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A DINÂMICA DA CRIAÇÃO DO CONHECIMENTO NUMA REDE INTRA-ORGANIZACIONAL

DYNAMICS OF KNOWLEDGE CREATION IN INTRA-ORGANIZATIONAL NETWORKS

LA DINÁMICA DE LA CREACIÓN DEL CONOCIMIENTO EN UNA RED INTRAORGANIZACIONAL

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RESUMO

Introdução: O conhecimento tem vindo a evidenciar uma crescente importância na economia, como fator de diferenciação e recurso gerador de competitividade, sendo considerado um grande pilar de desenvolvimento das sociedades actuais. As redes, dentro e entre organizações, como estratégia potenciadora para a partilha do conhecimento, podem ser uma das vias mais importantes que uma organização pode adotar.
Objetivos: Avaliar como ocorre a dinâmica da criação de conhecimento numa rede intra-organizacional.
Métodos: O estudo desenvolve-se segundo uma tipologia descritiva e exploratória e utiliza a metodologia de estudo de caso desenvolvido numa rede de serviços de óptica em Portugal.
Resultados: Os resultados apresentam evidências que o contexto de uma rede intra-organizacional pode proporcionar um ambiente de aprendizagem coletivo, representado sobretudo pela interação que ocorre entre os colaboradores das unidades e por meio de vários "espaços de interação" e criação de conhecimento.
Conclusões: As potencialidades atribuídas ao conhecimento e às redes na promoção de melhores práticas organizacionais justificam o interesse da análise e o contributo do estudo para o meio empresarial.

Palavras-chaves: Criação de conhecimento, redes intra-organizacionais, gestão do conhecimento

ABSTRACT

Introduction: Knowledge has shown growing importance in economy, as a differentiation factor and a competitiveness enhancer, being considered as an important pillar of modern society development. Networks within and between organizations, as a strategy to potentiate knowledge sharing might be considered one of the most important approaches an organization may adopt.
Objectives: To evaluate how the dynamics of knowledge creation occur in an intra-organizational network.
Methods: This study is developed according to a descriptive and exploratory typology and uses the methodology of a case study developed over an optical services network in Portugal.
Results: The results present evidence that the context of an intra-organizational network may favor a collective learning environment, mainly represented by the interaction that occurs between the collaborators of the various units and with the help of several "interaction" and knowledge creation spaces.
Conclusions: The potential attributed to knowledge and networks in promoting the best organizational practices justify the interest of this analysis and the contribution of this study to the business environment.

Keywords: Knowledge Creation; intra-organizational networks; Knowledge management.

RESUMEN

Introducción: El conocimiento ha venido a evidenciar una creciente importancia en la economía, como factor de diferenciación y recurso generador de competitividad, siendo considerado un gran pilar de desarrollo de las sociedades actuales. Las redes, dentro y entre organizaciones, como estrategia potenciadora para el compartir el conocimiento, pueden ser una de las vías más importantes que una organización puede adoptar.
Objetivos: Evaluar cómo ocurre la dinámica de la creación de conocimiento en una red intraorganizacional.
Métodos: El estudio se desarrolla un tipo descriptivo y exploratorio y utiliza la metodología de estudio de caso desarrollado en una empresa de servicios de redes ópticas en Portugal.
Resultados: Los resultados presentan evidencias que el contexto de una red intraorganizacional puede proporcionar un ambiente de aprendizaje colectivo, representado sobre todo por la interacción que ocurre entre los colaboradores de las unidades y por medio de varios "espacios de interacción" y creación de conocimiento.
Conclusiones: Las potencialidades atribuidas al conocimiento ya las redes en la promoción de mejores prácticas organizacionales justifican el interés del análisis y la contribución del estudio al medio empresarial.

Palabras Clave: Creación de conocimiento; redes intraorganizacionales; Conocimiento administrativo.

INTRODUCTION

From the current economic environment, of constant uncertainty and complexity, emerges the inevitability of restructuring the organizations in order to define actuation strategies, regarding resource sharing, in a perspective of inter and intra-

organizational cooperation, with the goal of creating synergies, competitive advantage and sustainability. Drucker (2003) foresaw that the "next society will be a knowledge based society", in that sense, knowledge is a key resource for competitiveness and for the individual and organizational capacity to create, process and transform information and knowledge. The network paradigm has been extended to several disciplines (Vidal, 2017).

Some authors, like Grant (2006), Nonaka, Toyama and Konno (2002) and Sundaresan and Zhang (2017) consider that the ability to create and utilize knowledge is an important source of sustainability and competitive advantage to the company. On this context, inter and intra-organizational networks may be seen as a mechanism which allows organizations to reach their goals. Uzzi and Spiro, (2005); and Ahuja et al., (2016), affirm that networks help spreading the rules, knowledge and other resources. On this line of thought, Tatarynowicz et al., (2016) affirm that networks can become an adequate strategy, since they can improve the competitiveness of organizations, shape behaviors and results and allow organizations obtain competitive advantages.

Even with acknowledged collective capacity and efficiency through networking, however, this phenomenon has been scantly studied (Perrow, 1992) and existing literature about the theme is still scarce.

