INVESTIGATING COOPETITIVE LEARNING AND KNOWLEDGE EXCHANGE NETWORKS (COLKENS) AS EMERGING CONCEPT IN MANAGEMENT LITERATURE AND PRACTICE

Claudia Loebbecke*
University of Cologne
Dept. of Business Administration and Media Management
Pohligstr. 1, 50969 Koeln, Germany
Tel: +49 (221) 470 5364
Fax: +49 (221) 470 5300
claudia.loebbecke@uni-koeln.de , www.mm.uni-koeln.de

Albert A. Angehrn**
INSEAD
Center for Advanced Learning Technologies (CALT)
Boulevard de Constance, 77305 Fontainebleau, France
Tel: +33 1 60 72 43 61
Fax: +33 1 60 74 55 45
albert.angehrn@insead.edu, www.insead.edu/calt

ABSTRACT

Behind the emerging digital facade companies start to operate in a distributed fashion. The intricate connectivity among contributing firms implies exchange of valuable resources like knowledge and information. Such 'cooperation' or 'collaboration' is what enables organizations and individuals to make decisions together, learn from one another, communicate effectively, and thus create knowledge. However, cooperating organizations often compete at the same time (coopetition). While reciprocal knowledge sharing may enhance the summed and individual added value, inter-firm knowledge sharing may also affect the uniqueness and thus competitive contribution of a firm's knowledge repository. Such a setting becomes increasingly relevant in business practice, as ever more learning networks are composed of members stemming from competing organizations.

In this context, this paper develops the concept of 'Coopetitive Learning and Knowledge Exchange Networks (CoLKENs) and introduces one CoLKEN case study. Besides analyzing the motivation for joining CoLKENs and the key value-creation processes of such networks, a

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particular focus is placed on issues related to cooperation-competition-dilemmas and intentional/unintentional knowledge transfer in such settings.

1. INTRODUCTION

Companies have begun to operate in a distributed fashion. Multiple companies cooperate in such a way that quasi-organizational entities and inter-organizational networks emerge (e.g. eFactors 2002). The intricate connectivity among contributing firms implies exchange of valuable resources like knowledge and information. Such 'cooperation' or 'collaboration' is what enables organizations[1] and individuals to make decisions together, learn from one another, communicate effectively, and thus create knowledge. It refers to purposefully designed or unintentional processes through which knowledge is created and acquired as well as shared and disseminated (Brown and Duguid 1991; Huber 1991; McDonald 1995).[2] Participation in such collaboration forms the basis for knowledge creation processes between organizations (e.g. von Krogh and Roos 1995).

However, cooperating organizations often compete at the same time; inter-organizational collaboration may also confront them with the paradox of 'coopetition'. While reciprocal knowledge sharing may enhance the summed and individual added value, inter-firm knowledge sharing may also affect the uniqueness and thus competitive contribution of a firm's knowledge repository. Opportunistic behavior of counterparts may erode anticipated benefits of cooperation and result in unevenly distributed value. Such a setting becomes increasingly relevant in business practice, as a growing number of 'learning networks' such as the ones discussed by Angehrn, Gibbert and Nicolopoulou (Angehrn et al. 2003) is composed of members stemming from competing organizations.

In this context, we are completing a study and a set of cases on 'Coopetitive Learning and Knowledge Exchange Networks' (CoLKENs). More specifically, we investigate inter-organizational knowledge management initiatives aimed at supporting cross-organizational and increasingly global collaborative learning and management. The networks under consideration range from initiatives driven by local industry clusters to new forms of organizations of globally distributed knowledge workers operating within OpenSource communities. Besides analyzing the motivation for joining the CoLKEN and the key value-creation processes of such networks, we are particularly focusing on issues related to *cooperation-competition-dilemmas* and *intentional/unintentional knowledge transfer* in such settings.

The remainder of the paper is organized as follows: In section '2', we provide an extensive literature review on the fundamental components of CoLKENs and their relevant developments in the academic literature. After that, we construct the so-called 'CoLKEN-Pyramid' (section '3') that should serve two main purposes: It aims to introduce the CoLKEN concept as well as to structure and channel various multi-facet research approaches in the field. As a framework it thus mainly serves to narrow down our unit of analysis, so that we end section '3' by deriving the research questions for our empirical investigation. Section '4' and '5' then present our empirical work including the main findings from the case study selected for this paper, the 'CarCo case'. Section '6'

1 The term 'organization' in this paper refers to any entity that comprises several individuals, i.e. groups inside organizations, as well as business- or other organizations themselves.

