Available online at www.fooddynamics.org

Int. J. Food System Dynamics 2(2), 2011, 114-125

INTERNATIONAL JOURNAL ON FOOD SYSTEM DYNAMICS

Network Experiences Lead to the Adaption of a Firm's Network Competence

Bianka Kühne, Carl Cochez, and Xavier Gellynck

Ghent University, Belgium
Bianka.Kuhne@UGent.be; Carl.Cochez@Ugent.be; Xavier.Gellynck@Ugent.be

Received February 2011 accepted Oktober 2011, available online December 2011

ABSTRACT

Networks become increasingly important as external sources of innovation for firms. Through networks firms get in contact with different actors with whom they can exchange information and collaborate. A firm's ability to be a successful network actor depends on its network competence. This term can be defined as having the necessary knowledge, skills and qualifications for networking as well as using them effectively. In this paper we investigate the link between a firm's network competence and the benefits resulting from it in a two-way direction. First, the network competence of the firm facilitates the adoption of information from other network actors which may lead to innovation success. Second the perceived network benefits shall in their turn influence the network competence of the firm. Consequently, firms will adapt their network strategy corresponding their experiences. The objective of this paper is to investigate the dynamics of networking and its influence on the firm's network competence. For this exploratory research 3 Belgian networks are examined. In-depth interviews are used in combination with semi-structured interview guides to conduct the research. Our results indicate that some firms perceive benefits from their network efforts, for others it is more a burden. Furthermore, in some of our cases we found that positive experiences with clear benefits motivate the firm to enhance its network competence. This is illustrated by the fact that collaborations are more frequently initiated, trust is more easily build, firms are more open to communicate information and the confidentiality threshold is overcome.

Keywords: network competence, innovation, network management

1 Introduction

In the contemporary market, innovation is important for firms to stay ahead of competition, which drives economic growth. Firms can innovate by means of internal resources and external resources. Nowadays, a growing number of firms acknowledge in-house innovation as not being sufficient anymore and recognize collaboration as being more and more necessary. Thus, it is the combination of both the internal and external resources of innovation which becomes increasingly a source of competitive advantage. Powell et al. (1996) perceived an 'innovation network' as a facilitator for organizational learning which act as the locus of innovation. We will follow this point of view to determine a network. Generally, firms and researchers recognize the importance of networks in being a sustainable source of innovation (e.g. Huggins 2010; Ozman 2009). Due to this rising recognition among firms and researchers, also policy makers understand more and more the necessity of innovation networks (Pittaway et al. 2004). The government's policy is increasingly focusing on stimulating collaboration between firms and research institutions[*]. This way, firms have more opportunities to participate in innovation networks. However, having the possibilities to participate in these networks, the firms still need to find the innovation

[*] This university-industry-government approach is called the Triple Helix model by some academics (Leydesdorff and Meyer 2003).

network best fitting their needs. In many cases firms don't know which innovation network is the best for their specific strategic innovation aims. Some network activities are mere a waste of time while other activities bring valuable insights and knowledge into the firm. Consequently, firms need to manage their networking efforts and their relationships with the actors in the network (e.g. Möller and Svahn 2003). Therefore Ritter (1999) introduced the term 'network competence' as the firm's ability to manage its relationships with other actors in the network (Ritter and Gemünden 2003). We state that it is not enough for a firm to have a certain degree of network competence, there is also the need to internalize the knowledge obtained outside the firm. This will be clarified by an open innovation framework.

In the literature emphasize has been put on the determinants of network competence and how it can be measured practically, but there is a lack of understanding about how a firm can improve its network competence (Äyväri and Möller 2008). The objective of our paper is to detect how experiences in networking lead to a firm, which is better able to grasp knowledge - leading to innovation - from the network activities it participates in. We will aim at broadening the knowledge about the dynamics of network competence both theoretically and empirically. This will be conducted by analyzing innovation networks via in-depth interviews.

The paper is structured as follows: First, an open innovation framework is developed. Since the focus of this paper is on the management of innovation networks, the framework will be further narrowed to the concept of network competence. Next, the methodology followed to conduct the in-depth interviews is described and the three networks are portrayed. Subsequently, the results are discussed, conclusions are drawn and future research directions set out.

2 Open Innovation Framework

This paper starts from Chesbrough's (2003) open innovation model in which firms open up their innovation process to their partners in the external environment. Especially SME's can overcome their 'liability of smallness' by opening up their innovation process (Gassmann and Keupp 2007). It is challenging for a firm to coordinate and stimulate the creation of knowledge in a dispersed and open innovation process. Consequently, firms need to manage to a certain extent their innovation network (Gassmann et al. 2010). Next, we will first introduce an innovation framework adapted from Enkel and Gassmann (2008) about the different capabilities needed for open innovation. Further, the focus is narrowed to the management of innovation networks.