Nonaka et al., (2002) emphasize that the conditions favorable to the creation of knowledge in an organization involve the method of knowledge conversion (Socialization – Externalization – Combining – Internalization), but for it to actually occur it is fundamental the emersion of a "*ba*", Japanese concept meaning a physical, virtual or mental space within which knowledge is created, shared, and utilized.

Considering these facts, this study´s goal is to evaluate and to understand how the knowledge creation dynamics occur in an intra-organizational network in the optics sector, in Portugal.

Therefore, the study is structured into three parts; after the introduction a theoretical reflection about the studied concepts is made, methodology is resumed, results are presented followed by the discussion, conclusions, contribution, limitations and suggestions for future research.

1. THEORETICAL FRAMEWORK

1.1 Knowledge creation in organizations

Nonaka and Takeuchi (1997) support the thesis that knowledge is a high valued asset for the organization and has the following dimensions: it is tacit, because it is strongly related to action, procedures, routines, ideas, values and emotions; it is dynamic, because it is created within social interactions between individuals, groups and organizations; it is humanist, for it is essentially related to human action. According to these authors, knowledge creation assumes an individual learning process resulting from reflection, creativity and questioning, therefore of a constructivist nature. The constructivist theory regards learning and knowledge creation as an active process, where the subject, interacting with others, creates new knowledge. According to Nonaka and Nishiguchi (2001) organizational learning occurs through shared perceptions, knowledge, and mental models, it is built upon past knowledge and experience, that is to say, upon memory and the organizational memory depends on institutional mechanisms such as policies, strategies and explicit models, used in order to retain knowledge.

Individual learning, by itself, does not assure organizational learning, but, without it, however, organizational knowledge does not happen (Nonaka and Takeuchi, 1995). Organizational learning occurs at three levels – individual, group and organizational – which makes knowledge to flow from individual to the group, and then to the organization (Nonaka, 2001). Nonaka and Takeuchi (1995) named "knowledge conversion" the process by which organizations create knowledge, based on the critical assumption that human knowledge is created and expanded through social interaction between tacit and explicit knowledge. This process develops itself in four knowledge conversion modes as presented in Picture 1.

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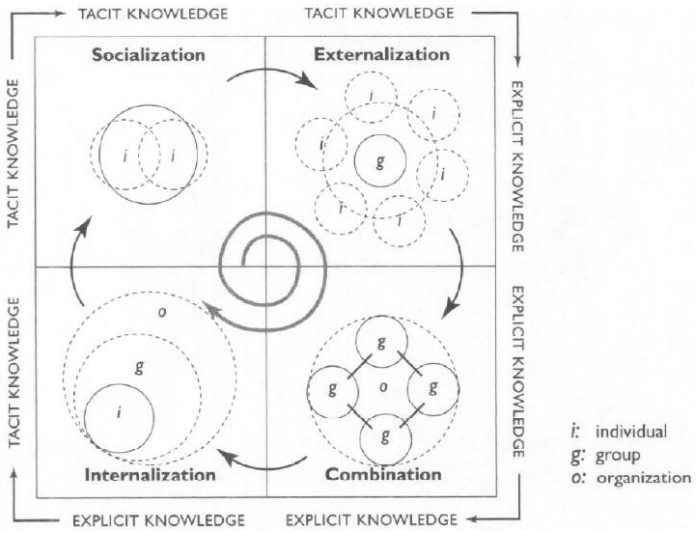


Picture 1 – SECI Model of knowledge forms transformation/conversion
Source: Nonaka and Konno (1998, p.43)

We understand tacit knowledge as personal knowledge, meaning it is difficult to formalize and transmit to others (Nonaka and Takeuchi, 1995; Li and Gao, 2003). Explicit knowledge is the one which is produced from collected data and storage information (Nonaka and Konno, 2001).

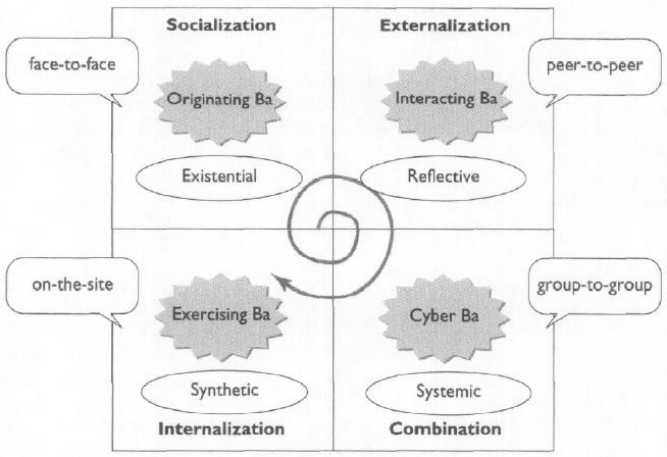
The socializing field occurs from the experience and from shared mental models, on which face-to-face communication creates shared knowledge (Nonaka and Takeuchi, 1997). In the externalization field, conceptual knowledge is created, expressed in metaphors, analogies, concepts, hypothesis or models Nonaka and Konno (2001). The conversion of explicit knowledge into a more complex set of explicit knowledge is called combination. The keys for that process are knowledge communication, diffusion e systematization (Nonaka and Konno, 2001).