2 This is different from a self-directed approach that places the focus on the individual learner and the resources he or she has access to at any one point in time.

generalizes our insights as conclusions and lessons learned. Finally, section '7' offers a critical view on the limitations of our study and outlines future research plans.

2. COOPERATIVE LEARNING AND KNOWLEDGE EXCHANGE NETWORKS (COLKENS) AND THEIR FUNDAMENTAL COMPONENTS

The following literature review provides the basis for the development of Cooperative Learning and Knowledge Exchange Networks (CoLKENs) as an emerging concept. It covers the fundamental components as well as their development in the management literature.

2.1 Fundamental Components of CoLKENs

Knowledge

Knowledge is definitely a complex concept to even define, and when seen from a management perspective it exhibits unique properties that are distinctly different from those of traditional corporate resources, such as land, labor and capital. Intellectual resources are not naturally scarce (Suchmann 1989); knowledge may increase in value the more it is used, with investment in knowledge and knowledge-creating capabilities characterized by increasing returns (e.g. Teece 1998). These properties tend to make knowledge less amenable to management (e.g. Polanyi 1966; Hedlund 1994; Nonaka 1994; Boisot 1995).

Knowledge Agents

The management literature provides us with an ongoing debate as to who are appropriate *knowledge agents*: Who is intellectually capable, the organization or its individual employees? Does knowledge reside at the level of the *individual* and at the *organizational* level? Among others, Drucker (1993) or Grant (1996) stress the predominant importance of individuals. A different body of management literature (Nonaka and Takeuchi 1995; Spender 1996; Boisot 1998; Lane and Lubatkin 1998; Matusik and Hill 1998; Crossan et al. 1999; Inkpen 2000) considers organizational cognition or organizations as cognitive entities as a suitable unit of analysis. A third school of scholars is found in the organization science literature, where organizational learning is a central tenet and is believed to be conductive to competitive advantage (Senge 1990; Moingeon and Edmondson 1996). For these authors, both the individual and the organization are capable of learning and processing knowledge although both place more emphasis on the importance of knowledge processing of the level of the individual employee.

Knowledge Networks

Knowledge Networks are commonly defined as formally set up mechanisms, structures, and behavioral patterns that connect knowledge agents who were not previously connected because of (a) functional, (b) hierarchical, or (c) legal boundaries between organizations. We differentiate those networks which operate *within (intra)* and those that are operated *between (inter)* organizations.[3]

3 Intra-organizational groups (e.g. departments) focus on learning processes within one organization through sharing the specialized knowledge of individual contributions. They often create a form of synergistic knowledge that transcends the expertise of individual contributions.

Inter-organizational knowledge networks (e.g. Klein 1996; Mowery et al. 1996) provide the basis for the concept of 'Coopetitive Learning and Knowledge Exchange Networks' (CoLKENs).

2.2 Theoretical Underpinnings of CoLKENs

We will now review the theoretical underpinnings of CoLKENs as they have emerged from various streams of strategy research. The 'resource based view of the firm', along with its conceptual predecessor, the 'industrial organization view', and its extension, the 'knowledge based view of the firm' shed light on the question as to why firms cooperate to learn from one another, share capabilities and knowledge, while - at the same time - manage knowledge as a valuable resource in the competitive environment.

Management Strategy: Shifting from Outbound to Inbound

Until the 1980's, competitive thinking - reflected in the *industrial organization view* - is generally seen focusing on companies' environments (e.g. Spender 1996; Teece et al. 1997). This stands for an outward focus. Business success is typically associated with market growth. To capitalize on the growth potential in diverse markets, portfolios of businesses and products are central to strategy design. Resources are assumed to be homogeneously distributed and easily accessible to competing firms. Strategy design typically involves carefully matching products and markets given the five forces prevalent in a particular industry (Porter 1980; Roos and Roos 1996).

