

MANAGING INTER-FIRM COLLABORATION IN THE FUZZY FRONT-END: STRUCTURE AS A TWO-EDGED SWORD

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Literature on innovation emphasises the potential for organisations to collaborate and network instead of carrying out innovation individually. Integrating suppliers, customers and other organisations into the innovation process is perceived as a key to success in innovation management (Chesbrough, 2003). Furthermore, the management of the initial phase of the innovation process has proven vital to the overall innovation success (Kim and Wilemon, 2002a,b). Although the merits of network-based innovations are widely acknowledged, the managerial challenges of the initial integration of external organisations in an innovation network are somewhat neglected in the literature. The aim of this paper is hence to address the challenges that an organisation faces when integrating a plurality of suppliers, customers and other organisations into the Fuzzy Front End of the innovation process.

Keywords: Innovation management; fuzzy front-end; inter-firm; inter-organisational; collaboration.

Introduction

The innovation process is typically divided into a series of succeeding stages where the Fuzzy Front-End is the first stage to encounter. A wide stream of research applies an intra-firm paradigm and focuses on the manufacturer and how this organisation can control and influence the environment (Cooper, 2005; Cooper and Kleinschmidt, 1987). In contrast to this approach, the paradigm of open innovation and inter-firm collaboration has become increasingly influential in

the recent decade (Chesbrough, 2003). In this paradigm, the locus of innovation is considered to be located in the interstices between firms (Powell *et al.*, 1996). Companies can engage in such inter-firm collaborations in regard to many different activities, e.g., innovation, logistics, marketing and sales (Moller and Halinen, 1999; Hagedoorn, 2002; Nooteboom, 2004). The focus of this paper is on inter-firm collaboration where innovation is the main part of the collaborative effort. Innovation in this respect refers to the research and development (R&D) activity devoted to increasing scientific or technical knowledge and the application of that knowledge to the creation of new and improved products and processes (Hagedoorn, 2002).

Contractual innovation partnerships have been widely researched (Ahuja, 2000; Child *et al.*, 2005; Faems *et al.*, 2005; Hagedoorn, 2002; Nooteboom, 2004; Powell *et al.*, 1996; Sampson, 2007; Gilsing *et al.*, 2007). The research has provided useful insights into the dynamics and tendencies in formal R&D partnering relations. This paper, however, focuses on collaboration between independent companies **prior** to such formal agreements as joint ventures or other contractual agreements. Thus, the focus is on how a focal firm can orchestrate a loosely coupled network (Dhanaraj and Parkhe, 2006). While Dhanaraj and Parkhe (2006) focus on the entire innovation process, the present article focuses on the first phase of the innovation process, which is often referred to as the Fuzzy Front-End (FFE) due to its intangible and ambiguous nature (Brun *et al.*, 2009). The FFE-phase consists of idea generation, product definition, and project evaluation (Murphy and Kumar, 1997). It is where the innovation process is set-off by allowing new ideas for incremental or radical product or service concepts to emerge (Richard and Donald, 2008; Verworn *et al.*, 2008). Such early involvement of suppliers and customers has been shown to reduce the development time (Guptar and Wilemon, 1990, Sanches and Perez, 2003).

Management of FFE in an inter-firm setting has only been examined scarcely (Jukka, 2008), and hence the research objective of the paper is to investigate how management methods applied in an intra-firm FFE setting can be transferred to an inter-firm FFE setting. To answer this question, a longitudinal in-depth case-study of a focal firm and its innovation partners is performed, in order to examine the characteristics and structure of the FFE phase in an inter-firm perspective.

In an intra-firm setting the early FFE phase is often carried out with a low degree of formalization, in order to facilitate creative input. However, as illustrated in the present case study of an inter-organisational setting, the unstructured process and low degree of formalization in the early FFE can entail an unstable network, since innovation partners might discard the project. We suggest that as the FFE process becomes an inter-firm collaboration, the management of the FFE also changes and calls for new management practises of this phase.

