mediate communications between pairs of nodes (VELÁZQUEZ; AGUILAR, 2005). Through betweenness routine, it was found that the actors that have the greatest degree of percentage intermediation are: A31 (3.207%), A43 (2.463%), A69 (2.385%), A102 (2.167%) and A87 (1.967%). The A31 and A69 actors stand out as the most critical actors in the network, as they have the largest network input degree of centrality, reflecting thus their popularity in terms of connections. Based on the centrality degree of input and Bonacich, it appears that the A31 and A69 are also actors who play a central role in the network connectors, as both indices are related to this role. In addition to the A31 and A69 actors, actor A43 has the greatest degree of centrality of intermediation as a percentage, which corresponds to the role of transactional content brokers, ranked as first main critical actors, and as second in the role of central connectors, who are responsible for transmitting knowledge among the actors of the network.

5 Conclusion

The networks were mapped considering the relationship between the actors; and the structure was analyzed as network indicators defined by Cross and Parker (2004). With indicators, it was possible to identify critical actors and the roles played by them, according to the classification established by Cross and Prusak (2002). The research network showed that there is high potential for 60.3% of relationship, as revealed low density of 40.7%, and there may be 14042 interactions. Based on this observation, the company has the opportunity to expand the links between the actors less connected with the most connected, the so-called central actors in the network. As the interactions are no longer individual and become collective, relevant information emerge from the daily business activities. Closer relations are therefore the strongest links and thus favor the sharing of knowledge among the actors. Regarding border expanders, there was no analysis because people were not asked about outside areas from their own team, for example, who would be the actors' main contacts out of the reporting sector. However, it is known that there is interaction with people from other sectors, since it is necessary to ask, for example, holidays with the human resources department of the company, as well as a periodic schedule for examinations in the medical sector. When analyzed which actors have greater centrality intermediation, we can see that are the ones who can control the flow of information on the network, in other words, have control over the interactions between two other actors. The more an actor is among others, and, if there is passage for him to communicate with these, the higher its centrality intermediation will be. Given that, actors A31(3.207%), A43 (2.463%), A69 (2.385%), A102 (2.167%), and A87 (1.967%) are considered the controllers of information flow, or intermediaries. The relevance of this is due to them being responsible for disseminating knowledge among other actors of the network. Finally, A31 and A69 actors are, for its position in the network, and, owing to the interactions they have with the other actors, central connectors, and also content brokers with the actor A43. These actors are critical to the company because they have many direct connections about the search for information. For KS, if the central connectors are removed from the network, there is a loss of expertise and organizational memory, because they have direct connections on the information search and they are the first to be called in crisis situations. Cross and Thomas (2009) suggest that managers use central connectors as leaders of communities of practice, guidance for newcomers, as well as shares of joint projects. Regarding the actors content brokers, their connections are defined by the degree of closeness between other participants of the network. Given this fact, the loss of consciousness occurs, in general, by the lack of opportunities that require the integration of different powers. At last, the peripheral actors have few direct links on the search for information. The absence of these actors entails the loss of external relations, as they have few direct links on the search for information.

6 Future Limitations And Analysis

A limitation, in relation to this study, was to not address actors that are beyond the analyzed structure. In further analysis, it would be of great value to analyze the borders of actors and verify existing groups between different organizational structures. As it comes to sales teams, these, in turn, have goals and receive commissions, and other option would be to investigate whether the positions in which the critical actors, central and border expanders, occupy have some relation to the achievement or not achievement of goals

