KNOWLEDGE MANAGEMENT THEORY IN INTERORGANIZATIONAL SETTINGS

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Abstract

This paper presents unexpected findings from a series of workshops conducted with firms involved in interorganizational collaboration (IOC). The scope for the workshops was to identify design criteria for a Knowledge Management System (KMS) for firms involved in IOC. As a starting point, five general Knowledge Management (KM) theoretical assumptions were introduced to IOC practitioners. Surprisingly, the practitioners found most of the assumptions difficult to elaborate on. This unexpected finding is explored and presented in this paper along with supporting evidence and future implications. Throughout this paper we argue that the basis for KM in organizations and in IOC are fundamentally different, and hence the relevance of general KM assumptions found in literature covering the management of knowledge in organizations need to be evaluated against an interorganizational setting. Given this argumentation, the purpose of this paper is to evaluate a number of general KM theoretical assumptions against an IOC setting.

Keywords: Knowledge Management, Knowledge Management Systems, Interorganizational Collaboration, Theory.

Knowledge management theory in interorganizational settings

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Abstract

This paper presents unexpected findings from a series of workshops conducted with firms involved in interorganizational collaboration (IOC). The scope for the workshops was to identify design criteria for a Knowledge Management System (KMS) for firms involved in IOC. As a starting point, five general Knowledge Management (KM) theoretical assumptions were introduced to IOC practitioners. Surprisingly, the practitioners found most of the assumptions difficult to elaborate on. This unexpected finding is explored and presented in this paper along with supporting evidence and future implications. Throughout this paper we argue that the basis for KM in organizations and in IOC are fundamentally different, and hence the relevance of general KM assumptions found in literature covering the management of knowledge in organizations need to be evaluated against an interorganizational setting. Given this argumentation, the purpose of this paper is to evaluate a number of general KM theoretical assumptions against an IOC setting.

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Suggested track: A Managing organizational knowledge and competence

1 Introduction

Knowledge management (KM) continues to be a fundamental ingredient in creating sustainable competitive advantage (Grant, 1997; Blackler, 1995). Alongside later years numerous technical innovations and increasing globalization follows an integration, blurring and redefinition of markets and business models (Håkansson, 1982; Hedberg et al, 1997; Paulsen and Hernes, 2003). Companies are meeting these trends with an increased involvement in, and dependency of interorganizational activities (Baker, 1992; Cravens, Shipp and Cravens, 1994). Thus, knowledge management must also

be considered from an interorganizational perspective in order to reflect the interorganizational knowledge inter-dependencies that exist.

When it comes to the organizational management of knowledge, knowledge management systems (KMS) have long been a both favored and highly debated approach towards supporting this activity (see for instance Walsham, 2002; Shultze & Boland, 2000; Shua, 2004). A KMS can be defined as an information technology (IT) based system designed for the specific support of knowledge related activities. This encompasses such IT-systems as decision support systems, data warehouses, video conferencing, computer-supported collaborative work (CSCW), intranets, competence systems etc (Butler, 2003; Davenport & Prusak, 1998; Lindgren, 2002; Stenmark, 2002). This paper was written against the backdrop of the design of a decision support system for interorganizational KM (project Plexus, 2002 – 2004).

This paper springs from unexpected findings when conducting academic activity with industry practitioners regarding KM in an interorganizational setting. The scope of the activity was to further elaborate on prevalent KM assumptions as a starting point in order to derive design issues for a KMS, but the findings from the workshops indicated that the general KM assumptions used caused inconsistencies when it came to the fit between design issues and IOC-settings. We elaborate on this through a discussion viewing the workshop results against interorganizational collaborative (IOC) motives taken from Oliver (1990). No claim is made towards the justification or falsification of theory, rather the explication of a specific project occurrence relevant to the KM and IOC community.

2 Methodology

After an initial literary review covering 58 articles and books within the field of knowledge management, five general theoretical assumptions regarding KM were identified and defined. These assumptions were then used as a basis for design of a number of workshops to be conducted locally across Europe among the partners involved in the development project. The theoretical assumptions were to be used as a basis for discussion among the participators of the workshops, in order to steer the discussion towards the identification of relevant design issues for the KMS in question.