The article identifies two types of structure relating to the degree of formalization which should be considered: the structure of **content** and the structure of **process**. The outcome of the case study analysis is a number of preliminary considerations concerning the balance of these two types of structure.

In the following section, the methodological approach is made explicit. Secondly, the literature on the inter-firm collaboration dichotomy is presented. Thirdly, the traditional intra-firm FFE phase is characterized. Finally, the case is analyzed in relation to the management methods applied in the FFE, followed by a presentation of findings and preliminary considerations.

Inter-Firm Collaboration

Powell (1990) presents a taxonomy of three overall forms of collaboration: hierarchy, networks and markets.

Table 1 illuminates the essential differences between the three kinds of collaboration. The distinction between hierarchy and network is equivalent with the difference between intra-firm and inter-firm relations. It should be noted that this may also be the case on an inter-unit level within an organisation. Even though some sort of hierarchy might exist between two companies in a network (in terms of size, intellectual properties, economic and staff resources, etc.), the normative basis, communication, tone, etc. will differ from the intra-firm and inter-unit collaboration. We argue that these differences have significant theoretical and managerial implications for the handling of the FFE, and intra- and inter-firm settings can therefore be assumed to set different standards and demands for a collaborative process.

Table 1. Three forms of Collaboration (Powell, 1990).

	Hierarchy/Intra-firm collaboration	Network/Inter-firm collaboration	Market
Normative basis	Employment relationship	Complementary strengths	Contract, property rights
Means of communication	Routines	Relational	Prices
Tone or climate	Formal/bureaucratic	Open-ended, mutual benefits	Precision and/or suspicion
Actor preferences or choices	Dependent	Interdependent	Independent
Methods of conflict resolution	Fiat/supervision	Reciprocity and reputation	Haggling

The inter-firm network is not founded on the same degree of routines and formal tone as the hierarchy, and the direct means of power, such as fiat and supervision, will not be feasible in a network set-up (Powell, 1990). The reciprocity, interdependence and complementary relationship between the companies involved in the network make the sources of influence and power much more subtle, and for this reason, Orton and Weick (1990) refer to such an inter-dependent collaboration as ‘a loosely coupled system’.

In spite of these challenges, Chandy and Tellis (1998) are able to show that by gathering information from external organisations, the company obtains a better understanding of current and potential customer needs. Furthermore Powell et al. (1996: 118) state that:

“Sources of innovation [...] are commonly found in the interstices between firms, universities, research laboratories, suppliers, and customers”

The characteristics of the three forms of collaboration illustrate the challenges confronting a focal company which initiates an inter-firm network. The focal company does not have the benefit of being able to impose a given behavior on the other participants, as would be the case in a hierarchy. Furthermore, it does not have a contract to rely on in case of inexpedient behavior of the other participants, as it is often the case in a market relationship (Child et al., 2005). Without a written contract or an employment relationship, there is a permanent risk that the other participants will exit from the network (Dhanaraj and Parkhe, 2006).

However, the hybrid between markets and hierarchies also poses some opportunities to the focal company. If the focal company manages to convince the other participants in the network about the potential in the network collaboration, the network can prove to be an adaptable and flexible form of organisation that is light on its feet (Powell, 1990; Provan and Kenis, 2008). A sense of mutual benefits, complementary strength and reciprocity will be a substantial driver for the collaboration in the network. In order to succeed in creating this sense of communality and common goal, the focal company has to be able to push the right buttons.

The Fuzzy Front-End

The Fuzzy Front-End (FFE) is the first phase of the innovation process, and initiates the process by producing ideas for incremental or radical product or service concepts. The term “Fuzzy” refers to the intangible and ambiguous nature of this particular stage of the innovation process (Brun et al., 2009; Brun, 2008). There are uncertainties and unknown issues concerning the needs of the customers;

uncertainty about what competitors are doing, and uncertainty about which product and process technologies should be used. Uncertainty concerning strategy alignment, required resources, capabilities and company limits may prevent an opportunity from going on to the more structured New Product Development (NPD) phase (Kim and Wilemon, 2002b; Kijkui and van den Ende, 2007).

