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Factors influencing Information Sharing in Four SME Networks in Portugal:

A Coordination Perspective

Esther Lage¹ and Bráulio Alturas²

Instituto Universitário de Lisboa (ISCTE-IUL), ADETTI-IUL – Avenida das Forças Armadas, 1649-026-LISBOA, Portugal,
elleo@iscte.pt ² braulio.alturas@iscte.pt

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Abstract: Sharing a minimum amount of information is a basic condition for working in cooperation. The aim of this study was to identify aspects that influence information sharing within inter-organizational networks through an exploratory and qualitative approach. The coordination's representatives of four networks were interviewed: the Majority-Partner of a Purchase Network (RAVT), the Technical Consultant of an Innovation Network (COTEC), the General Secretary of a cluster representation network (CEFAMOL) and the President of a Network of Associations (UACS). Aspects related to the information sharing were identified, such as information quality, top management commitment, trust, network coordination's role, reciprocity and age. Further researches can deepen these results by comparing them with network companies' view.

1 INTRODUCTION

The literature has already identified several factors influencing information/knowledge sharing in diverse types of inter-organizational relationships. Among those factors it is possible to cite intention and ability to learn (Simonin, 2004), assistance provided by the partner (Hau and Evangelista, 2007), high intensity of interaction and intimacy between partners (Bstieler and Hemmert, 2008) and informal socialization mechanisms (Dahl and Pedersen, 2004).

However, despite the growing number of studies on this subject over the past 20 years (Easterby-Smith, Lyles and Tsang, 2008), there are still aspects that require a deeper understanding. For instance, there remains a need for interpretative methodological approaches in order to capture the social complexity that involves the phenomenon (Pérez-Nordtvedt et al., 2008).

In this paper it is presented the network coordinators perspective on factors influencing information sharing within the networks. It is expected that this understanding can bring insight to network's coordinators and organizational managers, who are expected to improve policies, incentives and channels concerning the information sharing process.

2 INTER-ORGANIZATIONAL NETWORKS AND INFORMATION SHARING

Inter-organizational networks can be understood as "institutional arrangements that allow efficient organization of economic activities through the coordination of systematic links established among interdependent firms" (Britto, 2001). One of the links that characterize any types of networks is the sharing of information.

In this paper "information sharing" is defined as the process that allows a greater availability of information to network members. It is a communication process that takes place in a social context, which means that informational needs of individuals are not merely cognitive, but directly related to the labour and social groups to which they belong (Capurro, 2003). Despite the use of the two terms - information and knowledge - in this paper, following the authors researched, we consider that only information can be managed for conceptual reasons (Wilson, 2002).

Researches conducted in different types of inter-organizational relationships, such as supply chain networks (Moberg, Cutler, Gross and Speh, 2002; Madlberger, 2009), strategic alliances (Simonin, 2004), clusters (Mei and Nie, 2007) and innovation networks (Fritsch and Kauffeld-Monz, 2008; Bond III, Houston and Tang, 2008) have showed that information sharing is a dynamic process and its occurrence requires taking into consideration several factors.

In this study the relationship between the following aspects and the information sharing process were investigated:

- Information quality: it was found as a positive influence for the sharing of strategic information between buyers and suppliers. The authors characterize information quality as accuracy, timeliness and properly formatted information (Moberg et al, 2002).
- Top management commitment: it was also found as a positive influence for the exchange of strategic information between buyers and suppliers. In the mentioned study, top management commitment was composed of three aspects: the provision of the necessary resources for the sharing to happen; the sent of right signals to the affected part of the organization; and the convincement of the partners to take part in the sharing (Madlberger, 2009).
- Information and communication technologies: it was also identified the positive relation between the existence of internal technical readiness, referring to inter-organizational systems, and the exchange of operational information, probably due to the fact that operational information is highly formatted and standardized (Madlberger, 2009).
- Organizational size: a research in innovation networks identified that the smaller the company the greater the knowledge transferred to partners (Fritsch and Kauffeld-Monza, 2008).
- Trust in the partners: in the same research mentioned above the authors identified a positive relationship between strong ties (measured as trust among members) and the exchange of information and knowledge in innovation networks.
- Partner's power: the existence of a power asymmetry between the giver of knowledge (upper position) and the receiver is very common. The rate of acquisition of knowledge by the recipient is a key factor to change the relationship of dependency (Easterby-Smith et al. 2008; Martinkenaite 2011).
- Trust in the network's leadership: Moreira and Corvelo (2002, *apud* Moreira, 2007) found that cooperation among small and medium enterprises in Portugal highly depends on the trust of network's

members in their leadership. Therefore, trust in the network's coordination may also be an important factor for the information sharing process to happen.