Combination occurs in three phases: First is the gathering and integration of knowledge; second is dissemination; and third, editing e processing knowledge (Nonaka and Takeuchi, 1997; Nonaka and Konno, 2001). Internalization process is no more than learning by doing in organizational apprenticeship, with no empirical testing (Gourlay, 2006). Interaction in order to create knowledge starts in a field which facilitates sharing between individuals, generating dialogs and collective reflections, to create new knowledge which will become crystallized through products, management processes or systems (Nonaka et al., 2002) as shown in Picture 2.

Picture 2 – Types of interaction spaces
Source: Adapted from Nonaka et al., (2002)

Knowledge cannot be created in a vacuum, it needs a place, an appropriate and specific context in terms of time, space and relationship between individuals with the necessity of a dynamic interaction, which allows to create, utilize, share and spread knowledge (Nonaka et al., 2002; Kostiainen, 2002).

Nonaka and Nishiguchi (2001) name the aforementioned context as "*ba"*, which serves as the knowledge creation platform. The *ba* concept aims to unify the physical space, within which knowledge is created, shared and used. In this study the expression "interaction space" is used to name the concept of *ba*, which represents all the space which promotes interaction between individuals in a knowledge creation dynamic.
Nonaka et al., (2002) present four groups of "interaction spaces". The first one is knowledge socialization spaces (*originating ba*), on which tacit knowledge, shared through common experiences, is responsible for the emergence of knowledge assets as skills, *know-how*, confidence. Then comes knowledge externalization spaces (*dialoguing ba*), where tacit knowledge is articulated in the form of symbols, images and language, promotes the creation of knowledge assets like *design* and product concept (Nonaka, and Toyama, 2003). The third group refers to specific knowledge systematization spaces (*systematizing ba*), which are responsible by the emergence of knowledge assets like *database*, documents, specifications, manuals, patents and licenses (Nonaka, 2005). At last, knowledge applied to activities, actions and practices or knowledge internalization spaces (*exercising ba*) is responsible for creating knowledge assets like *know-how*, organizational routines and new behavior patterns (Nonaka, 2005) as depicted on picture 3.



Picture 3 – The four characteristics of "*ba"*
Source: Nonaka, Toyama and Konno (2002)

These "interaction spaces" allow knowledge to be socialized through means of face-to-face interaction where individuals share knowledge, feelings, emotions, experiences and mental models.
Provan et al., (2009) and McNamara et al., (2015) developed studies on how the organizational knowledge creation process occurs, effectively, and how the organizational structure influences on the existence of different "interaction spaces". They have reached the conclusion that knowledge works as a contingency variable, which determines the fitness of the organizational structure. Thus, it can be stated that, "interaction spaces" might emerge in work groups, informal circles, occasional meetings, virtual spaces and other moments where relationships occur in shared time and space. So, the question is how to potentiate the creation and utilization of knowledge. Some research point in the direction that the network configured enterprise might be more effective in knowledge creation than the one integrated in creation, transferring and recombining knowledge (Nonaka and Nishiguchi, 2001; Chua, 2002; Tsai, 2002; Spencer, 2003; Jacometti et al., 2015). Results point in the direction of understanding on how a network configuration might support the knowledge creation process.

1.2 Inter and intra-organizational networks
The "inter and intra-organizational networks" have been gaining ground on organizational theory (Ahuja et al., 2012). The inter-organizational relationships exists in several forms, like; *joint ventures*, licensing, *cobranding*, *franchising*, networks, associations and consortiums (Klein and Pereira, 2016).
In the social sciences study field, the term "network" designates a set of directly or indirectly interconnected people or organizations (Kim et al., 2006). In the technical-operational field, the term "network" underscores the idea of flow. In the organizational field, it implies a set of relations between companies, seen as a strategic resource for the organizations to face an uncertainty environment, characterized by competition. Actually, strategic networking within organizations are fundamental communication, interaction, share and knowledge diffusion vectors (Eiriz, 2004; Coviello, 2006).
Gulati (2007), Lefroy and Tsarenko (2013) define organizational networks as a more modern and dynamic way of structural configuration, establishing lasting agreements between two or more companies. Franco et al., (2011) defines networks as a group of organizations which involve exchanging and resource and capabilities sharing, with the goal of achieving a common

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strategy. Schiele et al., (2015) affirm that "the company where resources are found lacking will have to obtain them through relationships with others".
Other relevant characteristics are pointed out: gathering of several companies; operate in a specific market segment; establish horizontal and cooperative relationships between its elements; and it is structured according to basic coordination rules. Actually, networks are organizational systems capable of uniting individuals and institutions, in a democratic and participatory way, around a common goal (Franco e Barbeira, 2009).
Beyond that, inter-organizational relationships may increase the opportunities to develop new capabilities and launch new products without the need for large investments (Klein e Pereira, 2016). According to McNamara et al., (2015), they serve to define common goals and to create sustainable relationships. The real contribution of networks, to the participating organizations, is the development of specific organizational capabilities and competences, including aspects which address the improvement of processes (administrative, production, human resources, innovation, marketing and services) and to produce, process and transform information and knowledge into economic assets which grant differentiation, competitiveness and sustainability.