The FFE is of interest because it has a great influence on the success of the innovation project (Kim and Wilemon, 2002a; Qingyu and William, 2001). As ideas are generated in the front end, this is both the most troublesome and weak part of the innovation process, and at the same time it is the phase which represents the biggest potential (Reid and de Brentani, 2004). The outcome of the FFE is a well defined concept with clear development requirements, and a business plan which is aligned with the corporate strategy (Kim and Wilemon, 2002b).

According to Moenaeart *et al.* (1995), a company proposes a product concept and determines whether or not it should invest resources to develop the idea through the FFE. Based on the process developed by Cooper (1988), Murphy and Kumar (1997) define the predevelopment stages as consisting of idea generation, product definition, and project evaluation.

In this article, the FFE is defined as:

“...the period between when an opportunity is first considered and when an idea is judged ready for development.” (Kim and Wilemon, 2002b:269)

The FFE phase thereby includes the development of the concept but not the concrete product.

As shown by Murphy and Kumar (1997), the management of the FFE in intra-firm settings is essential, and unsuccessful management of this phase can have considerable consequences. If the project enters the development phase without sufficient preparation, there is a high risk of project delays and budget escalations (Thomke and Fujimoto, 2000). Furthermore, Clark and Fujimoto (1991) point out that engineering changes occurring late in the development are both costly and time consuming.

In the conventional intra-firm perspective on the early innovation process, the loose idea or opportunity spotted is still an internal process within the company. Hence, the idea in development is still easy to change or to reject. Traditionally, the management is characterized by a low degree of formalization, and the management methods applied are unstructured and experimental (Kim and Wilemon, 2002b), as it is not decisive to formalize in a hierarchy where the authority is clearly set. These are management methods which support the creative process, and the desire to explore new ideas and opportunities (Martins and Terblanche, 2003).

Here, creativity is defined as the generation of new and valuable ideas for products, services, processes and procedures by individuals or groups (Martins and Terblanche, 2003) within the specific organisational context of inter-firm setting.

Ideas that are put forward may later become formalized projects in the NPD process, or they may simply disappear without notice. Some survive in other projects, and some are discarded. Meetings are held without agendas and on an accidental basis, or due to a coincidence of events. The FFE phase is in general carried out by an individual or a small project team (Kim and Wilemon, 2002b). There is little or no budget at all allocated to the activities. It is in many respects a very informal phase of the innovation process, and Montoya-Weiss and O'Driscoll (2000) describe the processes as being often ill-defined.

While some of the challenges of a FFE setting are similar across intra- and inter-firm settings, some features are clearly different (cf. Table 1). The actors in an inter-firm setting are inter-dependent, and different interests are at stake between different actors. The decision-making process is hence very different, which is the main reason why Dhanaraj and Parkhe (2006) talk about 'orchestrating' innovation networks, rather than governing or managing. This could potentially have a substantial impact on the collaborative process of generating ideas in the FFE.

Additionally, as a focal firm invites external network partners to participate in this often un-formalized stage of the innovation process, they should consider that their partners will expect some kind of tangible outcome. This is related to the issue of resources. A company within this logic of economic exchange usually does not pay to collaborate with another company. Still, networks involve a significant amount of costs spent in developing the formal and informal relations with the network partners (Harrigan, 1985). The invited partners might need to travel in order to participate, and they most certainly will need to spend time participating. One thing is to meet informally at the grounds of your own firm, but it is a quite different thing to spend considerable resources preparing, travelling and participating in meetings with the sole purpose of providing potential innovation partners with valuable input.

Finally, inter-firm networks can be assumed to involve more heterogeneous knowledge than intra-firm networks, since different firms have different core competencies, and the structure of the social networks can be assumed to be less dense. Such a network structure implies more heterogeneous partners and knowledge (Kilduff and Tsai, 2003) which again entail managerial challenges.