3 METHODOLOGY

Taking into account the assumptions underlying the qualitative study (Creswell, 1994), this study can be classified as a qualitative research. The main interest is the *meaning* given by the networks coordination representatives about the phenomenon; the result is a *descriptive* understanding of the process and an *inductive* analysis of the data. When it comes to the objective it is an exploratory research and when it comes to the method it is classified as a field research.

Four kinds of Portuguese SME networks that represent important sectors for the Portuguese economy were investigated:

- Cluster representation Network: Molds Industry National Association (CEFAMOL).
- Innovation Network: SME Innovation Network (COTEC).
- Purchase Network: Representation of Travel Agents and Tourism Training (RAVT).
- Network of Associations: Union of Associations of Trade and Services (UACS).

Primary data were collected through semi-structured interviews, in 2011, with representatives of the coordination of each network. The Majority-Partner of RAVT, the Technical Consultant of COTEC, the General Secretary of CEFAMOL and the President of UACS were interviewed. Three reasons explain the chosen actors: the aim to understand the information sharing process from a collective perspective; the role developed by those actors in terms of defining rules and procedures that can influence the information process sharing; the focus of those actors on the global results.

Secondary data were collected through the websites of the respective networks. The data was analyzed qualitatively according to the themes of the research. An interaction between the theoretical material and the data was carried, following Yin's (2001) orientation. As limitations, this study is based on subjective data and does not explore the perception of other actors belonging to the networks.

4 BRIEF DESCRIPTION OF THE NETWORKS

Table 1 indicates the foundation and number of members of the networks researched:

Table 1: Basic characteristics of the networks

Networks	Foundation	Number of members
UACS	1870	15 associations
CEFAMOL	1969	115 members
COTEC	2005	119 members
RAVT	2005	96 branches/ 62 travel agencies

UACS is composed of associations of micro and small enterprises, whose 70 to 80% are family businesses. Its objective is to defend the interests of small businesses regarding the more diverse issues. According to the interviewee, there is no association with the same product or service in the network. In order to join the network, the associations must pay a monthly fee which is calculated considering the number of employees and the social capital.

CEFAMOL is composed of national companies whose head office is located in Portugal. Its objectives are to defend the sector's interests, to get a closer relationship among the companies through the focus on common objectives and goals and to build a sense of orientation to the sector that facilitates its worldly recognition. In order to belong to the network the companies have to apply by filling out a form and pay a monthly fee. According to the respondent, there is a predominance of competitors within the network, but also some complementary competences.

The SME Innovation COTEC Network is composed of firms with at least 200,000 Euros turnover, 10 employees, 3 years in the market and a minimal degree of innovation. Its objectives are to develop skills in SME, to promote public recognition of the ones which are examples of value creation, to establish network among the SME and the large companies and to support specific stages of growth. The degree of innovation is measured by a tool developed for this purpose - the innovation scoring - whose results are analyzed by a specific committee. Membership requires the payment of an annual fee. Moreover, in order to remain in the network, companies must maintain the efforts towards innovation, since they will be evaluated annually with respect to this criterion. COTEC is a multi-sectorial network and the companies are geographically dispersed throughout the country.

RAVT has as objectives the training, promotion, representation and brokerage of the members and their products. The coordination carries a strict evaluation of the member's profile and history regarding aspects such as company's reputation in

the market, absence of debt, possession of licenses, ability to work in a group and real interest in participating in the network. A special attention is given to the geographic scope in order to avoid that a new member reaches the geographical area of another one. In order to become a member, companies have to pay an admission and a monthly fee. The coordination plays a strong influence on the companies' management supervision, as can be seen by the following statement:

By interfering with the negotiations, imposing objectives, we are obviously making a clear business management of their companies. No doubt about that.

5 FACTORS INFLUENCING INFORMATION SHARING

Information quality - Information quality influences information sharing in all networks, according to the respondents. The understanding of the respondents on what quality information is can be summarized into two aspects: rigor (truthfulness, honesty, correct spelling and grammar) and relevance (usefulness).