The results of the workshops were formalized by the individual workshop-leaders and design issues regarding the KMS in question were identified. Following this, the design issues were evaluated against an IOC-setting illustrated by Oliver's (1990) contingencies for IOC.

3 Theory

Oliver (1990) identifies six main contingencies (or motives) for the establishment and maintenance of IOC's, presented below in a slightly modified version of the original.

- *Need* - participators are forced to meet legal and political requirements;
- *Power* - participators are motivated to control other organizations and to preserve their autonomy;
- *Stability* - participators strive to reduce uncertainty in their relations to others;
- *Cost* - participators seek to economize on the cost of transactions with other organizations;
- *Legitimacy* - participators attempt to justify their activities and outputs to institutional environments and to be seen as socially responsible;
- *Goals* - participators strive to identify and pursue mutually beneficial or common goals in collaboration with others.

After an initial literary review covering 58 articles, five general assumptions concerning efficient knowledge management were identified. These theoretical assumptions are based on the notion of knowledge sharing as a core element of knowledge management (See Probst, Raub & Romhardt, 1998).

A1: Efficient knowledge sharing requires foundation of trust between involved parties.

The notion of trust has long been a studied phenomenon with regards to its role in the context of business. As early as 1964, Simmel (In McAllister, 1995) argued that trust is necessary if there is neither total knowledge nor total ignorance, and researchers have long sought a omnipotent and universal definition of the term (see for instance Hwang & Burgers (1997) or McAllister (1995) for a review).

Regardless of the fact that a number of researchers argue that the concept of trust and its affects on business have not received the attention that it deserves (Bluhm, 1987; Porter, Lawler & Hackman, 1975), there is a multitude of definitions and taxonomies covering the subjects. On a general level the majority of definitions differentiate the content of trust to two diametrically divided sub-categories (Hwang & Burgers, 1997;

MacAllister, 1995; Ring & Van De Ven, 1992), namely competence and goodwill. These two aspects of trust reflect the complexity in the activity of trusting as encompassing an assessment of not only the ability of the receiver of trust to fulfil his or her obligations, but also the willingness to achieve said obligations.

These two dimensions of trust are further complemented by a differentiation based on between what actors trust exists, namely inter-personal or inter-organizational (Rosseau, 1985; Zaheer, McEvily & Perrone, 1998) and in some cases even inter-cultural or inter-national (Buckley & Casson, 1988).

"Where there is trust there is the feeling that others will not take advantage of me"

Porter, Lawler & Hackman, 1975, p.497.

As the quote above points out, the notion of trust is also closely related to the concept of opportunism by being an inhibitor of opportunistic behaviour. According to Barney (1999), opportunism can be defined as

"…when a party to an exchange takes unfair advantage of other parties to that exchange". (p.3)

and argues that in order for opportunism to be held at bay, a new form of governance needs to be applied. This new form of governance (intermediate, network or relational (Poppo & Zenger, 2002) governance) uncouples the traditional rigidity of organizational boundaries and opens up for the governance of exchanges between organizations. In order for this form of governance to be successful, the level of opportunism needs to be controlled mainly through the use of contracts and elaborate governance mechanisms (Barney, 1999).

If elaborate contracts and governance mechanisms was all that was needed to hinder opportunistic behaviour in inter-firm collaborations all would be well. However, researchers such as Ghosal & Moran (1996) and Poppo & Zenger (2002) stipulate a somewhat more complex relationship between the existence of opportunistic behavior and the use of contracts. The same researchers state that contracts do not merely have the positive effect of making commitment explicit and provide customized approaches to handling exchanges, but they also have a side-effect in acting as a motor for opportunistic behaviour (Poppo & Zenger, 2002).