2.1 Capabilities needed to successfully innovate

The competence-based view has evolved from the resource-based view in the strategic management literature (Prahalad and Hamel 1990). The resource-based view states that firms in the same industry perform differently because they dispose of different resources and skills (Barney 1991). The competence-based view goes further and tries to identify the way in which a competitive advantage may be obtained through a superior ability to coordinate flows of intellectual assets and other resources within and between firms that function like open systems. This perspective improves the manageability of a firm's competitive advantage (Sanchez and Heene 1997).

For a firm to stay ahead of competition and sustain its competitiveness, innovation is essential (e.g. Gellynck et al. 2007). Firms can innovate by means of internal resources and external resources. If the inputs of innovation processes are to a great extent sourced outside the firm, the broad concept of open innovation is often used in the literature (Chesbrough 2003; Enkel 2010). The potential innovation partners can be other firms, research institutions or consumers. According to Enkel et. al (2009) the future lies in an appropriate balance of the open innovation approach, where the firm uses every available tool to successfully innovate, faster than its competitors while at the same time protecting its intellectual property. The importance of strategic innovation networks is nowadays acknowledged as being a sustainable source of innovation and in addition of competitive advantage for the firm (Huggins 2010). As Schilling (1995) stated, there is a growing recognition of managers for the importance of collaborative R&D networks for innovation. The firm itself can develop an open innovation strategy such as the "Connect and Develop" strategy of Proctor and Gamble (Huston and Sakkab 2006). Besides, also policy makers can provide possibilities to collaborate by initiating and supporting innovation networks (Warmerdam et al. 1999). In the exploratory part of this paper we focus on a subset of innovation networks in which a network orchestrator is the primary actor engaged in the design and management of the innovation network (Batterink et al. 2008).

We first introduce an open innovation framework, prior to going deeper into the management of innovation networks. The open innovation framework, figure 1, is adapted from Enkel and Gassmann

(2008), which they based on Chesbrough's open innovation model (2003). One major adjustment was made on Enkel and Gassmann's framework. We acknowledge that the external commercialization is valuable to the firm but this is not the focus of our research, therefore we leave this out of our open innovation framework.

Starting from the competence-based perspective, firms need to have certain capabilities or competences[†] to be able to innovate. Learned et al. (1969) put forward that the real solution to a firm's success or even to its future growth lies in its ability to create a competence that is truly distinctive. Two parts can be distinguished in the figure, the internal part of the firm, within the dashed lines, and the external environment of the firm outside the dashed lines. The dashed line indicates that the boundary between the firm and its surrounding environment is porous, which facilitates the exchange of information between the inside and the outside of the firm (Chesbrough 2003). As is shown in the framework, we focus on two main capabilities a firm needs, to successfully innovate:

A) Network Competence

Internal resources are not sufficient anymore for a firm to be a successful innovator nowadays. Firms can use knowledge from different actors outside the firm (Chesbrough 2003). There is the need of a certain firm competence to be able to grasp the external knowledge from innovation networks in an effective way. Gemünden and Ritter (1997) were the first to define the concept of network competence as the firm's ability to manage its relationships with other actors in the network. There are several other terms which have similar meanings such as net management capabilities, alliance capability, networking capability or networking abilities, see Äyväri and Möller (2008) for a good overview. We will further use network competence because it is constructed out of both firm-level capabilities as well as individual level abilities and skills (Ritter and Gemünden 2003). The concept was several times empirically tested and improved in the past (Äyväri and Jyrämä 2007; Ritter 1999; Ritter and Gemünden 2003; Ritter et al. 2002). In addition, network competence was elaborated which lead to the important conclusion that a firm's network competence is positively related to innovation success (Ritter and Gemünden 2003).

Firms learn from innovation networks by participating in them, this is of course not a one way process but more a dynamic process, shown by the two-arrow loop in figure 1. The dynamics of network competence will be further elaborated in this paper in the next section.

[†] According to Hafeez et al. (2002) a firm competence is a valuable, unique, collective and more flexible firm capability.