References

- BARÁBASI, A. L.** *Linked: a nova ciência dos networks*. São Paulo: Editora Leopardo, 2002.
- BRASS, D. J.; GALASKIEWICZ, J.; GREVE, H. R.; TSAI, W.** *Taking stock of networks and organizations: A multilevel perspective*. *Academy of management journal*, 47(6), 795-817, 2004.
- CABRERA, A.; CABRERA, E. F.** *Knowledge-sharing dilemmas*. *Organization studies*, Vol. 23, n. 5, p. 687-710, 2002.
- CASTELLS, M.; GERHARDT, K. B.** *A sociedade em rede* (Vol. 3). São Paulo: Paz e terra, 2000.
- CHOO, C. W.** *A organização do conhecimento: como as organizações usam a informação para criar significado, construir conhecimento e tomar decisões*. Senac São Paulo, 2001.
- CROSS, R. L.; PARKER, A.** *The hidden power of social networks: Understanding how work really gets done in organizations*. Harvard Business Press, 2004
- CROSS, R.; PRUSAK, L.** *The people who make organizations go-or stop*. *Harvard business review*, Vol. 80, n. 6, p. 104-112, 2002.
- CROSS, R.; THOMAS, R. J.** *Redes sociais: como empresários e executivos de vanguarda as utilizam para obtenção de resultados*. Gente, 2009.
- CROSS, R.; PARKER, A.; BORGATTI, S. P.** *A bird's-eye view: Using social network analysis to improve knowledge creation and sharing*. IBM Institute for Business Value, 1669-1600, 2002.
- DAVENPORT, T. H.; PRUSAK, L.** *Conhecimento empresarial: como as organizações gerenciam o seu capital intelectual*. Rio de Janeiro: Elsevier Brasil, 2003.
- EHRlich, K.; CARBONI, I.** *Inside social network analysis*. Boston College, 2005.
- GLADWELL, M.** *O ponto da virada*. Rio de Janeiro: Sextante, 2009.
- GOLBECK, J. A.** *Computing and applying trust in web-based social networks*, 2005.
- GROTTO, D.** *O compartilhamento do conhecimento nas organizações. Organizações do conhecimento: infraestrutura, pessoas e tecnologias*. São Paulo: Saraiva, 2002.
- GUBBINS, C.; DOOLEY, L.** *Exploring social network dynamics driving knowledge management for innovation*. *Journal of Management Inquiry*, Vol. 23, n. 2, p. 162-185, 2014.
- HAMRA, J.; WIGAND, L.; HOSSAIN, L.; OWEN, C.** *Network effects on learning during emergency events*. *Knowledge Management Research & Practice*, Vol. 12, n. 4, p. 387-397, 2014.
- HUTZSCHENREUTER, T.; HORSTKOTTE, J.** *Knowledge transfer to partners: a firm level perspective*. *Journal of Knowledge Management*, Vol. 14, n. 3, p. 428-448, 2010.
- KANG, J.; RHEE, M.; KANG, K. H.** *Revisiting knowledge transfer: Effects of knowledge characteristics on organizational effort for knowledge transfer*. *Expert Systems with Applications*, Vol. 37, n. 12, p. 8155-8160, 2010.
- KIM, M. P.** *Knowledge retention enhances performance-based management*. *DCMA Communicator*, p. 49-51, 2005.
- KLEINDORFER, P. R.** *O imperativo das redes: comunidade ou contágio?* In Kleindorfer, PR.; Wind, YJ. *O desafio das redes: estratégia, lucro e risco em um mundo interligado*, 2012.
- KRACKHARDT, D.; HANSON, J. R.** *Informal networks: the company behind the chart*. *Harvard Business Review*, Vol. 71, n. 104, 1993.

- LAZER, D.; KATZ, N.** *Building effective intra-organizational networks: The role of teams*, 2003.
- LEE, S.** *Creative Interaction and Multiplexity in Intraorganizational Networks*. Management Communication Quarterly, Vol. 29, n. 1, p. 56-83, 2015.
- LEONARDI, S. M.** *O compartilhamento de conhecimento em equipes de venda: um estudo exploratório no setor químico. O compartilhamento de conhecimento em equipes de venda: um estudo exploratório no setor químico*, 2005.
- LESKOVEC, J.; ADAMIC, L. A.; HUBERMAN, B. A.** *The dynamics of viral marketing*. ACM Transactions on the Web (TWEB), Vol. 1, n. 1, 5, 2007.
- MU, J.; TANG, F.; MACLACHLAN, D. L.** *Absorptive and disseminative capacity: Knowledge transfer in intra-organization networks*. Expert Systems with Applications, Vol. 37, n. 1, p. 31-38, 2010.
- NONAKA, I.; TAKEUCHI, H.** *Criação de conhecimento na empresa*. Elsevier Brasil, 2003.
- PROBST, G.; RAUB, S.; ROMHARDT, K.** *GC: Os elementos construtivos do sucesso*. Bookman, 2002.
- REAGANS, R.; MCEVILY, B.** *Network structure and knowledge transfer: The effects of cohesion and range*. Administrative Science quarterly, 48(2), 240-267, 2003.
- SIMON, F.; TELLIER, A.** *How do actors shape social networks during the process of new product development?*. European Management Journal, Vol. 29, n. 5, p. 414-430, 2011.
- SROKA, W.; CYGLER, J.; GAJDZIK, B.** *Knowledge transfer in networks—the case of steel enterprises in Poland*. Metalurgija, Vol. 53, n.1, p. 101-104, 2014.
- STEWART, T. A.** *Capital intelectual: a nova vantagem competitiva das empresas* (Vol. 5). Rio de Janeiro: Campus, 1998.
- TSAI, W.** *Social structure of “coopetition” within a multiunit organization: Coordination, competition, and intraorganizational knowledge sharing*. Organization science, Vol. 13, n. 2, p. 179-190, 2002.
- VELÁZQUEZ, A.; AGUILAR, N.** *Manual introductorial análisis de redes sociales. Ejemplos prácticos con UCINET*, 6, 2005.
- ZHONG, X.; HUANG, Q.; DAVISON, R. M.; YANG, X.; CHEN, H.** *Empowering teams through social network ties*. International Journal of Information Management, 32(3), 209-220, 2012.