1.3 Creation of knowledge in intra-organizational networks

The intra-organizational network has the potential to create and develop new knowledge (Spencer, 2003; Cudney et al., 2014), to achieve that, there must be a knowledge management system which encourages that type of relation, which must be turned to information flow creation and organization within and between the various organizational levels, aiming to create, increase, develop and share knowledge within the organization. In this sense, knowledge management, might be seen as a set of processes which manages knowledge creation, dissemination and use in order to achieve the organization's goals (Lefroy and Tsarenko, 2013).
Nonaka and Takeuchi (1997) provided evidence of the creation of new knowledge from interaction between individuals, groups and organizations. According to these authors, knowledge comes at an individual level, being expanded through knowledge interaction and socialization dynamics, to an organizational and, onwards, to an inter-organizational level. Thus, knowledge is created solely by individuals; an organization, by itself, cannot create knowledge, but may provide a positive and constructive relationship space between the several elements, in such a way that allows information, knowledge, experiences and competences exchange to create a context to knowledge creation within organizations.
In order for the intra-organizational knowledge creation process to be effective, it is necessary a synergetic and stimulating environment, where emotions, experiences, feelings and mental images are shared beyond the organization borders (Spencer, 2003; Szell et al., 2010).
Tsai (2002), mentions that this environment cannot be produced by the traditional company model.
Therefore, one might say that an intra-organizational network may provide the existence of an effective interaction between people, groups and organizations, intra-organizationally expanding the knowledge created by individuals. This dynamic promotes competences complementarity through which knowledge, practices, values, processes, culture and individual differences are collectively shared with a common goal in sight (Gest et al., 2011).
The creation of knowledge in an organization involves articulated and intentional interconnection between its members, in a way that allows for sharing reasoning and ideas aiming to stimulate the cooperation and collaboration with the goal of promoting organizational performance.
Nonaka and Toyama (2003) refer to "devices" through which individual knowledge is connected and distributed, spreading in a spiral inside the organization. These devices have the function of promoting a continuous and dynamic interaction, which promotes sharing and creation of knowledge. Some studies suggest that networks are amongst the main necessary conditions to endure the pressure and to sustain enough levels of knowledge diversity, in order to prosper in current environments (Uzzi and Spiro, 2005; Franco and Mariano 2007; Gulati et al., 2012; Valente et al., 2015).
Considering this, it can be said that the network configuration might facilitate the appearance of "interaction spaces" which are favorable to the knowledge creation process. To better understand how that dynamic occurs and its potential contribution to the company, evidences from a case study in the optical business area in Portugal were sought, and presented next.

2. METHODS

This study develops through a qualitative topology, it is framed by a descriptive and exploratory line and adopts the methodology of a unique case study, concerning a network in the optical services area in Portugal. According to Yin (2001), in a case study, the goal is to expand and generalize theories (analytical generalization), in order to accomplish an holistic view of the studied phenomenon. Godoy (2006), says that the case study is evaluative.
Since the object of the study is to understand and analyze how does the knowledge creation dynamics works, within an intra-organizational network, the method used was the one proposed by Nonaka et al., (2002) (picture 2), considering as "interaction spaces" the place where the sharing and creation of knowledge occurs.

The analyzed unit in the case study was one store, which is part of an international Optics services network. The group, at a National level, is formed by several stores, 78 of which are franchised, and 77 others which are directly managed by the group (own stores). For this study, only the management and policies practices of own stores are considered. This is an horizontal network, formed by small stores, with an average of 7 workers per store. The choice of the analyzed unit was due to the fact that this group adopts an intra-organizational management network, allowing access to data collection and is adequate to the goal of this study.

Since it is impossible to do a longitudinal study, the retrospective method was adopted, revealing occurred changes and the motives that originated them. The retrospective method allows the interviewed to describe the events and changes, in their own terminology, besides allowing them to propose their own explanations to the facts. Data and information collection, according to Yin (1994), must contemplate various sources, observation, documents analysis, interviews and inquiries, contributing to create evidence chains, which connect gathered data to the purpose of the study. This work was performed through semi-structured interviews, information gathering through web site and direct observation. To conduct the interviews a guide was prepared, according to the idea defended by Lee (1999) and Hartley (1994). The analysis of the interviews was made through the content analysis, according to the set of rules guaranteeing its rigor (Miles and Huberman, 1994), which consists in the interpretation of the data from the lexical analysis, or content analysis.

The analyzed unit (store) has seven workers: The unit responsible, optometrist, salesperson, sales helper and counter employees. A pre-interview was conducted with one of the store's elements (optometrist) which allowed the readjustment of the questions, in order to evaluate and conclude the second goal of the study. Being a retrospective study, one of the inconveniences is that the terminology of the interviewed might be imprecise or inconsistent amongst them. To minimize this problem, the interviewed must encompass the "widest possible of hierarchical positions so that the information can be analyzed" (Glick, Huber et al., 1993). Thus, the empirical evidences were collected from interviews with the seven workers, with an approximate duration of 30 minutes each, during the month of May 2017, by the interviewer. The content of the interviews was noted and, afterwards, a transcript was produced. Additionally, other evidences were collected allowing to create evidence chains, which connect the collected data to the analysis variables. The operationalization of the study occurred from the systematization between conceptual elements, authors, purpose and the corresponding variables according to Table 1.