The respondents mentioned two factors that influence the availability of quality information within a network: the interlocutor's knowledge (CEFAMOL and UACS) and the network coordination's role (COTEC and RAVT).

For CEFAMOL's interviewee, quality information is related to the knowledge possessed by the interlocutor: *usually people will ask for information to those they consider can add on the theme.* UACS' interviewee mentioned the power of knowledge of some individuals within the network, which brings greater credibility to the information transmitted. This aspect is related to the findings of Pérez-Nordtvedt et al. (2008) according to whom the sources become more attractive to the recipient when their knowledge is considered valuable, which also contributes to increase the perceived usefulness of it.

The relevance of networks coordination was also mentioned. For COTEC's interviewee, since network coordination contributes in the selection of network members, it indirectly selects the quality of information that will be available for other members, saving their time:

I will not have time to meet everyone in business, so if I have a consultant that restricts the range by using a criterion that I accept, that is fundamental."

For RAVT, although some members send lower quality information, all information is received by

the coordination and used in order to construct the meaning:

There are members who send lower quality information. But we receive them. Sometimes we joined a piece of information with another one and form the puzzle...

The last statements highlight the role of the coordination acting as a filter and a decoder in order to provide quality information to network members.

Top Management Commitment - Top management commitment was also regarded as an important factor. For CEFAMOL and UACS the importance of top management commitment is due to the small size of companies belonging to the networks. For CEFAMOL's respondent, although technicians have their friendship or familiar relationship and use them to share information, strategic information is shared by top managers and is mainly carried out face-to-face or by phone. Madlberger (2009), in a research focused on the relationship between buyers and suppliers, identified that top management commitment is positively related to the exchange of strategic information. UACS's interviewee highlighted the greater dependence of small enterprises on the presence of top managers.

COTEC and RAVT's interviewees mentioned the importance of top managers acting as teams' leaders and models. According to Dibella and Nevis (1999), the personal involvement of leaders in what they consider important is fundamental to encourage their teams.

Information and Communication Technologies – Despite all the respondents have mentioned the importance of ICT to the information sharing, its relevance seems to be greater to RAVT than to the other networks. According to RAVT's interviewee, ICT is the main channel used to share information within the network. The relevance of ICT is probably related to the facts that the members are geographically dispersed throughout the country and the network has a more vertical coordination, which demands the exchange of more operational information. Moreover, tourism is a globally connected business.

The main ICT used in RAVT are intranet, e-mail and telephone. RAVT also have other ICT as web cam with specific messenger, Skype, e-voice and facebook. The interviewee highlights the goal of the network to become one of the best groups at integrated management information system (an intranet that will link and control the evolution of the business of the allies).

The other respondents also mentioned the importance of ICT to disseminate information (UACS) and to help companies organize their

internal information (COTEC). The main ICT used in the networks are traditional ones such as e-mail and telephone.

Size – COTEC's interviewee highlighted that since small companies have fewer resources, mainly in terms of people, they have more difficulty to allocate members to the network's activities, which is a hindrance to the information sharing process.

For the other respondents, size is not an important factor in terms of information sharing within the networks. According to CEFAMOL's interviewee, size only becomes an important factor when it comes to the relationship between small and large companies. That is the case of Mold Industry, whose companies have little power in relation to customers and supplier due to their size. This fact leaves the smaller ones more vulnerable in terms of sharing relevant information:

Any company that exports molds will send to its partners all the drawings that were made, any projects that was done, i.e.... if the client wants to repeat a pattern...it can design and repeat it with another company.

This view is coherent with Wijk et al. (2008), who identified a positive and significant relationship between size and knowledge transfer, in the sense that larger organizations have greater access to resources.

Trust in partners and in network coordination - Trust in partners and in network coordination is relevant for all networks as a basic condition for the sharing of information to happen.

For CEFAMOL's interviewee the development of trust among the partners is highly dependent on the interpersonal relationship. To COTEC, trust in network coordination can influence the trust of members in one another, i.e., it is believed that the network coordination acts as a seal, an assurance that the companies within the network are trustworthy.

Although the mentioned relevance of trust, it was possible to notice that its presence is influenced by the type of information that is expected to be shared and the type of partner to whom the information is expected to be shared.