A number of researchers have dealt with the relationship between trust and complex contracts (see Poppo & Zenger, 2002 for an overview), and a split can be found between those that regard them as substitutes (Granovetter, 1985; Gulati, 1995b) and

those that regard them as complementary (Poppo & Zenger, 2002; Ghosal & Moran, 1996). In this paper we acknowledge the fact that contracts can function both as structural constraints and affordances, but disagree with the notion that the two constructs exist on a single scale.

The concept of trust would most likely be irrelevant for further research if there was not a direct link between level of trust existing in a collaboration and the performance or outcome of the collaboration. Poppo & Zenger (2002), DeCremer, Snyder & Dewitte (2000), Zaheer, McEvily & Peronne (1998), Barney & Hansen (1995) and Chetty & Eriksson (2002) argue that the level of trust in a collaboration has direct effect on the competitive advantage of the collaboration and hence also the participating firms. This can partly be attributed to the learning-effect that the network collaboration can foster (Chetty & Eriksson, 2002).

When it comes to the link between trust and knowledge sharing, Ardichvili et al (2003) recently investigated the element of trust in virtual communities of practice. According to their findings various different kinds of trust need to be present for efficient knowledge sharing to be possible. This is also supported by Szulanski (1996) in a more general study of knowledge transfer and its prerequisites and Politis (2003) concerning the role of trust in KM and team performance.

A2 Efficient knowledge sharing requires a clarity of roles

We collect our main influence of roles from actor network theory (ANT). ANT is a theory concerned with the production of facts or knowledge (Callon, 1986, 2001; Latour, 1987; Latour and Woolgar, 1979). In particular this methodology highlights the networks giving raise to, and sustaining, various forms of knowledge. No one has ever observed a fact, theory or machine that could survive outside the networks that gave birth to them (Latour, 1987, p.248). From this perspective networks comprise of interconnections between human and non-human actants – that is, ‘documents devices and people’ (Law, 1986). We simplify the view of actors acting in networks into a set of example descriptions of roles involved in knowledge sharing.

Process knowledge refers to knowledge of business processes. Knowledge Management Systems (KMS) support KM activities by integrating information and communication technologies. As an effective process management tool, workflow management systems (WfMS) allows a business to analyze, stimulate, design, enact, control and monitor general business processes (Georgakopoulus, Hornick, and Sheth, 1995; Leamann and Altenhauber, 1994). In practice, workflow participants possess

different needs and types of authority when obtaining information about business processes, they represent different roles. The definition of roles and the delivery of relevant and necessary documents to workers in order for them to complete their tasks in a workflow environment have been addressed by (Abecker, Bernardi, Maus, Sintek and Wenzel, 2000; Staaba and Schnurr, 2000; Ferraiolo, Sandhu, Gavrila, Khun and Chandramouli, 2001).

The role of Artificial Intelligence (AI) in KM is by Tsui, Gardner and Staab states in their editorial of Knowledge based Systems (Tsui, Gardner and Staab, 2000) two questions commonly encountered by AI researchers moving in to the KM area; (i) “After decades of research in knowledge engineering, what exactly is knowledge management”? “Is it jus another name for the same thing”? The business response is a loud NO! There is a general consensus that Knowledge Engineering has a far more technical focus on knowledge, its representation, organization and reasoning. KM is more aligned towards capturing, sharing and reusing knowledge in or among organizations. The second question is; (ii) “There is still no system that can converse with a human, Should one nevertheless try to tackle the even larger problems in KM”? The answer to this question is that most commercial KM tools available already comprise of some sort of AI technology, Bayesen reasoning, ontologies, data mining, intelligent agents etc.

Turner and Keegan (1999, 2000) described operational control processes in project based organizations. The project organization creates an interface between its projects and its clients and noted two roles, Broker and Steward. They found these roles in almost all project based organizations and argue for their respective importance regardless of project. The roles may be described as follows: The Broker shall maintain the relationship with the client. This entails the identification and attraction of new clients, a bid for and win work, a liaison with the client during the work and the delivery of the product. Furhtermore he should ensure the satisfaction of the client and should win follow-up businesses. The role combines ambassador for the firm and resource investigator for the client. The Steward puts together the network of resources to deliver the project, ensuring the right people at the right time to ensure that the right thing happens. It is the project manager’s role to manage the process. The role of the Steward is almost abstract, but an essential one, complementing the complementing the Broker and Manager in the core three (Turner and Keegan, 1999).