This is what the article intends to focus on: the balance of structure in the practical organisation of the development process. On one hand, ensuring a continuous flow of concrete output in the fuzzy phase of the innovation process, and,

on the other, focussing on the structure of the content, allowing network partners to provide creative input to the concept development.

Methodology

The paper is based on a single case study of a Danish inter-firm network within the energy sector. Since the actual processes and dynamics of the relations and ongoing processes were of primary interest, the case-study design following Yin (2009) and Flyvbjerg (2006) seemed the most appropriate choice of research design. Additionally, Dyer and Wilkins (1991) have pointed out the value of performing a single case study in order to get an in-depth understanding of the relevant processes, rather than applying Eisenhardt's (1989) more pattern-searching case(s) study approach.

In 2005, the focal company K was about to initiate the network, and the issue of how to handle the FFE phase was important, both seen from a theoretical point of view, but also from K's point of view. To choose a case that was about to be initiated entailed the opportunity of a longitudinal study, so the research could develop along with the evolution of the particular network (Ring and Van de Ven, 1994).

Furthermore, Oliver and Ebers (1998) emphasize the need for thick descriptions and qualitative studies in inter-organisational settings, since inter-organisational collaborations are particularly complex to investigate. Therefore, a qualitative approach has been chosen. The data on which the present paper is based is partly observations of meetings, in-depth interviews with the companies involved in the process and relevant archival data. During the process, all data, including interviews, observations, letters, email, secondary data, etc., has been registered in a 'case book' to secure that no information was lost in the process.

Over a period of one year, the focal company organized four network meetings with the purpose of concept development. The researchers have participated in all four network meetings. The duration of the network meetings was between four and eight hours. One of the network meetings was documented on audio recorder and transcribed. Due to the fact that the initiating organisation did not feel comfortable about having the other three network meetings audio recorded, these three meetings were documented through field notes.

Following the four network meetings, the researchers have carried out fourteen interviews with persons from nine of the participating eleven companies. Two companies did not wish to participate in personal interviews. The interviews have been set up as explorative interviews covering a variety of aspects of the network process, with a specific focus on the management (or lack of) the FFE in the inter-firm collaboration. The questions in these interviews have been related to exploring theoretical constructs, and they have not been aimed at verifying or

falsifying specific relations between parameters. The duration of the interviews was between 50 minutes and 1 hour and 55 minutes. All interviews have been recorded and transcribed, and interpretations of the interviews have been discussed by at least three researchers. Thus, the different data sources have been triangulated (Jick, 1979), and the interpretations have also been triangulated since different researchers with different theoretical standpoints have been present at the network meetings (Rasmussen *et al.*, 2009). The aim of these triangulating actions has been to ensure that all relevant alternative interpretations have been included. Via analytical generalisations (Yin, 2009), current theory on the management of inter-firm collaboration in the FFE is hence developed on the basis of this case.

Overall, the case study method has been used to describe the relevant parameters for inter-firm collaboration in FFE projects, and, furthermore, it has been explained why these parameters are relevant. In addition to the qualitative data collection, a survey among the involved network partners has been conducted. Even though the network consists of organisational actors, collaborations take place between individuals, and it is therefore vital to untangle these different levels of analysis (Zaheer *et al.*, 2010). Therefore, a questionnaire was sent to 32 persons (of which 31 responded) with the purpose of clarifying the network structure of the inter-firm and inter-personal relations between the relevant partners.

Case Background

The case started with K having introductory meetings with potential network partners at their respective company localities. The purpose of these meetings was clear to both parties involved. K would present the idea of a digital platform for B2C services within the energy area, and wanted to find out whether the potential partner was interested in participating in the development of this project. At the end of each meeting, K invited interested partners to participate in an up-coming meeting to which all interested parties would be invited. Two months after the last introductory meeting was held, all interested network partners participated in a meeting held at K's meeting facilities. The purpose of this meeting was communicated as a chance to meet the other participants and to provide new ideas to the concept development of the platform.