From the mid-1980's on, the so-called *'resource-based' approach* (Wernerfelt 1984; Rumelt 1987; Prahalad and Hamel 1990) partially builds on Penrose's conception of the firm as a "collection of productive resources, both human and material" (Penrose 1959: p. 31). It is contrary and complementary to the Porterian outward focus (Rugman and Verbeke 2002), as it adopts a view on strategy that is essentially inward-looking; analyzing relative strengths and weaknesses of firms (Andrews 1971). The resource-based view builds on two basic assumptions: (a) That the firm's ultimate objective is to achieve sustained, above normal returns, and (b) that a set of resources and their combination into competencies and capabilities are a precondition for sustained superior returns (Rugman and Verbeke 2002). These resources are to be firm-specific (i.e. imperfectly mobile), valuable to customers, non-substitutable, difficult to imitate, and differently available to firms. Companies are seen as heterogeneous with respect to their resource and capability endowments (Teece et al. 1997). Assets such as knowledge are not readily tradable, they cannot equilibrate through factor input markets. Hence critical resources can typically not be acquired via the market and consequently need to be developed internally. Competitive advantage is associated primarily with the heterogeneous resource endowments of firms (Wernerfelt 1984; Prahalad and Hamel 1990; Barney 1991; Hamel 1991).[4]

Recent extensions of the knowledge-based perspective are centered around its application to a *network of firms*, rather than the individual firm. They see the locus of critical competencies or

4 For a discussion of the evolution of the resource-based view including its relevance to the field or inter-organizational learning and knowledge exchange see, for instance, Montgomery (1995) and Foss (1997). More recent advances in resource-based thinking can be found in Eisenhardt and Martin (2000) and Winter (2000).

capabilities not necessarily residing within corporate boundaries (Hamel 1991; Dyer and Nobeoka 2000; Gulati et al. 2000; Prahalad and Ramaswamy 2000; Doz et al. 2001).

As developed in the *'relational view of the firm'*, firms ought to look at inter-organizational networks as a source of sustainable, competitive advantage (Liebeskind et al. 1996; Powell et al. 1996; Dyer and Singh 1998; Powell 1998).

Knowledge as 'Core Resource'

The next step in strategy research has been to decide which resource, capability or skill may be critical in providing sustainable competitive advantage (Roos and Roos 1996), so that managers can focus their attention on them (Hamel 1991; Hamel and Prahalad 1993).

Different scholars hold different views on what criteria to use to differentiate critical from non-critical resources (e.g. Montgomery 1995). Barney (1991) proposes 'value creation for the company', 'rarity compared to competition', 'imitability', and 'substitutability'. Prahalad and Hamel (1990) distinguish 'core competencies' from 'non core competencies'. Core competencies are outlined as being suitable for application in many different markets, creating a significant contribution to customer value, and being difficult for competitors to imitate.

To specify resources that accommodate these criteria is equally controversial (Priem and Butler 2001a & b; Rugman and Verbeke 2002). We find a plethora of phrases such as 'firm resources' (Barney 1991, 2001), 'invisible assets' (Itami 1987), or 'dynamic capabilities '(Teece et al. 1997; Eisenhardt and Martin 2000).

An emerging consensus among scholars (Drucker 1993; Roos and Roos 1996) proclaims that *knowledge*, whether referred to as invisible assets (Itami 1987), absorptive capacity (Cohen and Levinthal 1990), core competencies (Prahalad and Hamel 1990), core capabilities (Kogut and Zander 1996), or organizational knowledge (Nonaka and Takeuchi 1995) can be seen as the only - or at least an important resource - that fulfils the criteria of providing sustainable competitive advantage. Teece (1998) even argues that the essence of a firm is its ability to create, transfer, assemble, integrate, and exploit knowledge assets.

These lines of though match the traditional analysis that both Ricardian and monopoly rents derive in large part from intangible assets with organizational learning and knowledge being one of the most crucial (Penrose 1959; Liebeskind 1996, McGaughey 2002). By stressing the outstanding importance of knowledge, the literature has given birth to the *'knowledge-based perspective'* as a special form of the resource-based view.

Levers for Managing Inter-Organizational Knowledge Networks

With a significant number of inter-organizational networks failing in some sense (Inkpen and Beamish 1997; Lam 1997), there is an established body of literature investigating factors causing such failures together with steps for improvement (Cohen and Levinthal 1990; Hamel 1991; Mowery et al. 1996; Powell et al. 1996; Inkpen and Beamish 1997; Lam 1997; Dyer and Singh 1998; Kumar and Nti 1998; Larsson et al. 1998; Powell 1998). These factors are worth studying in the context of

CoLKENs as they depict possible management levers for dealing with the paradox of simultaneous cooperation and competition: Main factors for discussion are (1) factors influencing the extent of learning and knowledge sharing, (2) factors influencing the stability of the relationship, and (3) factors influencing the ability of Learning Network partners to cooperate.