Table 1 – Operationalization of the research variables

Conceptual Elements	Authors	Variables analysis
Companies networks	Perrow, 1992; Gulati, 2007; Suire and Vicente, 2008 Franco et al., 2011; Lefroy and Tsarenko, 2013 Schiele et al., 2015; Klein and Pereira, 2016 Vidal, 2017	- geographic localization of the stores; - number of stores participating in the network; - business sector (commerce or service); - type of service or product; - coordination instruments; - formalization level of relations between stores in the network (formal *versus* informal); - hierarchy levels of the relations between networks (hierarchy *versus* cooperation); - cooperation level *versus* competition between network stores; - objectives inherent to the formation of the network.
Knowledge creation	Nonaka, 1994; Nonaka and Takeuchi, 1997; Nonaka and Nishiguchi, 2001; Chua, 2002; Nonaka *et al.*, 2002; Spencer, 2003 and Tsai, 2002 Kostiainen, 2002 Sher and Lee, 2004 Provan et al., 2007; Gest et al., 2011 Valente et al., 2015	- types and quantities of "interaction spaces" dedicated to knowledge socialization (fraternizing, touring the stores, other meetings); - types and quantities of "interaction spaces" dedicated to knowledge externalization (formal meetings, collective decision making processes, planning meetings and goals); - types and quantities of "interaction spaces" dedicated to knowledge systematizing (electronic communication, formal documents, data banks, shared management systems); - types and quantities of "interaction spaces" dedicated to knowledge internalization (new concepts and practices of services and management); - trust in information and knowledge sharing; - main knowledge assets created within the network

Source: own making

3. RESULTS

Among the several answers, one of those which got more similar responses refers that the greater gain of stores and collaborators, as a result of the implementation of the knowledge network, was information and experiences sharing. The

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shared information which brought more benefits to the network was that concerning services, suppliers, technologies and markets. That information was shared on a social inter-relationship which occurs on an informal basis between collaborators and the commercial director.

Several moments where information and knowledge sharing occurs were identified. According to the orientations of Nonaka et al., (2002), each one of those spaces work as a different set of situations, allowing to promote an effective "platform" to ease the process of knowledge creation between networked stores. "Interaction spaces" were identified from the collected data and are presented in Table 2.

Table 2 – Interaction spaces identified within the optics company network

Interaction spaces	Empirical evidences
National level meetings	"National level meetings occur in smaller numbers, usually to communicate changes in the group, strategies, management directives, services, in order to keep everyone integrated with the set goals."
Monthly meetings	"Every month meetings with the Commercial Director are set, in order to check the achievement of the established goals, the detected difficulties and the definition of new goals". "These meetings also serve to communicate the difficulties and problems related to relationships, tasks performed or problems with clients"
Individual meetings	"Most frequent individual meetings occur with the store responsible or commercial director". "These occur when new information or alerts are communicated. Or when a clarification is necessary". "At these meetings we also give our opinion about the service, or even about the management directives"
Fraternizing	"An interesting moment of information exchange is confraternization (lunches or dinners) at national and district level, attended by all employees and family involved in the network or specific sub segments of it."
	"Given the current national crisis, these meetings frequency have been decreasing overtime". They are always moments of a great deal of experiences and knowledge sharing"
Training / Colloquiums	"With the upcoming of new products or services" These training allows to acquire new knowledge about products or the market, but we also meet new people, colleagues, suppliers and even costumers" "They are always interesting experiences"
Courses and speeches	"Training is mandatory for all store workers" Whenever new products arrive or new service methodologies are implemented, training is provided, given by the group or even by suppliers"
Electronic space	"Throughout the years professional and even friendship ties are created. Informal talks occur through email. The necessity of clarifying about any situation or even asking for information is, usually, made by phone or fax. Information exchange also occur, simply motivated by curiosity or the novelty of the matter. We talk a lot by phone, email and fax".

Source: own elaboration

As such, evidences were found that several physical and virtual spaces do exist, easing the knowledge creation process in the studied network. One of these spaces, usually used for communication of tacit knowledge, consists on the visits that the commercial director pays to the stores belonging to the network. Through these visits, improvement possibilities are identified in services delivery, going around technological problems and improving the relationship to clients on a continuous improvement perspective.

This dynamic leads to substantial gains to the store and to the group. Another observed fact is that, with the evolution of the network, the social relations become stronger, as the trust and cooperation levels became more intense.

Meetings with the commercial director occur at least once a month and constitute a relevant knowledge sharing space in the network. It works as a formal forum for the collective decision making process and group and individual goals planning. Goals are established according to a debate, and an individual and group reflection process, in order to produce satisfactory and feasible goals, according to market conditions. At the meetings, after concluding the planned works, a space for sharing experiences is created, favoring an atmosphere of trust and well-being between the director and collaborators. According to these, sometimes "they learn more in those informal talks than in an entire month's work". They find solutions to problems and even to perform their tasks better. This fact corroborates the affirmation from Tsai (2002), who believes that "informal lateral relations, in social interaction form, have a significant effect over shared knowledge". The store, which is the case study, is located at a mall. This context and environment also promotes and facilitates intense social relations, often allowing friendship