The Fig. 1 is a visual illustration of the network structure of the overall inter-firm network. Size of nodes based on degree measure in Netdraw (program associated with Ucinet) (Borgatti *et al.*, 2002).

The density is fairly low, which also underlines the fact that this setting cannot be compared to an intra-firm setting, where the density usually is assumed to be higher. As the figure illustrates, the network structure consists of a mix of minor

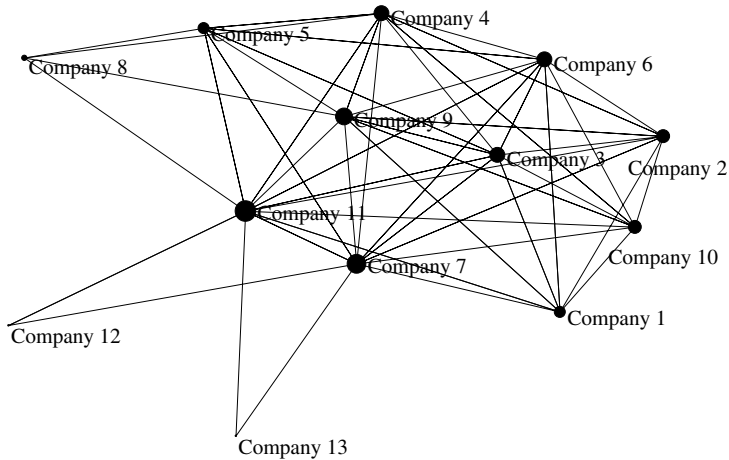


Fig. 1. Network structure at the August 2006 meeting.

cliques and more peripheral actors without any single actor being the clear centre of the network. Some of the main players in the figure are the main actors in the Danish energy sector.

Case analysis

All the comments below are based on the transcribed interviews about the process and thus represent the respondents' after-thoughts about the process and the meetings. All quotes have been translated from Danish.

At the first meeting, which was chaired by K's director, K presented their perspective on the digital platform. Their presentation included specific functionalities which should be incorporated on the platform, as well as a detailed flow chart illustrating how information flows in the system should be structured. From the focal company's view, this is retrospectively seen as a major reason why the meetings did not provide significant progress. As the director of the focal company phrases it:

“And I think that when we started [the project], we were probably too far down into the funnel — meaning that we were ready — mentally more ready to make decisions than they [the other participants] were because they were still way back there. You can say it is our fault, because we probably drove too fast...”(Company 1 — Director of focal company)

During the six hour long meeting at K, there was much discussion and brainstorming concerning a wide variety of issues. The main topics were price, market potential and functionality of the product. The discussions became very narrow and focused on problem solving rather than concept development.

The representative from a major manufacturer of heating and water controls expresses some degree of disappointment, as he felt that the project had great potential:

“They [the focal company] began by talking about the solution and functionalities too early, instead of dealing with the long term perspective. We never discussed the framework for this project.”
(Company 4 — Major manufacturer of heating and water controls)

As the interviewees elaborated on the issue of framework — what we denote “Structure” — they emphasized the lack of not only an open discussion of project visions, but also a focal company openness towards product architecture, product functionality and an overall business model. In this respect, the participating network partners perceived the framework as being too narrow and restrictive.

At the end of the first meeting, the general assumption was that nothing new had appeared in regard to the concept development of the platform (see Table 2). The focal company’s initial presentation had not been further developed or modified in any direction. A close customer of the focal company and a utility

Table 2. Overview of participants’ perception of the outcome from the first two network meetings.