A3: Efficient knowledge sharing requires a strong knowledge sharing culture

One of the main influential factors on the successful knowledge sharing within organization is the existence of an organizational culture that supports the effective sharing of knowledge (e.g. Probst 1998, Bullinger 1998). According to major studies on Knowledge Management or Organizational Learning, culture is a key barrier to success in related initiatives. (The conference Board, 2000)

According to Schein (Schein, 1992, p. 12) organizational culture is defined as "*a pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems"*. One aspect of an organizational culture is the knowledge culture. Knowledge culture is the totality of values and norms in an organization that have been developed over time, are accepted by the organizational members and have an influence on the creation, sharing and usage of knowledge. (Grolik, 2004)

In the epoch of the knowledge society which is characterized by a tremendous increase in the amount of available knowledge and information sources and very short knowledge-lifecycles, the willingness of the organizational members to share knowledge becomes one of the most important aspects of organizational culture (Kleinfeld, 2001).

Based on the findings of empirical studies it can be said, that the willingness to share knowledge, is positively related to profitability and productivity and negatively to labor costs. (Jarvenpaa & Staples, 2000). Smith and MacKeen (2000) characterize a knowledge sharing culture by the openness of the organizational members to share knowledge, to teach and to mentor colleagues by using a variety of different media like conversations, meetings, data bases etc.

Especially in knowledge based organizations the existence of a culture that encourages and values knowledge and knowledge sharing is of central importance (Bennet & Bennet, 2001). The organizational culture defines the range of autonomy, trust and values which have a strong impact on the communication, the sharing of knowledge and the innovativeness of an organization (Zucker, 2000)

Tanja Panhans (2004) states in her article about the way to a culture for cooperative learning and working that lots of knowledge management initiatives fail due to the existing organizational culture. Knowledge sharing is directly related to individual

learning and co-operative working. The cultural prerequisites for co-operative learning are trust, open communication, self-confidence, consciousness, the ability and possibility to think critically, leadership, the ability to solve conflicts, the ability to make decisions and the feeling of togetherness.

In the white paper on knowledge management by Lotus (1998) it is stated that knowledge management is as much cultural as it is technological and that a culture that does not foster and reward sharing of knowledge cannot expect technology to solve its knowledge challenges. Successful knowledge management depends very much on the commitment of top-management.

Mark Koskiniemi of Buckman Labs says that Ninety percent of moving an organization to success in knowledge sharing or learning is in having the right culture. If your people are not confident that they can or should communicate freely, then all the best technology will be unable to pry knowledge out of them, or help them absorb knowledge. (The Conference Board 2000, p. 47)

The American Productivity and Quality Centre (APQC) found in an empirical study conducted in 2000 out that *however strong commitment and approach to knowledge management are, the culture is stronger. Companies successful in promoting a strong knowledge-sharing culture do not try to change their culture to fit their knowledge management approach. They build their knowledge management approach to fit their culture. As a result, there is not one right way to get people to share, but many different ways depending on the values and style of the organization. … Organizations with a culture that supports sharing knowledge have the following characteristics: There is a visible link between sharing knowledge and solving practical business problems. Knowledge sharing is tightly linked to a pre-existing core value of the organization. The organization introduces the approach, tools, and structures to support knowledge sharing in a way that matches the overall style of the organization. Knowledge-sharing activities build on existing networks people use in their daily work. Peers and immediate supervisors of those actively involved in sharing knowledge support, even exert, pressure to share. There is an appropriate level of senior management support and involvement.* (McDermott 2000)

Davenport (1999) identifies several factors of an organizational culture that inhibit the successful transfer of knowledge within an organization. Deficits in trust, differences in cultures and language habits, lack of time and meeting-opportunities, incentives for knowledge carriers, lack of capacity to absorb new knowledge, not invented here

syndrome and the intolerance towards mistakes and the need for help. Those deficiencies have to be identified and reduced by appropriate measures.