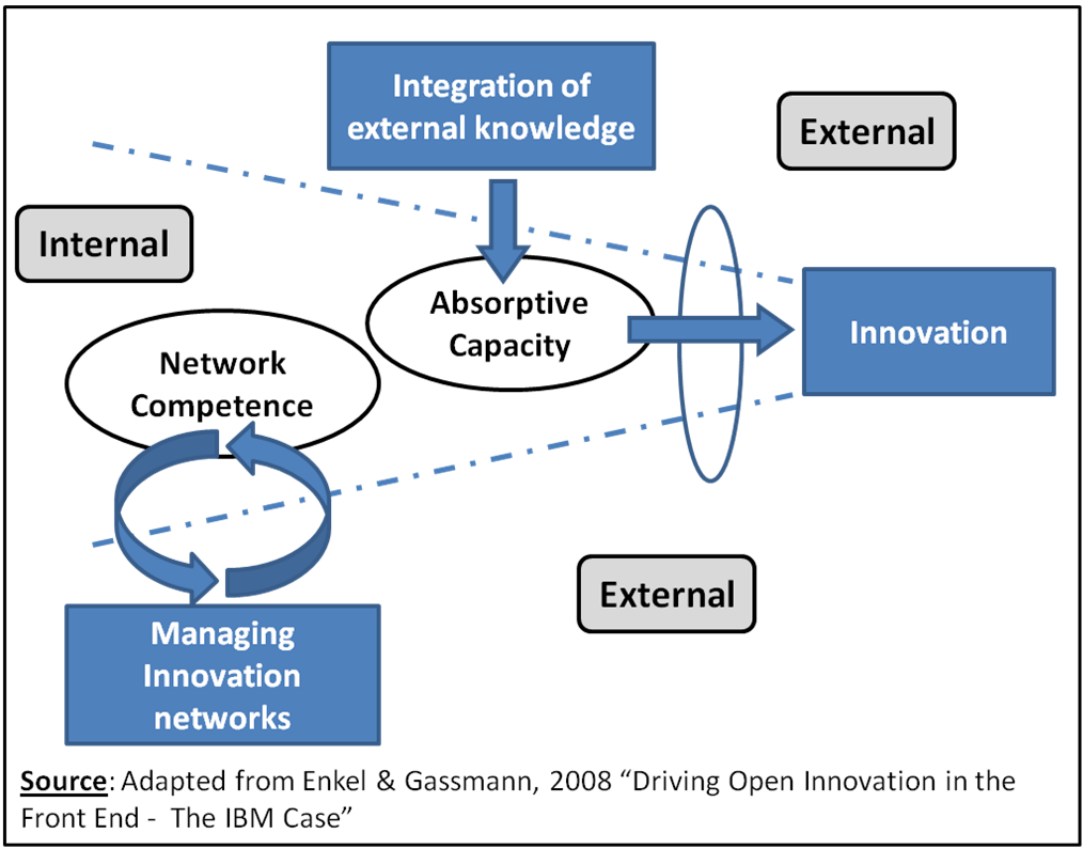

Figure 1. Open Innovation Framework: Capabilities needed to successfully innovate

B) Absorptive Capacity

Network competence alone is not enough to grasp successfully the knowledge derived from external partners and more specifically from innovation networks. The ability to integrate best practices internally is critical to a firm's ability to build competitive advantage (Szulanski 1996). A firm needs to have first internal knowledge before it is capable of developing new knowledge by combining the internal with the external knowledge. Powell et al. (1996) found that what can be learned is crucially affected by what is already known. The absorptive capacity makes it possible to integrate the external knowledge. Assuming a satisfactory level of knowledge overlap to guarantee effective communication and interactions across individuals, who each possess diverse knowledge, will augment the organization's capacity for making novel linkages beyond what an individual can achieve (Simon 1985). An organization's absorptive capacity will depend on the absorptive capacities of the individual members, but it is not simply the sum. The absorptive capacity not only refers to the acquisition of the knowledge but also to the exploitation of the knowledge. Thus, to understand the sources of a firm's absorptive capacity, it is important to focus on the structure of communication between the external environment and the organization, as well as on the character and distribution of expertise within the organization (Cohen and Levinthal 1990). Thus, it becomes clear that being able to network effectively is only one part of the open innovation process, which must be followed by the absorption and spreading of the learned knowledge inside the firm. In combination with the internal resources this can eventually lead to innovation (Tsai 2001).

Since the focus of this paper is on network competence, this concept will be further described in the next section.

2.2 Management of innovation networks

Small firms can overcome their resource-based constraints by taking part in innovation networks (Inkpen and Pien 2006). As indicated in the introduction, the innovation network perception of Powell et al. (1996) will be further used in the paper. Participating in innovation networks is time-consuming and does not bring immediate results in most cases. Some network activities are mere a waste of time while other activities bring valuable insights and knowledge into the firm. Consequently, this evokes that firms need to manage their networking efforts to a certain extent. "Efficient networking no longer implies optimization of single relationships independently of each other, but instead network management

requires the management of synergies and coordination of all relationships in an efficient way" (Gemünden et al. 1996: p. 460).

Some academics use the term network management in a network level perspective rather than in a firm-level perspective (e.g. Rampersad et al. 2010). They look at how a network can be managed effectively. However, in this paper the focus lies on the firm-level. The aim of the firm manager is to leverage the knowledge inside the firm by learning from the other network actors. Thus, we do not focus on how the network is managed as such, but on how a firm manages its relationships with its innovation networks.

A firm's ability to develop and manage successfully its relationships with other actors is an important source of competitive advantage (Ritter et al. 2004) and contributes to the innovation success of the firm (Lorenzoni and Lipparini 1999; Ritter and Gemünden 2003). To effectively manage its network relationships a firm needs certain capabilities (e.g. organization, evaluation, collaboration, communication capabilities), the combination of these capabilities form the network competence of the firm (Gemünden and Ritter 1997; Hafeez et al. 2002).