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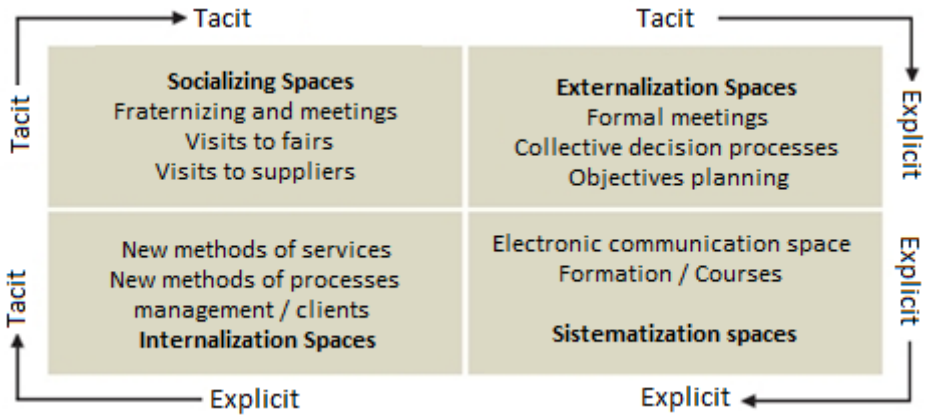
and business to happen simultaneously. As an example, fraternizing lunches or dinners occur between collaborators, between collaborators and customers, between collaborators and suppliers and even with elements from other stores.
Fraternizing at regional or national level, like dinners, meetings and others are important moments to solidify trust relationships and, beyond that, enable informal talks about opportunities, challenges and the future of the group. We can see that trust is fundamental to existing cooperation between collaborators and the leadership. This is established, primarily, by informal ways, face to face. Events like visiting products exhibits at fairs allows collaborators to have the opportunity to meet other colleagues, suppliers and customers, share experiences and also reflexing on the tendencies and challenges of the business sector.
The utilization of several electronic resources in the knowledge creation dynamics of the network was observed, such as the examples of email, telephone and fax. These methods are used more frequently and, on the other hand, the internet is less used. This evidence represents a point that must be strengthened in the studied network, in its knowledge creation dynamics, as the following analysis will show. On picture 4 it is proposed a classification of the diverse "interaction spaces" identified in the knowledge creation dynamics of the studied store.



Picture 4 – "Interaction spaces" in the studied optics network
Source: Adapted from Nonaka et al., (2002)

Analyzing pictures 4, the knowledge **socialization spaces** occur in the several visits to fairs, when collaborators directly observe not only the solutions, but also the new and better adopted practices. Besides that, those visits allow fraternizing and other informal encounters, sharing knowledge, emotions and feelings through informal interaction. Knowledge **externalization spaces** occur in formal meetings, objective planning meetings and collective decision making processes. These meetings allow the collaborators, through dialogue and collective reflection, to share ideas and experiences (tacit knowledge), converting them into common concepts, in the form of models, hypothesis and scenarios (explicit knowledge).
Knowledge **systematizing spaces** occur at training and courses, as well as in using the technologies that ease that process. However, the knowledge systematizing resources are defective, mainly on the lack of usage of IT systems by most of the collaborators.
Knowledge **internalization spaces**, which sustain the last phase of the knowledge conversion process, in which the knowledge is internalized and applied in terms of new organizational practices, has given good results, both for the store and for the group. By evaluating different "interaction spaces" of the studied store, a strong context of trust and interaction between the collaborators and leadership (commercial director) is generally observed. That interaction, which occurs mainly informally and face to face, offers a valuable basis for knowledge creation. According to Nonaka e Nishiguchi (2001), the biggest part, if not the whole of the knowledge, is created through an interactive process of experimenting and dialogue involving several individuals. In Soo, Devinney e Midgley's (2002) perspective, to many organizations, the informal communication channels have been a rich source of knowledge, which cannot be found in databases or organization's manuals. The importance of informal interaction is a crucial element for the creation of knowledge, mostly when knowledge is systemic, complex and tacit (Bhagat et al., 2002).

CONCLUSIONS

Before what was exposed one might say that this study is a theoretical rehearse for the formation and understanding of the knowledge creation phenomenon in intra-organizational networks, according to a systemic approach, arising important implications to the present and future managers and proprietors of companies which are inserted into a network.
One might conclude that the effective knowledge creation process, represented by the diverse "interaction spaces", allows the development of essential knowledge assets to the creation of value and competitive differential to the store and to the group.

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According to this research results, the fact that the group is working as a network allows new concepts and know-how, a better understanding of the network functioning scenario, knowledge about suppliers and representatives, knowledge about new processes, new technologies and products. One might say that the intangible assets, resulting from learning, are already contributing to the improvement of service delivery processes.

The results allowed us to observe that the social interaction acquired by the network configuration had a positive influence in the store and group's knowledge creation dynamics.

In the network context, several "interaction spaces" emerged where the created knowledge would hardly be attained in isolation.

The existence of formal and informal situations so that the collaborators might share expertise, experience, emotions and know-how, through face to face communication, promoted, amongst themselves at the store and in the group, an intense tacit knowledge sharing environment, and an essential resource to the sustainability, as already mentioned in the literature.

Teece et al., (1994) stress that the learning process is an intrinsically social and collective phenomenon. The conclusions relative to the network effect in promoting and amplifying knowledge creation reinforce some evidences pointed out in the literature.