As *factors influencing the extent of learning and knowledge sharing*, Kogut (1988) and Mowery et al. (1996) name alliance contracts and governance structures. For instance, equity joint ventures lead to a higher degree of knowledge sharing than contract-based alliances. Cohen and Levinthal (1990), Dyer and Singh (1998), Kumar and Nti (1998), and Larsson et al. (1998) point to partners' internal capabilities. According to Hamel (1991), Kumar and Nti (1998), or Larsson et al. (1998), the amount of learning that takes place in the relationship depends on each partner's collaborative strategy.

As a main *factor influencing the stability of the relationship*, Pfeffer and Salancik (1978) refer to bargaining power. If collaboration provides access to the other partners' resources (e.g. knowledge and skills), dependencies resulting from resource specificity change or disappear, and the alliance may be terminated (Inkpen and Beamish 1997). Hence partners who want to ensure alliance stability should prevent outsiders from learning 'all there is to learn', create new knowledge, and consider the track record of their partners.

Finally, the literature discusses *factors influencing the ability of network partners to get a competitive advantage from their relationships*. For Dyer and Singh (1998), appropriate management processes and governance structures are crucial for turning CoLKEN membership into a source of competitive advantage. They even suggest (a) protection against opportunistic behavior in the network, (b) high volume of information exchange, (c) knowledge sharing routines, and (d) the development of self-enforcing safeguards (trust and incentives) for sharing. The ability to have influence on the network structure and to occupy an information rich position shall provide network members with promising entrepreneurial opportunities (Powell et al. 1996).

3. 'CoLKEN-Pyramid': Cooperation and Competition in Inter-Organizational Knowledge Networks

Implications of the knowledge-based and resource-based theory of the firm then lead to the area of *inter-organizational collaboration*, which broadly refers to a variety of inter-organizational relationships such as joint development agreements, equity joint ventures, licensing agreements, cross-licensing and technology sharing, customer-supplier partnerships, R&D contracts, and some others less dominant forms (Bardaracco 1991; Mowery et al. 1996).

At the same time - as outlined in the literature review - knowledge management has been increasingly considered as a key managerial function necessary for achieving competitive advantage (Tsang 2002). Here, economic thinking leaves no doubt that scarcity is a precondition for property and thus commercial value of any resource, and thus puts at least a question mark behind generously sharing knowledge in an economic context.

Hence, inter-organizational knowledge sharing processes revolve around a formidable balancing act between borrowing knowledge assets from partners, while protecting one's own assets (Loebbecke et al. 1999). The challenge is to share enough skills to learn and create advantage vis-a-vis companies outside the network, while preventing an unwanted transfer of core competencies to a partner (Hamel et al. 1989). This challenge is exacerbated when some members in the network are competitors. In such constellations, the danger of becoming 'hollowed out' by 'predatory' partners (Hamel et al. 1989; Kogut and Zander 1996) seems particularly evident, suggesting that appropriate steps be taken to ensure mutually beneficial sharing. Nevertheless, many of the skills that migrate between companies are not covered in the formal terms of a knowledge exchange (Loebbecke and van Fenema 2000). Often, what gets traded - i.e. what is learned - is determined by day-to-day interactions of engineers, marketers, and product developers (Hamel et al. 1989).

3.1 Constructing the 'CoLKEN-Pyramid'

Following the ongoing debates outlined above, we construct the 'CoLKEN Pyramid' based on the following seven statements.

(1) *Knowledge* assets have their foundation not only in data and in information, but - and for this paper more importantly - in collaborative learning processes.

(2) Both the individual employee as well as the organization should be seen as *knowledge agents* capable of owning and processing knowledge. (The problem with a singular focus on individuals as the only knowledge agents would be that it renders an analysis on an inter-organizational scale logically impossible.)

(3) Knowledge agents exchange knowledge in *knowledge networks* within and - in light of ubiquitous information, communication, and media technologies - increasingly between organizations.

(4) The growing appearance of *inter-organizational networks* triggers a focus on *learning* and *knowledge exchange* processes between organizations during *coopetition*.

(5) *Cooperation* forms the basis for any knowledge exchange process between organizations as it stands for the learning processes through which knowledge is created and acquired as well as shared and disseminated.

(6) In the light of *competition*, knowledge serves as a critical resource or asset to achieve competitive advantage and above normal rents.