Capabilities can be perceived as a set of routines. In order to constitute a firm competence, the capabilities must have reached some threshold level of practiced or routine activity (Helfat and Peteraf 2003). According to Helfat and Peteraf (2003) a capability has a lifecycle, from the founding stage over the development stage until the maturity stage. Improvements are derived from a complex set of actors that include learning-by-doing of individual team members and the team as a whole, intentional attempts at process improvement and problem-solving, as well as investment over time. Network competence as a valuable, unique, collective and more flexible networking capability can be approached in a similar way (Hafeez et al. 2002).

The network competence of the firm makes it possible to learn from innovation networks. For the firm members who participate in innovation network activities this learning leads to positive or negative experiences (illustrated by figure 2) indicating clearly the dynamics of network competence. According to their perception and the outcome of the learned knowledge, the firm members will adapt, consciously or unconsciously, the network competence of their firm. Kale and Singh (2007) found that firms which are better able in learning and accumulating network management practices and know-how have greater networking success.

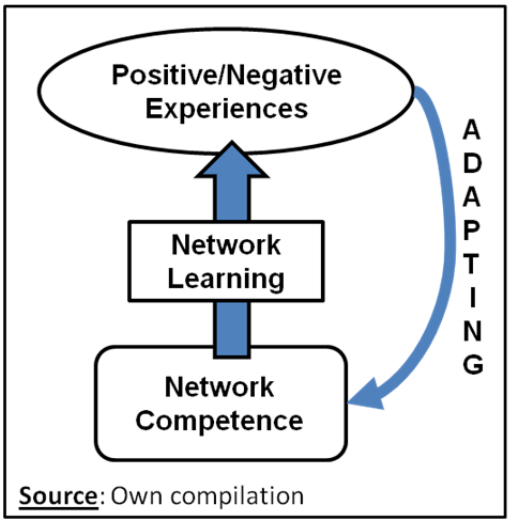

Figure 2. Dynamics of network competence

We state that firms will improve their network competence according to their experiences. As described above, network competence is constructed out of firm-level capabilities as well as individual level abilities. Thus, the experiences will adapt both. This way, in future network collaborations firms are better able to understand their networking needs and the way they should behave in innovation networks. We will further try to find empiric proof for this statement.

3 Research design and method

A firm tries to manage its innovation system, which means the strategic environment within which the firm and its innovation process are embedded (Kirner et al. 2009; Kühne 2011). This is illustrated by figure 3. The focal firm has relationships with actors in formal networks (bold arrows) and also relationships with other actors in its innovation system (thin arrows). Under a formal network we understand a network which is systematically established and organizationally structured by a network orchestrator. As the focus of this paper is on the relationships with actors in formal innovation networks, we will not have a look at the other relationships in the firm's innovation system. Thus, we base the management of innovation networks on the assumption that firm managers can decide in which formal networks the firm participates and to what extent the firm collaborates with other actors in these networks. For example in figure 3 the focal firm collaborates in network A with two actors, in network B with one actor and does not participate in network C.

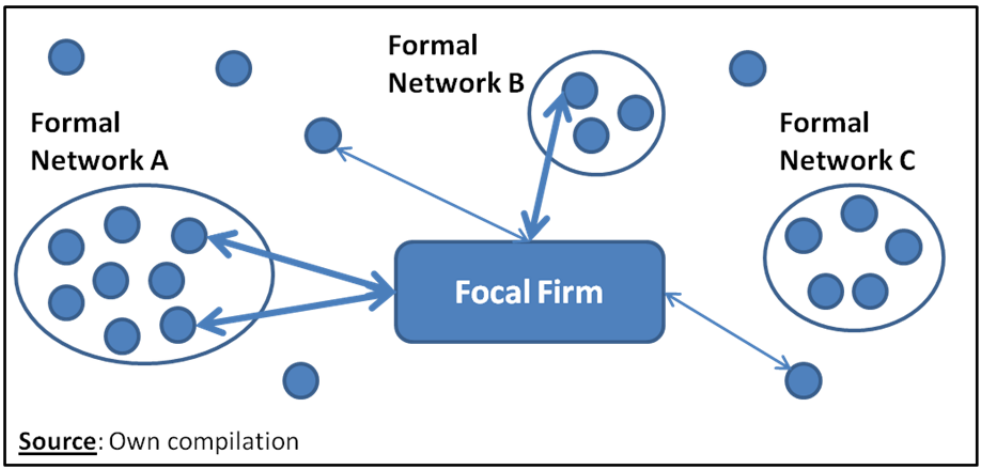

Figure 3. The focal firm's innovation system

Nodes represent single actors
Bold arrows indicate relationships with actors in formal networks
Thin arrows indicate relationships with other actors of the focal firm's innovation system

Following, Miles and Huberman (1994), who put forward that researchers should use qualitative research designs if an in-depth understanding is needed and if the opinions of interviewees are important, a qualitative case study approach is applied. We selected formal networks which are focusing on learning and innovation in the Flemish region of Belgium. For confidentiality reasons the name of the analyzed networks will not be mentioned and the name "NetX" will be used instead.