To be noted is that theorizations outlined in this study, although limited by the used methodology, are intended to contribute to a more widening approach to intra-organizational knowledge creation, going from an endogenous process in the store to an exogenous process, inter-organizational. The study does not refrain from supplying evidences and ideas to the professionals to implement strategies in order to promote the success of their networks. These considerations, although not having a definitive character, stimulate the study about the theme on other methodologies views and typologies, establishing the basis to future researches, in order to deepen the theme and fill the theoretical gaps. Thus, to better understand the phenomenon mixed, qualitative and quantitative, studies are suggested in order to further validate on theorizations and allow for generalization of the same. As Nonaka e Takeuchi, (1997) affirm, "creating new knowledge means to recreate the company and all within in a continuous process of personal and organizational self-renewal".

REFERENCES

Ahuja, G., Soda, G. and Zaheer, A. (2012) ''The genesis and dynamics of organizational networks.'' Organization Science, 23: 434–448.

Bhagat, R. Kedia, B., Harveston, P. and Triandis, H. (2002) Cultural variations in the cross-border transfer of organizational knowledge: an integrative framework. *Academy of Management Review*, v. 27, n. 2, p. 204-21.

Boisot, M., and B. McKelvey (2010) ''Integrating modernist and postmodernist perspectives on organizations: A complexity science bridge.'' Academy of Management Review, 35: 415–433.

Chua, A. (2002) The influence of social interaction on knowledge creation. *Journal of Intellectual Capital*, v. 3, n. 4, p. 375-92.

Coviello, N. (2006) The network dynamics of international new ventures. *Journal of international Business Studies, 37*, 713-731.

Cudney, E. A., Corns, S. M., & Long, S. K. (2014). Improving knowledge sharing in healthcare through social network analysis, *International Journal of Collaborative Enterprise*, 4(1/2),17-33.

Drucker, P. F. (2003) A Administração na próxima sociedade. 3ª. Edição. São Paulo

Eiriz, V. (2004) Dinâmica de relacionamento entre redes inter - organizacionais. *Inovação Organizacional*, *2,* 121–153.

Franco, M., Mainardes, E., Martins, O. (2011) A review of interorganizational networks: Evidence from studiespublished in 2005-2008, Cuad. admon.ser.organ. Bogotá (Colombia), 24 (43): 133-155, julio-diciembre de 2011

Franco, M. e Barbeira, M. (2009) Um Sistema de Gestão de conhecimento como fomentador de Redes Estratégicas Inter-organizacionais**,** RIAE – Revista Ibero-Americana de Estratégia ISSN: 2176-0756.

Franco, M., & Mariano, S. (2007) Information technology repositories and knowledge management processes. *Journal of Information and Knowledge Management Systems, 37*(4), 440-451.

Gest, S.D., Osgood, D.W., Feinberg, M.E., Bierman, K.L. and Moody, J., (2011). Strengthening prevention program theories and evaluations: Contributions from social network analysis. *Prevention Science*, 12 (4), 349-360.

Glick, W., Huber, G. et al. (1993) "Studying Changes in Organizational Design and Effectiveness: Retrospective Event Histories and Periodic Assessments", in Huber, G. e . Glick, W. (Eds.), Organizational Change and Redesign, Oxford: Oxford University Press, p. 411-433.

Godoy, Arilda S; (2006) Pesquisa Qualitativa em estudos organizacionais: paradigmas, estratégias e métodos; São Paulo: Saraiva, 2006

Grant, R. M. (2006) The knowledge-based view of the firm. In D. Faulkner & A. Campbell,

Strategy: a strategy overview and competitive strategy (pp. 203-227). Oxford: University Press.

Gulati, R. (2007). Silo busting: transcending barriers to build high growth organizations. *Harvard Business Review*, *85*(5), 98-108.

Gulati, R., M. Sytch, and A. Tatarynowicz (2012) "The rise and fall of small worlds: Exploring the dynamics of social structure."Organization Science, 23: 449–471.

Hartley, J. (1994) "Case Studies in Organizational Research", in Cassel, C. e Symon, G. (Eds.), Qualitative Methods in Organizational Research, Thousand Oaks, CA: Sage, p. 208-229.

Inkpen, A. C., & Tsang (2005) Creating knowledge through collaboration. *California Management Review*, *39*(1), 123-140.

Jacometti, M.; Gonçalves, S. ;Castro, G. (2015) Institutional Work Y Knowledgein Networkin Interorganizational: A Proposal to Investigate LPAs

Lee, T. (1999) Using Qualitative Methods in Organizational Research, Thousand Oaks, CA: Sage.

Klein, L. Pereira, B. (2016) The survival of inter-organizational networks: a proposal based on resource dependence theory, RAM, REV. ADM. MACKENZIE, *17*(4), SÃO PAULO, SP, JUL./AGO. 2016. SSN 1518-6776 (impresso), ISSN 1678-6971 (*on-line*)

Kostiainen, J. (2002) Learning and the "Ba" in the development network of an urban region. *European Planning Studies*, v. 10, n. 5.

McNamara, P., Pazzaglia, F., & Sonpar, K. (2015). Large-scale events as catalysts for creating mutual

dependence between social ventures and resource providers. *Journal of Management, 20*(10), 1-31.

Michelis, G. (2001) Cooperation and knowledge creation. In: Nonaka, I.; Nishiguchi, T. (Eds.) *Knowledge emergence*. New York: Oxford.