For RAVT's respondent there is a lack of trust when the topic is finances, which leads to a lack of willingness to share this kind of information:

It is very serious to get access to their profitability... sharing on money is the most difficult issue...

According to the interviewee, this lack of trust is related to the Portuguese culture. In this matter, Moreira (2007) considers that the Portuguese culture is characterized by the absence of a collective system of trust and the predominance of strong informal neighboring relationships.

The representatives of CEFAMOL, COTEC and UACS highlighted that a protectiveness attitude in relation to information is part of the competitive side of a networking process, as illustrated by the statements below:

If we don't do a good use of the network, we can end up sharing strategic information, which can be harmful... (COTEC).

If there is information that can help a company overcome another one within an association, then, in this case, is perhaps beneficial to some companies do not share it (UACS).

The fear of losing competitive advantage shows the expectancy that the information shared may bring negative effects for the transmitting company (Loebbecke and Van Fenema, 1998 *apud* Tálamo, 2008). This fact encourages the companies to hide part of their information, which is conceptualized by Simonin (2004) as the inability or unwillingness to share knowledge.

Power – According to CEFAMOL and COTEC's interviewees, power is not an important aspect among companies of similar size, but among small and large companies. Although RAVT's interviewee recognizes the presence of differences in power among members who have access to different resources, she mentioned that this is not taken into account in the decision process within the network. For UACS, as mentioned before, power is related to the quality of knowledge of the individuals within the network.

Reciprocity, age, motivation to teach and the coordination' role – In addition to the factors cited in the interview guide, other relevant aspects were also mentioned by the respondents.

According to COTEC's interviewee, the most important factor to boost information sharing among the partners is reciprocity:

Today I know this and I can help my partner, tomorrow I am also counting on the availability of someone who knows to help me.

CEFAMOL's interviewee highlights the age. According to him the oldest companies are more willing to share information and the youngest are more individualistic:

The old ones have a better understanding of the meaning of sharing because they have shared many things together.

Wijk et al. (2008) did not find a relationship between age and inter-organizational knowledge sharing.

For RAVT the entrepreneurs have an intrinsic incentive to share information, which comes from the feeling of contribution offered:

They like to share...They feel gratified to see that they passed something for the network."

However, this intrinsic motivation to teach does not seem sufficient to ensure that the sharing occurs in RAVT, being necessary the constant push of the network's coordination, as shown by the statement below:

If we lose the momentum, the group itself slows down. You need an engine. The engine must always be searching, pulling, informing."

COTEC's interviewee also stresses the importance of the efforts made by the coordination to incentive the members to engage in network's activities and to encourage them to meet one another: *We are the engine, we pull things.*

This fact highlights the importance of the coordination to the process of information sharing. In order to keep the dynamics of sharing, RAVT's interviewee emphasizes the need of constant feedback from the coordination:

If you send an e-mail, phone, trying to say something and nobody answered ... but here there is always a grateful feedback.

Another aspect related to the coordination is the diversification of activities in which the members of the coordination are involved, which provides quicker access to quality information compared to competitors:

I am involved in several projects. I have access to inside information, first hand.

In CEFAMOL the coordination acts through the proposal of projects that aim to join companies with similar interests and competences.

The relevance of the coordination reveals the requirement of professionals with the necessary competences to deal with the diversity of interests presenting in a network, as Wegner e Padula (2010) point out.

6 CONCLUSIONS

Sharing a minimal amount of information is a basic condition to work in cooperation. This study aimed to improve understanding on the factors influencing information sharing within inter-organizational networks. Among the relevant factors found it is possible to cite information quality, top management commitment, trust, network coordination' activities, age, reciprocity and TIC.

Information quality was associated with the presence of individuals whose knowledge is perceived as valuable by other network members and with the network coordination's activities. Top management commitment was mentioned as a relevant aspect especially due to the small size of firms within the networks. It was also associated with the sharing of strategic information. Trust was

found to be associated with the type of information and the type of partner in focus. National culture also appeared as a factor that may influence trust among network members. One aspect that deserves mention is the importance of coordination' activities in relation to information sharing: information filter and decoder; mediator for the development of trust between members; and incentive for members to participate and engage in network activities. Size and power were not cited as relevant aspects to the sharing within the network. Other studies should precede a qualitative and quantitative research with the other network actors in order to deepen the results. It would also make possible the gain of specific knowledge about the sharing of information between companies and their partners.

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