First, we started by creating a comprehensive topic list, based on the literature, which was further transformed in an interview guide. Secondly, there was an initial telephone contact with the innovation network orchestrators to ask them whether they are interested to participate. Three innovation networks, focusing on learning and innovation, appeared to be interested to participate in our study. The third step was arranging a date on which we could interview the network orchestrators at their premises. Then finally per network two key members were interviewed. These key members were the network orchestrators and/or experienced participants. Each interview took about 1.5 hours. All interviews were audio-recorded and transcribed.

In the next section the three innovation networks are described and compared and some preliminary results are drawn.

4 Results and discussion

In this section first an overview is given of the explored case studies. Pittaway et al. (2004) assumed that a different network configuration could have a different impact on innovation. Anyway there is no such thing as a superior network configuration but rather a superior one for a certain kind of firm (Gemünden et al. 1996). Furthermore Inkpen and Tsang (2005) state that when studying network behavior, it is important to first examine the nature of the network type concerned and how it differs from other types. Thus, the different network characteristics must suit the specific strategic innovation aims of the firm. Consequently, the different characteristics of the innovation networks under study will be analyzed and compared first. In table 1 the differences and similarities between each innovation network are listed.

Net1 was launched by the government in cooperation with the food industry in 2005 and is subsidized by the Flemish government. Net1 aims at strengthening the competitive power of Flemish food firms by stimulating innovation. The focus lies on the collaboration of food firms, especially SMEs[‡], and research institutions by means of collaborative projects. In most of these projects, basic research is conducted within research institutions in close collaboration with the participating firms. At a later stage the results are implemented in the participating firms. All kinds of firms related to the food sector are working together, competitors as well as non-competitors, e.g. producers, technology providers, raw material suppliers, packaging firms, etc.. This way the network facilitates the development of knowledge of its member firms. Secondly, Net1 wants to spread the learned knowledge and ascertain the food firms actually use the knowledge. The latter is called knowledge valorization. Net1 has known a steep increase in members and project participants since their inception. As the network is quite young yet, the results are starting to get visible.

Net2 started as a project of the Chamber of Commerce in 1990 under the form of a learning network. The aim is that CEO's or key managers of SMEs can share experiences and raise problems they struggle with, within a small group of 10 – 15 people. The group is guided and moderated by 2 "godfather(s)" and/or "godmother(s)", who work in larger firms and have already a lot of field experience. First, godfathers/godmothers are trained in advance, to be sure that they have a clear understanding about what is expected from them and to learn them how to address certain issues. Then, the first group activity is a start-up weekend with all participating firms of the group together with the godfathers/godmothers. The meetings are monthly and the themes discussed on these meetings are chosen by the participants. Every participant is free to utter his/her opinion, give suggestions and share experiences within the group.

An important issue is the composition of the groups. The network orchestrator watchfully composes the group out of non-competing firms mostly from different sectors. After the start-up weekend and some monthly meetings the group members get to know each other and establish a more open relationship. During the 20 years of existence the project concept has been proven to be successful and thousands of Flemish entrepreneurs took part in the project.

Net3 started in 2003 by a university and was funded by a governmental institution. The aim of the network was to establish a low threshold platform for SMEs to conduct research in collaboration with the

[‡] SMEs: Small and Medium Sized Enterprises

university. Thereby, the theoretical knowledge of the university was translated into more practical knowledge for the firm. If a firm has a certain technological problem, it contacts the network orchestrator. In most cases the network orchestrator first carries out a study visit in the firm and will then try to come up with a solution of the technological problem. This cooperation is kept highly confidential. Thus the collaboration between firm and university is mainly bilateral, group projects are rare.

Table 1.
Comparison of innovation network characteristics

	Net1	Net2	Net3
Focus	Collaborative innovation	Learning from each other and exchanging information between each other	Technological problem solving
Strategy	Bringing people (firms and research institutions) together, mostly within collaborative projects	Group sessions guided by experienced employees from large firms	Bilateral projects between firm and university
Sources of topics	• Steering committee with large firms • Questionnaires	The topics are discussed during the sessions.	Technological problems of single firms.
Funding	80% government funded	75% government funded	80% government funded
Sector	Broad food sector	All sectors	Specific branch of the food industry
Age	5 years	20 years	7 years

All three networks are stimulating learning and innovation within firms and especially within SMEs, but they have a different strategy to accomplish this. In Net1 and Net2 firms share knowledge and experiences and work together in small groups. However, their focus is on different aspects. In Net1 the focus lies on research, in contrast with the focus of Net2 which is on sharing experiences about management practices. In Net3 only bilateral technological collaboration is done between a firm and a research institution. Further, while Net1 and Net3 are relatively young networks, Net2 is an older network with more experience. These differences should be kept in mind by the analysis of the experiences firms have in the innovation networks.