(7) Management processes and actively managed strategic interventions (stimuli) in knowledge exchanges allow organizations to *create value* by significantly impacting the composition, the exploitation and exploitability, as well as the business results of learning, knowledge, and intellectual assets at large.

The three fundamental components, 'Knowledge', Knowledge Agents', and 'Knowledge Networks' (Statements '1', 2', and '3') lay the foundations for investigating inter-organizational learning and knowledge exchange networks in the context of coopetition. The CoLKEN focus is represented as the central platform on which cooperation and competition are performed (Statements '4', '5', and '6'). In order to create and extract the maximum economic value, the challenge is to balance both

aspects by designing and implementing management processes for active strategic interventions in the CoLKEN (Statement '7'). The CoLKEN Pyramid is depicted in Figure 1.

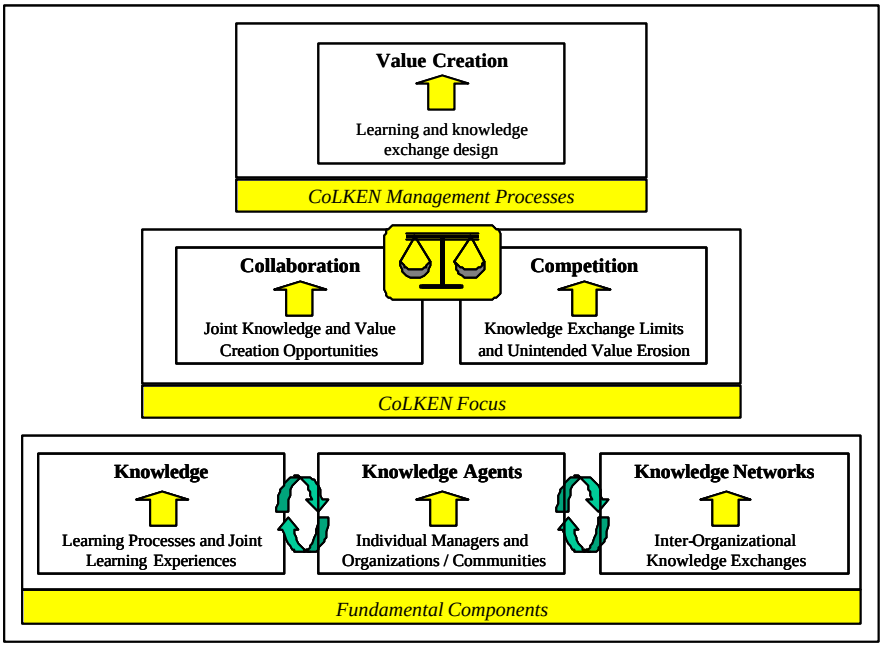

Figure 1: CoLKEN Pyramid

3.2 Research Dimensions and Questions Derived from the CoLKEN Pyramid

Based on the developed common understanding of CoLKENs, we investigate in our empirical work the

(1) Motivation to participate

(2) Collaboration and its management

(3) Competition and its management

The three dimensions are translated into the following research questions:

(1) Why do knowledge agents participate and how sustainable is their participation in CoLKENs?

(2) How do organizations collaborate and actively manage knowledge exchange in CoLKENs to create value (competitive advantage / above normal rents)?

(3) What processes should be put in place in order to actively manage knowledge sharing processes in light of coopetition?

4. RESEARCH METHODOLOGY: DATA COLLECTION AND ANALYTICAL APPROACH

Lack of prior theorizing in the realm of learning networks and CoLKENs suggested an inductive case study based approach with cross-case analysis of various CoLKENs applying inter-organizational knowledge flows. A qualitative method, the multiple case study (Yin 1994), was chosen in the context of a EU-founded research project (Knowlaboration 2002) to arrive at an in-depth understanding of how to initiate, manage, and sustain economic knowledge exchange in CoLKENs. The work was based on a multi-stage, nested design (Eisenhardt 1989; Burgelman 1994; Yin 1994).