	Participant outcome		Result
	Follow up (with indication of progress)	New ideas	Participant in next meeting
Company 1 — Major IT solution provider (project leader of the funding organisation)	N/A	None	N/A
Company 2 — High end audio & Television manufacturer	No	None	No
Company 3 — Utility provider	No	None	No(I)
Company 4 — Major manufacturer of heating and water controls	Yes	None	Yes
Company 5 — Engineering company	None	New perspectives	Yes
Company 6 — Utility provider	Yes	None	Yes (II)
Company 7 — Webportal developer	Yes	None	No
Company 8 — Major telecommunications company (II)	None	None	No (III)
Company 9 — Electrical equipment manufacturer	None	None	No

provider, who had a major interest in the project, sums up their impressions of the meeting in the following way:

“We did not feel that anything new was put forward in regard to the X-project. Not at all. And this is what you expect.”
(Company 3 — Close customer and utility provider)

In response, K suggested a second meeting be held one month later where new participants with different backgrounds should be invited in addition to the present participants. The purpose of this second meeting would be to focus on creative thinking and idea generation concerning the platform.

The first meeting ended with K handing out questionnaires to the participants with the purpose of making a status of which participants would still like to be involved in the development of the platform. The participating network partners expressed their wish to get minutes from the meeting, and K agreed that minutes would be put on the website. Furthermore, it was agreed that K would make individual follow-ups.

The second meeting was postponed four months, and the minutes were not put on the website. Even though all of the participants had answered positively in the questionnaire, some of them did not show up at the second meeting. A considerable group of participants did not think that there was a concrete outcome, and therefore they chose not to participate in the following meeting. In this respect, “*framework*” also showed to be related to the issue of, e.g. agendas, clear purpose of meetings, follow-ups, and meeting minutes. In this sense, there was not an adequate framework or structure for the practical organisation of the development process.

“I was in a workshop meeting... And since then I have actually not heard anything from that side.. I think I felt a little like the others – no new ideas were put forward.” (Company 2 — High end Audio and Television manufacturer)

The interviews with the company participants showed that all participating companies expected an outcome from the meetings. This could take form as either (1) New ideas in regard to the concept development, or (2) A follow up explaining in which direction the project was moving and exposing the next step and progress in the project.

Table 2 provides an overview of the participants’ perception of the outcome from the first two network meetings.

- (I) The initial representative from Company 3 sent a substitute, as he felt that the project was going nowhere. Later, he rejoined the project after the project vision was modified according to their specific needs.

- (II) The representative from Company 6 intended to participate in the following meeting but was hindered. He was in close contact with the focal company, and participated in the following meetings.
- (III) The initial representative from Company 8 discarded the project after the first meeting, as he felt that there was no vision for the project. To attend the following meeting, he sent a lower ranking colleague as a gesture to the other participating companies. This was also done in order to nurse some customer relations — it was not to be perceived as a wish to stay involved in the project.

Both from the perspective of the focal organisation and the meeting participants, no new ideas were provided throughout the process. It could be argued that the reason why some of the participants chose not to attend the second meeting could be the lack of project relevance to the respective participant. However, the interviews have revealed that this is not the case. All participating companies found the project interesting and with great potential and relevance.

Respondents (2, 3, 8, 9) who did not perceive any tangible outcome in the form of either new ideas or project progress ended their participation in the project.

At the first meeting, the management of the focal company had prepared a written agenda. The internal success criteria of the meeting was that they would perceive new valuable input to the X-project concept development, and that the vast majority of the invited companies would express a positive interest in continued participation.

The internal success criteria were partly fulfilled. The meeting did not provide any new inputs, but the participants all expressed interest in continued participation. Still, the case analysis has showed that this expression of interest was based on the precondition that the meeting would provide a tangible outcome. As this was not the case for four out of eight participants, these chose to discard the project.

Meanwhile, the management of K agreed that it would be preferable to apply an unstructured management method with a low degree of formalization. This was done in order to make all partners in the project equal. The director of the focal company makes this decision explicit at the first meeting.