The network orchestrator of Net1 stressed the fact that firms really learned from their networking experience. The following was mentioned in one of the interviews: “At the beginning of the first collaborative research projects the firms and research institutions did not actually collaborate at all, during the project the cooperation increased slowly. But at the end of the 4-year project there was a huge difference in the collaboration attitude of the firms. Now, some members are again involved in new 4-year projects and the cooperation in the project group is considerably different. The collaboration between firms among each other and between firms and research institutions started to improve from day 1 of the research project.” This shows that the experience firms gained previously changed the behavior of the participating firm members in follow-up project groups. In the literature a similar result was found by Gulati (1999). He proved that firms are more eager to start new collaborations if they worked together with other firms in the past. Consequently, it becomes clear that firms experience that being more open towards the other actors, generates much more knowledge than hiding information from one another.

In Net2 the participants of a group are carefully put together, the network orchestrator makes sure that there are no competitors in the same group. The participating firms come from different industries, which according to Peters et al. (2010) increases the learning possibilities due to the combination of different views. Furthermore Enkel et al. (2009) stated that one of the most interesting sources of external innovation is information from other sectors, as is known that first a certain knowledge base is needed before grasping new knowledge. By combining experiences of other sectors a recombination is likely to happen.

Regarding the success of Net2 the network orchestrator told us a story about one firm in which the participation in Net2 was obligatory for managers to get promoted. This shows obviously how much importance this firm adjusts to Net2. Furthermore there is a steep growth in firms that are interested to participate in a new group session. Thus we may assume that Net2 seems to be a success for certain firms.

In Net2's group sessions, trust between the participating firms appears to be the key to learn from each other. First, because there are no competitors in the same group trust relationships are easier developed. Second, after the start-up weekend and maybe another informal meeting trust is also more easily build between the firms. Inkpen and Tsang (2005) argue that when trust is high, firms are more likely to invest resources in learning because of the perception that their partners will not misuse the spread knowledge. In the literature, trust is recognized as the most important success factor that supports innovation (e.g. Ameseder et al. 2008). According to Ritter and Gemünden (2003) trust building and maintaining is one of the social qualifications of network competence. Thus, this indicates that collaboration experience enhances the network competence of the firm.

One of the interviewees of Net3 refers to the fact that external knowledge sharing within some food branches is quite uncommon. The typical composition of a certain product is highly protected. This restrains certain food firms from collaborating with research institutions to improve the composition of their core products. In other words, confidentiality is very important for these firms. As Net3 only has bilateral contacts with firms to solve certain problems, keeping confidentiality is much easier than in collaborative projects. Further, the network orchestrator noticed that firms that once participated are now frequent users of the technological advice Net3 offers. Thus, due to their participation in Net3, the firms overcame this confidentiality threshold. Sharing confidential information appears to be one of the tasks of network competence (Ritter and Gemünden 2003). Thus, again an indication that collaboration experiences improve the firm's network competence is found.

In every explored innovation network at least one interviewee mentioned the fact that there are still member firms that almost never participate in one of the networking activities, contrary to other firms that frequently join networking activities.

These results are still preliminary as only the key member's point of view in the network is analyzed.

5 Conclusion and Research Directions

Järvensivu and Möller (2009) suggested that it would be useful to combine aspects of network management and the competence-based view. Hence, network management was integrated in Chesbrough's (2003) open innovation model. We started by adapting Enkel and Gassmann's (2008) open innovation framework in which two important tasks are set out which a firm needs to fulfill if it wants to use external knowledge in a successful way. A firm needs to be able to manage its innovation system and combine this with the integration of the external knowledge. Therefore, two main capabilities are necessary: network competence and absorptive capacity. We state that the combination of a high absorptive capacity together with a high network competence is necessary for a firm to successfully grasp and translate external knowledge into innovation. This integrative view elaborates the understanding about how firms adapt and create value from networks.

Further in the paper, we focused more on the management of innovation networks. Network management is an important future issue to strengthen the competitive position of a firm (Jarvensivu and Moller 2009). The fundamental drive of management is to improve value creation (Pfeffer and Salancik 1978), thus the better a firm can manage its network relationships the better it is able to catch valuable information from its innovation system. To be able to manage the network there are specific capabilities needed, which form network competence.

We did a first attempt to open the black box of how to improve the network competence of a firm by focusing on the question of how network experiences lead to the improvement of the firm-level capabilities as well as the individual level abilities of network competence. To do so we explored three innovation networks and interviewed two key members of each network.

Since there is no such thing as a superior network configuration but rather a superior one for a certain kind of firm (Gemünden et al. 1996), it is not our aim to conclude which of the three investigated innovation networks in Flanders is the best. The interview results provide first insights on how the experiences firms get by participating in these innovation networks lead to an adaptation of the network competence of the firms. Finally, we may conclude that firms actually learn from their experiences. This is illustrated by the fact that collaborations are more frequently initiated, trust is more easily build, firms are more open to communicate their experiences and information and the confidentiality threshold is overcome.