Nonaka, Ikujiro; Takeuchi, Hirotaka (1997) The Knowledge – Creating Company: How Japanese Companies create the Dinamics of Innovation, Oxford University Press, New York.

Nonaka, I., Nishigushi, T. (2001). Knowledge emergence: social, technical and evolutionary dimensions of knowledge creation. New York: Oxford University Press.

Nonaka, I.; Konno, N. (2001) The concept of "Ba": building a foundation for knowledge creation . California Management Review, v.40, n.3, p.40-55, 1998.

Nonaka, I.; Toyama, R.; Konno, (2002) N. SECI, Ba and Leadership: a unified model of dynamic knowledge creation. Long Range Planning, Oxford, v.33, n.1, p.5-34.

Nonaka, I.; Konno, N. (1998). The Concept of "Ba": building a foundation for knowledge creation. California Management Review, Berkerley, v.40, n.3, p.40-54, Spring.

Nonaka, I.; Toyama, R.; Nagata, (2000) A. A Firm as a Knowledge-creating Entity: a new perspective on the Theory of the firm. Industrial and Corporate Change, v.9, n.1, p.1-20.

Nonaka, I.; Toyama, R. (2003). The Knowledge-creating theory revisited: knowledge creating as synthesizing process. Knowledge Management Research and Practice, Hampshire, v.1, n.1, p.2-10, July.

Nonaka, I. (2005). Managing Organizational Knowledge: Theoretical and Methodological Foundations. In K.G. Smith & M.A. Hitt (Eds.), *The Great Minds in Management* (pp.373-393). New York: Oxford University Press.

Perrow, C. (1992) Small-Firm Networks. In: NOHRIA, N.; ECCLES, R. (Eds.) *Networks and organizations: structure, form and action*. Boston: Harvard Business School Press.

Provan, K.G., Fish, A. and Sydow, J. (2007) Interorganizational Networks at the Network Level: A Review of the Empirical Literature on Whole Networks. *Journal of Management*,

33 (3), 479-516. Doi: 10.1177/0149206307302554

Provan, K.G., Huang, K. and Milward, B. 2009. The Evolution of Structural Embeddedness

and Organizational Social Outcomes in a Centrally Governed Health and Human Services Network. *Journal of Public Administration Research and Theory,* 19, 873- 893. Doi: 10.1093/jopart/mun036

Schiele, H., Ellis, S. C., Eßig, M., Henke Jr., J. W., & Kull, T. J. (2015). Managing supplier satisfaction: social capital and resource dependence frameworks. *Australasian Marketing Journal, 23*(2), 132-138.

Sher, J. P., & Lee, C. V. (2004) Information technology as a facilitator for enhancing dynamic capabilities through knowledge managements. *Information and Management*, *41*(8), 933-945.

Soo, C.; Devinney, T.; Midgley, A. (2002) Knowledge management: philosophy, processes and pitfalls. *California Management Review,* v. 44, n. 4.

Spencer, J. W. (2003) Firms' knowledge-sharing strategies in the global innovation system: empirical evidence from the flat panel display industry. *Strategic Management Journal*, v. 24, n. 3, p. 217-33.

Suire, R., and Vicente, J. (2008) Théorie économique des *clusters* et management des réseaux d'entreprises innovantes. *Revue Française de Gestion, 184*, 119-136.

Passos, C. (2019). Dynamics of knowledge creation in intra-organizational networks.
Millenium, 2(8), 55-66.
DOI: https://doi.org/10.29352/mill0208.05.00192

Sundaresan, S. and Zhang, Z. (2017) Incentive Strategies for Facilitating Knowledge Sharing on an Enterprise Social Network, Northeast Decision Sciences Institute 2017 Annual Conference

Szell, M., R. Lambiotte, and S. Thurner (2010) ''Multi-relational organization of large-scale social networks in an online world.'' PNAS, 107: 13636–13641.

Tatarynowicz, T.; Sytch, M.; Gulati, R. (2016) Environmental Demands and the Emergence of Social Structure: Technological Dynamism and Interorganizational Network Forms, Administrative Science Quarterly 2016, Vol. 61(1)52–86

Teece, D.; Rumelt, R.; Dosi, G.; Winter, S(1994) Understanding corporate coherence: theory and evidence. *Journal Economic Behavior*, v. 23, p. 1-30.

Tsai W. (2002) Social structure of "coopetition" within a multiunit organization: coordination, competition, and intraorganizational knowledge sharing. *Organization Science*, v. 13, n. 2, p. 179-90.

Uzzi, B., and J. Spiro (2005) ''Collaboration and creativity: The small world problem.'' American Journal of Sociology, 111: 447–504.

Valente, T.W., Palinkas, L.A., Czaja, S., Chu, K.H. and Brown, C.H., (2015) Social network analysis for program implementation. *PloS One*, 10 (6), e0131712.

Vidal, Ignácio Ramos,(2017) Detecting key actors in interorganizational networks, *Cuadernos de Gestión* Vol. 17 - Nº 2 (2017), pp. 63-86 - ISSN: 1131 – 6837

Yin, R. (1994) Case Study Research - Design and Methods, Thousand Oaks, CA: Sage.Yin, R. K. (2001) *Estudo de caso: planejamento e métodos*. Porto Alegre: Bookman.