“It was in order to say: ‘This is not [K] – it is us [a network of companies]. We are doing this together. Now it is not me who shall stand on the podium and conduct. We want this to be a network. We might be coordinators of some part of it, but you must be aware that we do not run it’” Company 1 – Director of focal company

As illustrated in Fig. 2), K entered the project with a very specific picture of the concept and the final product functionalities. This led to a closed presentation of

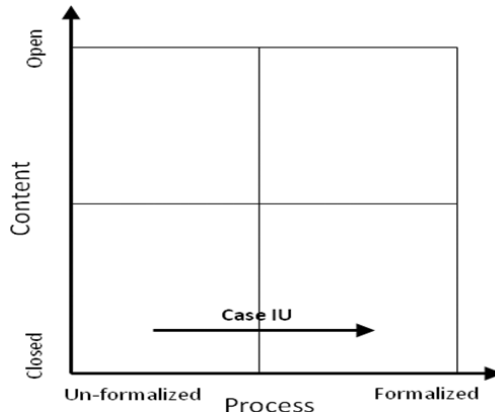


Fig. 2. The FFE in Project X.

the project and the concept which cancelled creative input from the invited innovation partners.

As the project progressed, the working process became more structured and formalized. At this time, however, the majority of the invited network partners had already chosen to leave the project.

Discussion

On the bases of our analysis of the case, we argue that an ill defined work process and unstructured management methods with a low degree of formalization do not seem to be suitable for handling the FFE in an inter-firm setting based on a non-contractual collaboration form.

What we find in addition to the existing literature on FFE management is that in an inter-firm setting, two analytical levels of structure should be considered:

- (1) Structure of content
 - (a) Open vs. Closed concept
- (2) Structure of work process
 - (a) Formalized vs. Un-formalized

The structure of content is related to the creative processes concerning the concept that is to be developed during the FFE. If the concept is presented as a closed concept with specified technologies, functionalities and information flows, the participants will be discussing the project within the structure of that concept. If the concept is presented as an open concept with multiple alternatives regarding technology, functionality and information flows, it is more likely that the participants

will offer some creative input (Basadur et al., 2000). In our case, K presented the digital platform as a closed concept which led to a lack of creative input on the part of the participating innovation partners.

As Dhanaraj and Parkhe (2006) point out and the case findings illustrate the involved actors are interdependent and hence decisions should not just be made by a single authority. In an open innovation context you want actual collaboration (Miles et al., 2010) which implies that the idea-development should not be closed but open for significant new input. Furthermore, given the low density in such an inter-firm network it is quite heterogeneous, which entails that firms will provide significantly different input (Kilduff and Tsai, 2003; Gilsing et al., 2007). A closed structure of concept would filter out such input.

The structure of process refers to the work process relating to the concept development. Is there a clear purpose of the meeting with an agenda, a chairman of the meeting and success criteria? Is the outcome of each meeting made explicit with minutes and follow-ups? The case has shown that in the case of the first meeting in the network, the purpose of the meeting was clear, but the outcome of the meeting was very unclear. Even though the participants explicitly asked for a tangible outcome in the form of minutes, such were never provided for them. Instead, the outcome was presented to them as an upcoming meeting, which was in the end postponed four months. Since there are costs associated with these meetings (cf. Harrigan, 1985) some form of incentive to attend upcoming meetings is important. Furthermore, due to the interdependent nature of the involved firms, it is important to treat collaborating firms as equals (cf. Powell, 1990; Dhanaraj and Parkhe, 2006).

Figure 3 illustrates the difference of going through the FFE phase in an inter-firm setting vs. an intra-firm setting towards the goal of the FFE phase; a well

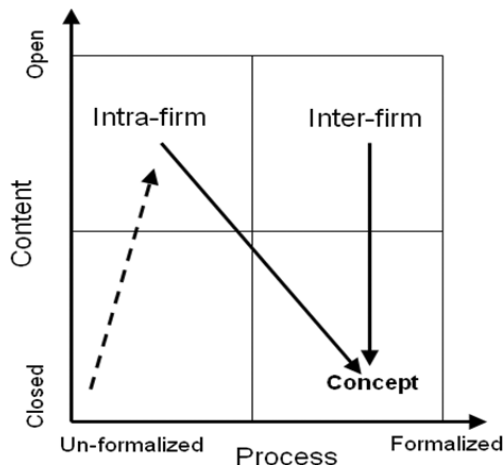


Fig. 3. The FFE phase inter-firm vs. intra-firm.

defined concept, clear development requirements, and a business plan aligned with the corporate strategy.