Although, the amount of networking possibilities firms have, there are still member firms in Net1 and Net3 that never participated in one of the networking activities, contrary to other firms that frequently join networking activities. This was also found by Gemünden et al. (1996), who assume that this is due to

significant differences in the firms' experience and network competence. We can agree on this, as experience turned out to enhance collaboration, open communication and trust, and accordingly enhance the network competence of the firm.

In upcoming research on the networks presented in this paper, the point of views of other network members will be gathered and included to the analysis. To get a more comprehensive understanding of the innovation network and broaden the perspective, interviews will be extended to the business community, the participating research institutions and the supporting policy makers of the innovation network.

Furthermore, it can be interesting for future research to detect how the different characteristics of the innovation networks lead to different innovation outcomes in the firm. We assume that this depends on the firm-level capabilities and individual level abilities of the firm's network competence. This way it could be possible to match innovation networks with certain firm characteristics. In addition, further research should address the question whether network management really is an issue for firms, in other words do firm managers actually structure their networking efforts or not? Especially for SMEs this is important, because on the one hand, they have less internal resources and would benefit most from innovation networks. On the other hand, they are most constrained in time, which obstructs them to put enough efforts in network activities.

Acknowledgements

The research leading to these results has received funding from the European Union Seventh Framework Program (FP7/2007-2013) under grant agreement n° 245301 NetGrow - "Enhancing the innovativeness of food SMEs through the management of strategic network behavior and network learning performance". The information in this document reflects only the authors' views and the Community is not liable for any use that may be made of the information contained therein.

References

Ameseder, C. O., Meixner, O., Haas, R., Fritz, M., and Schiefer, G. (2008). "Measurment of the importance of trust elements in B2B agrifood chains an application of the analytic hierarchy process. ." *Journal on Chain and Network Science* **8**(2): 153-160.

Äyväri, A., and Jyrämä, A. (2007). The Networking Abilities of Craft Entrepreneurs. 23rd IMP Conference. Manchester.

Äyväri, A. and Möller, K. (2008). "Understanding relational and network capabilities - a critical review." 24th IMP conference in Uppsala, Sweden.

Barney, J. (1991). "Firm Resources and Sustained Competitive Advantage." *Journal of Management* **17**(1): 99-120.

Batterink, M. H., Wubben, E. F. M., Klerkx, L., Gardère, E., and Molegnana, F. (2008). How do innovation brokers orchestrate SME-innovation networks in agri-food? 8th Chain Conference. Ede.

Chesbrough, H. W. (2003). "The era of open innovation." Mit Sloan Management Review **44**(3): 35-41.

Cohen, W. M., and D. A. Levinthal (1990). "Absorptive-Capacity - a New Perspective on Learning and Innovation." *Administrative Science Quarterly* **35**(1): 128-152.

Enkel, E. (2010). "Attributes required for profiting from open innovation in networks." International Journal of Technology Management (in press).

Enkel, E., and O. Gassmann (2008). Driving Open Innovation in the frond end. The IBM case. St. Gallen & Friedrichshafen.

Enkel, E., Gassmann, O., and Chesbrough, H. (2009). "Open R&D and open innovation: exploring the phenomenon." *R & D Management* **39**(4): 311-316.

Gassmann, O., Enkel, E. and Chesbrough, H. (2010). "The future of open innovation." *R & D Management* **40**(3): 213-221.

Gassmann, O., and Keupp, M. M. (2007). "The competitive advantage of early and rapidly internationalising SMEs in the biotechnology industry: A knowledge-based view." *Journal of World Business* **42**(3): 350-366.

Gellynck, X., Vermeire, B., and Viaene, J. (2007). "Innovation in food firms: contribution of regional networks within the international business context." *Entrepreneurship and Regional Development* **19**(3): 209-226.

Gemünden, H. G., and Ritter, T. (1997). Managing technological networks: the concept of network competence. Relationships and Networks in International Markets. H. G. Gemünden, T. Ritter and A. Walter. Oxford, Elsevier Science**:** 294 - 304.

Gemünden, H. G., Ritter, T., and Heydebreck, P. (1996). "Network Configuration and innovation success: An empirical analysis in German high-tech industries." *International Journal of Research in Marketing* **13**: 449-462.

Gulati, R. (1999). "Network location and learning: The influence of network resources and firm capabilities on alliance formation." *Strategic Management Journal* **20**(5): 397-420.

Hafeez, K., Zhang, Y. B., and Malak, N. (2002). "Core competence for sustainable competitive advantage: A structured methodology for identifying core competence." Ieee *Transactions on Engineering Management* **49**(1): 28-35.

Helfat, C. E., and Peteraf, M. A. (2003). "The dynamic resource-based view: Capability lifecycles." *Strategic Management Journal* **24**(10): 997-1010.

Huggins, R. (2010). "Forms of Network Resource: Knowledge Access and the Role of Inter-Firm Networks." *International Journal of Management Reviews* **12**(3): 335-352.