The data collection comprised one-to-one as well as expert interviews, thematic focus groups with organizational members as well as participant observation. In more detail, data collection was done mainly by formal interviews with managers on site with some direct observation to corroborate the interview data. Several interviewees were contacted again in order to check for discrepancies in the interview accounts and to support interview data as a check for internal validity. Such follow up interviews were typically structured around key issues and questions that needed clarification. By contrast, interviews with a 'new' interviewee were semi-structured to provide openness to the interviewees contextual frame of reference (Pettigrew 1990). To ensure reliability of the data, first interviews and follow-up interviews were fully transcribed, leading to more than 140 pages of field notes, interview transcripts, and direct observation data. In addition to interview data, data from on-site direct observation and archival data were used. We applied 'learning logs' to collect personalized data from the CoLKEN members, particularly taking note of their own learning and knowledge exchange processes during a typical 10-day period. This represents a further check for internal and construct validity (Eisenhardt 1989; Yin 1994).

Data were analyzed using the grounded-theorizing approach (Glaser and Strauss 1967), which refers to inductively gaining theoretical insights by comparative analysis of two or more cases in an iterative mode. We examined the case evidence, revised theoretical propositions, and then iteratively examined the evidence once again from an adapted perspective. The issue of external validity was approached by systematically comparing the data across cases (Eisenhardt 1989) in order to highlight inter-case differences and to make sure that patterns discussed were not idiosyncratic to one setting. In the remainder of this paper, we report on one of the case studies, namely 'CarCo'.

5. CASE STUDY

5.1. Overview on CoLKEN 'CarCo'

CarCo[5], a regional Austrian-based automotive cluster, was founded in 1996 by a government grant and the local business promotion agency to respond to economic stagnation in the region. In 1999, the network was privatized as planned within three years and turned into a 'GmbH' (a limited company).

Historically linked to the automotive industry, the region is home to small-parts manufacturers as well as four large automotive supplier companies. The auto cluster sought to bring together both large and

5 Company name and names of persons have been changed.

small companies in the automotive industry as well as local resources, such as well-known engineering universities located locally. The main four companies took the lead on developing the network, having come together to support the region and themselves. They had two main reasons for wishing to stimulate growth and stability among smaller companies in the region: Firstly, they aimed at tighter control over the efficiency and quality of parts supplied locally. Secondly, by earmarking the region as a center for automotive excellence in central Europe, potentially more and bigger car companies would locate there. After signing on the four core members, CarCo opened its membership to small and medium sized companies in the region.

The CarCo network today is self-sufficient with income from its four major sponsors and sliding-scale member fees. There are 180 member companies who pay an annual fee, 85 core groups, and 6 partners in research and development. Seventy percent of the members are SMEs, another 18 percent are micro-companies, and eight percent are scientific institutions. In addition, CarCo counts 250 interested and 137 partner companies. CarCo's five shareholders meet three to four times a year to review budgets and new programs. Four full-time employees manage the network.

Some of the members are direct competitors in the market. The following example illustrates the competitive awareness that dominates many decisions and actions in the network: Two CarCo members suggested introducing an auditor pool for CarCo. The idea was to soften the legal requirement of always having to have two auditors by mutually exchanging them among members. This was predicted to save time and money. However, the auditor pool never came to life as sensitivity for competitive implications and, possibly, lack of trust among CarCo members or potential auditors overrode the collaboration potential.

5.2. Main Case Findings

Table 1 summarizes the main findings from the CarCo case along our three research dimensions.

Research Dimension		
Motivation to Participate	**Managing Collaboration**	**Managing Competition**
- Specific, pragmatic, 'value-for-business' driven - Learning potential - Cost reduction and speed improvement - Sales opportunity	- Based on business objectives - Covering non-competitive issues, relevant to the overall sector - Jointly approaching of potential external business partners - Initiation of joint projects undertaken outside CarCo	- Low entry barriers ignoring competitive issues - Via choice of topics - Via choice of event format - Neither contractual nor informal agreements among members or between members and

	CarCo organized

Table 1: Overview of Findings from the 'CarCo' Case

All CarCo members involved in the case show a directly expressed wish and need to participate. They are sufficiently *motivated* to share and exchange information with the objective of learning. However, they seem to have financially driven reasons to participate, which seem to stem mainly from price pressure. Consequently there two types of members: Those who come in order to get information at a good price for a variety of different services, and those who join in order to sell their products or services. Both groups also see the opportunity for cost reductions, for instance when it comes to having to implement a new industry quality standard.

Entry barriers for joining hardly exist. From the point of view of the CarCo organizers, additional members mean increased membership fee revenues. Due to a lack of measurable and measured results, CarCo members feel an ongoing pressure to justify their activity within their organization. In spite of top management backing, company peers who are not active in the network cannot assess the direct benefits for their companies and hence question time efforts and competitive consequences of participation in the CoLKEN.