In the intra-firm setting, the process can be unstructured from the beginning, and gradually become more structured as the personnel involvement becomes clearer and the concept takes form (Kim and Wilemon, 2002a,b). Or, as the dotted line illustrates, it can also start as a somewhat closed concept developed by a small group or an individual, and then be challenged by colleagues, and, as a result, become open. In the inter-firm setting, it appears central that the process takes off with an open concept, whereas the collaboration is based on a structured and formalized process.

Managerial implications

According to our in-depth case study and analytical approach, it seems reasonable to claim that there ought to be a fair structure for the process in order to ensure successive outcome to the participants through the FFE in an inter-firm innovation setting.

An informal meeting in an intra-firm perspective is quite different from an “informal” meeting in an inter-firm perspective. On the one hand, participants who do not perceive tangible outcome are likely to quit the project. On the other hand, too much structure in the concept that is to be developed seems to suppress creative input from the innovation partners.

The challenge in regard to structure when going through the FFE in an inter-firm setting is thus to balance the two levels of structure ensuring the following:

- (1) The concept is presented as open so that creative input from participants is encouraged.
- (2) A clear and structured work process is provided that can help ensure explicit and continuous information about the output and progress in the process and the concept development.

This balance is illustrated in Fig. 4. We suggest that the sum of structure in an inter-firm based FFE phase should be approximately constant. In the beginning of the project, the process must be very conform, which may help ensure the participants that the project is moving forward — that it is still beneficial to stay in the project. In this early stage of the FFE, the structure is the main driver in the project. As the concept become more concrete during the FFE phase, the specific content of the project gradually substitutes the process as the main driver that keeps the innovation partners in the project.

As there can be no use of direct fiat in such inter-firm settings, the challenge of the focal company is to structure the concept development work process and

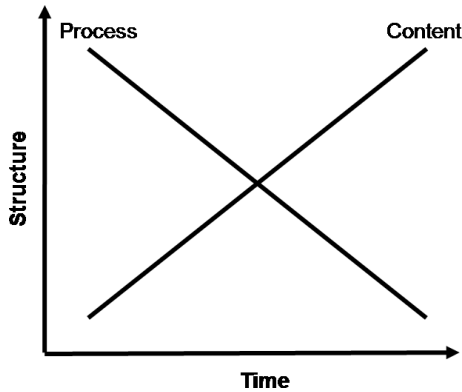


Fig. 4. Two levels of structure.

the creative thinking process in a way that provides tangible output, and allows the recombination of knowledge and thereby new ideas (Brown and Duguid, 2000). If this balance is not reached, there is a risk that the partners will lose their commitment if they do not see a continuous development and progress in the process.

Conclusion

This article has discussed the differences of going through the FFE phase of the innovation process in an intra- versus an inter-firm innovation setting. In regard to the form of collaboration, the latter is characterized as a *network* where no direct power can be employed, as opposed to an intra-firm setting, which is traditionally characterized as a *hierarchy*. Through an in-depth case study analysis we have focused on two main differences:

- (A) The structure of content: whether the concept is formulated as an open or a closed concept.
- (B) The structure of the work process: whether there is a clear purpose of the meetings, and whether the outcome of each meeting is made explicit.

The focal company K had very high ambitions for the project, and was prepared to use great resources to make it succeed. Similarly, many of the network partners had quite high expectations, and were willing to invest manpower and money. Why did it not succeed then? In our opinion, the answer can be found in the two findings above: process and content. The focal company did not manage to balance the structure of *content* and the structure of *process* properly. In future studies

multi-case studies could test the proposed distinction between structure of content and process. Such studies could also involve different industries and different network structures, in order to examine whether and how these contingencies matter.

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