Huston, L., and Sakkab, N. (2006). "Connect and develop: Inside Procter & Gamble's new model for innovation." *Harvard Business Review* **84**(3): 58-+.

Inkpen, A. C., and Pien, W. (2006). "An examination of collaboration and knowledge transfer: China-Singapore Suzhou Industrial Park." *Journal of Management Studies* **43**(4): 779-811.

Inkpen, A. C., and Tsang, E. W. K. (2005). "Social capital, networks, and knowledge transfer." *Academy of Management Review* **30**(1): 146-165.

Jarvensivu, T., and Moller, K. (2009). "Metatheory of network management: A contingency perspective." *Industrial Marketing Management* **38**(6): 654-661.

Kale, P., and Singh, H. (2007). "Building firm capabilities through learning: The role of the alliance learning process in alliance capability and firm-level alliance success." *Strategic Management Journal* **28**(10): 981-1000.

Kirner, E., Kinkel, S. and Jaeger, A. (2009). "Innovation paths and the innovation performance of low-technology firms-An empirical analysis of German industry." Research Policy **38**(3): 447-458.

Kühne, B. (2011). Understanding innovation capacity in food chains: The European traditional food sector. Faculty of Bio-science Engineering. Ghent, Ghent University. **PhD**.

Learned, E. P., Christensen, C., Andrews, K., and Guth, W., Eds. (1969). Business Policy: Text and Cases. Homewood, IL, R. D. Irwin

Lorenzoni, G., and Lipparini, A. (1999). "The leveraging of interfirm relationships as a distinctive organizational capability: A longitudinal study." *Strategic Management Journal* **20**(4): 317-338.

Miles, M. B., and Huberman, A. M. (1994). Qualitative data analysis: An expanded sourcebook. Beverly Hills, CA, Sage.

Möller, K., and Svahn, S. (2003). "Managing Strategic Nets: A Capability Perspective." Marketing Theory **3**(2): 209-234.

Ozman, M. (2009). "Inter-firm networks and innovation: a survey of literature." *Economics of Innovation and New Technology* **18**(1): 39-67.

Peters, L. D., Johnston, W. J., Pressey, A. D., and Kendrick, T. (2010). "Collaboration and collective learning: networks as learning organisations." *Journal of Business and Industrial Marketing* **25**(6): 478-484.

Pfeffer, J., and Salancik, G. R. (1978). The external control of organizations: A resource dependence perspective. New York, Harper and Row.

Pittaway, L., Robertson, M., Munir, K., Denyer, D., and Neely, A. (2004). "Networking and innovation: a systematic review of the evidence." *International Journal of Management Reviews* **5-6**(3-4): 137-168.

Powell, W. W., Koput, K. W., and SmithDoerr, L. (1996). "Interorganizational collaboration and the locus of innovation: Networks of learning in biotechnology." *Administrative Science Quarterly* **41**(1): 116-145.

Prahalad, C. K., and Hamel, G. (1990). "The Core Competence of the Corporation." Harvard Business Review **68**(3): 79-91.

Rampersad, G., Quester, P., and Troshani, I. (2010). "Managing innovation networks: Exploratory evidence from ICT, biotechnology and nanotechnology networks." *Industrial Marketing Management* **39**(5): 793-805.

Ritter, T. (1999). "The networking company - Antecedents for coping with relationships and networks effectively." *Industrial Marketing Management* **28**(5): 467-479.

Ritter, T., and Gemünden, H. G. (2003). "Network competence: Its impact on innovation success and its antecedents." *Journal of Business Research* **56**(9): 745-755.

Ritter, T., Wilkinson, I. F., and Johnston, W. J. (2002). "Measuring network competence: some international evidence." *Journal of Business and Industrial Marketing* **17**(2/3): 119-138.

Ritter, T., Wilkinson, I. F., and Johnston, W. J. (2004). "Managing in complex business networks." *Industrial Marketing Management* **33**(3): 175-183.

Sanchez, R., and Heene, A. (1997). "Reinventing Strategic Management: New Theory and Practice for Competence-based Competition." *European Management Journal* **15**(3): 303-317.

Schilling, M. (1995). Strategic Management of Technological Innovation. New York, McGraw Hill/Irwin.

Simon, H. A. (1985). What we know about the creative process. Frontiers in creative and innovative management. R. Kuhn. Cambridge, MA: Ballinger**:** 3-22.

Szulanski, G. (1996). "Exploring internal stickiness: Impediments to the transfer of best practice within the firm." *Strategic Management Journal* **17**: 27-43.

Tsai, W. P. (2001). "Knowledge transfer in intraorganizational networks: Effects of network position and absorptive capacity on business unit innovation and performance." *Academy of Management Journal* **44**(5): 996-1004.

Warmerdam, J., van der Meersch, W., Papadaki-Klavdianou, A., Krüger, K., and King, R. (1999). Innovation and training in the agribusiness complex. Thessaloniki.