Actual *cooperation* is, interestingly, quite low, while learning takes place in effect through a loose 'enlightened' transmission. CarCo, although adopting a rather conservative knowledge exchange model, succeeds in enabling mutual learning and networking among professionals from similar functional areas and across different companies or industries. The focus is on the inter-organizational relationships, especially within a domain of particular activity. Collaboration, for instance, occurs when new quality or environmental standards are imposed by governing bodies. CarCo then organizes workshops or expert presentations to better inform their members. Thus CarCo creates value for its members. However, this value has not been strictly quantified. Neither has it been identified that learning resulted in some concrete and measurable change in their everyday work practices.

Active knowledge exchange procedures in the light of *competition* have been implemented by the network organizer only via 'topic selection' and 'choice of event formats'. Concerning topic selection, it has been implicitly agreed that issues directly impacting competitive positions, such as product and process specific know how, are not put on the agenda of any joint events regardless of the format chosen. Regarding the event format, CarCo offers workshops to its members, which require active input from the participants. Alternatively, members are invited to more or less passively absorb presentations by external experts. The latter events do not require participants to share their insights with the group.

Finally, network members themselves actively manage by deciding to attend or stay away from specific events. The low entry barriers for joining CarCo do not allow asking for any commitment from the members, either via the network or directly among each other.

6. DISCUSSION AND LESSONS LEARNED

A first insight emerging from the empirical data collected until now is that CoLKENs represent opportunities for individual managers to engage in new forms of collaborative learning and management development. CoLKENs also offer opportunities for organizations to better achieve their objectives through acquisition of knowledge critical to their processes or strategy, or through collaborative knowledge exchanges and initiatives. Further benefits can appear at a even higher, e.g. regional or professional, levels. For instance, members of CarCo have founded a new school in their region for the benefit of a larger regional community.

At the level of learning processes, the dominant form is still the one of traditional knowledge transfer, a context in which members do not need to engage too personally or do not need to contribute their knowledge at all. More collaborative and experiential forms of learning are still rare. They appear to emerge only in non-critical domains and only after having helped members to develop more stable relationships and trust, as in the case of CarCo.

Nevertheless, competitive logic can prevent individuals as well as organizations from benefiting from such opportunities. The fact that motivations and incentives for participation vary makes the management of the coopetition dimension particularly complex. By better aligning the motivation of their members and 'selecting' them accordingly, CoLKENs could reduce the negative influence of the competition dimension. On the other hand, ambitious growth strategies and pressure to collect membership fees leads some of today's CoLKENs to operate less selectively when it comes to assessing and aligning the motivation of their members.

The competition dimension also strongly influences the design of value-creation processes such as 'collaborative learning', 'knowledge exchange', and 'derived initiatives'. It limits these processes to domains and formats which are perceived by members as non-competitive in terms of not releasing much critical knowledge to potential competitors.

To conclude, effective membership relationship management and experimentation with more cooperative forms of learning and knowledge exchange have been seen as key factors for the success of CoLKENs. They enable CoLKEN members to take advantage of their participation in such inter-organizational knowledge management initiatives. These key factors act as catalysts enabling members to progressively learn how to learn and how to act together ('knowledge and alliance incubators').

7. LIMITATIONS AND FURTHER RESEARCH

Our insights and implications must be seen in light of the limitations of the present study. We clearly need further research and validation in a wider variety of contextual settings (scale).

Beyond just collecting further case material, we are extending our research to also investigate technology-enabled CoLKENs. Some are even completely virtual, stemming from Open Source type communities which actively apply enhanced forms of Internet-enabled learning, collaboration and knowledge exchange management (scope). Thereby, we wish to better assess the adoption of

Information, Communication, and Media Technologies (ICMT) and their impact on collaboration and competition in CoLKENs.

Our overall objective for this ongoing research program then is to compare 'traditional' CoLKENs such as the one illustrated in this paper with more virtual CoLKENs. We are seeking further insights as to the actual and potential impact of innovative technologies with regard to the shaping of CoLKEN management. In this context, we hope to be able to assess (a) the real potential of ICMT for the majority of today's CoLKENs, (b) the ICMT-related challenges such organizations are likely to face, as well as (c) the new mindsets and competencies members and managers of such networks will require in order to take full advantage of distributed approaches to learning and knowledge management.

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