A4: Efficient knowledge sharing requires the existence of a common language

Another important assumption for the effective sharing of knowledge within an organization is the existence of a common language (corporate language). Through the existence of a common language the mental model behind a term is understood by all individuals in an organization that should receive certain information. Davenport (1999) states that knowledge sharing is only possible if all involved individuals speak the same language.

Speaking the same language does however not necessarily mean the sharing of knowledge. Mattson and Sarraste (2002) state in their thesis on knowledge and knowledge management that *the sender of the message sends information not knowledge. The message is received by the recipient as data, ready to be interpreted into information to be used for knowledge.* … *The sender has to structure information into data that is transferred and then put together into information by the recipient that hopefully will be able to transform it into knowledge.* The usage of a common language can therefore be seen as an important enabler for the effective sharing of knowledge.

Von Krogh et al. (2000) state that the usage of a corporate language is a prerequisite for an effective knowledge flow within an organization. Furthermore they perceive the corporate language as an important aspect for individual learning and reflection. For the purpose of sharing what one knows, tacit knowledge has to be made explicit through a common language that is acceptable to other community members and the company.

Romhardt (1998) identifies the lack of a common language as one major barrier for the successful knowledge transfer in organizations. Based on an empirical study Mark Jones (1999) describes that in the context of on-line forums for communities of practice, new areas of expertise that cross disciplines are more difficult to establish when there is a lack of shared language and norms.

In a survey by the IBM Institute for Knowledge Based organizations (2002) it was found out that the usage of common language has an influence of the competence based trust between people which is a prerequisite for knowledge sharing within an organisation.

Georg Disterer (2001, p. 3) identifies the lack of a common language as one major obstacle to the effective knowledge sharing within an organization. He sees a need for

a common language in order to "*communicate knowledge by special language features like analogies and metaphors to externalize tacit knowledge hidden in individual mental models, viewpoints, working models, schemata, paradigms and beliefs"*. Ontologies can be one form of common language that enable the sharing and reuse of knowledge. (Holsapple 2002).

Barner-Rasmussen (2003, p. 13) states in his thesis about knowledge sharing in multinational corporations that *since language is the means by which people discuss, exchange information, ask questions, and conduct business, sharing a common language makes it easier to access other people and their information, and conversely, differing language and codes can keep people apart and restrict their access to each other. This effect is termed 'direct impact'. It pertains to the extent to which skills in a particular language give those who speak it access to other people and their information.*

A5: Efficient knowledge sharing requires a clear knowledge sharing strategy

The fifth basic assumption for the efficient knowledge sharing within a interorganizational setting is the existence of a clear defined knowledge sharing strategy. The knowledge sharing strategy is based on the knowledge strategy of an organization. *The knowledge strategy is dedicated instrument used by business owners and their management teams to plan, implement and control management actions concerning business relevant knowledge. The latter, both as a resource and as a product, is having a growing impact on business success. The knowledge strategy identifies which knowledge areas have an impact on the business, how strong this impact is, which deficits there are in each of the knowledge areas in terms of proficiency, codification and diffusion, and determines what the management feels it can do in response to these issues. (Hofer-Alfeis & von der Spek (2002), p. 25)* The term diffusion of knowledge is directly related to the sharing of it. Therefore measures have to be derived by the responsible management for the effective distribution of the knowledge within the organization.

The UNFPA (2004) sees the definition of a knowledge sharing strategy as an essential step towards an effective sharing of knowledge within an organization. *A clear understanding of the meaning and implications of sharing, as well as proper motivation mechanisms are therefore essential components of any knowledge sharing strategy*. … *The benefits of a knowledge sharing strategy must be central to the work of all staff in the Organization* (UNFPA 2004)

The definition of a knowledge sharing strategy was one important aspect of the World Bank's knowledge management initiative (Pommier, 2000). According to the Knowledge Management Initiative at the World Bank a Knowledge Sharing Strategy shall clearly state the reasons of an organization why there is a need for the sharing of knowledge. Furthermore it should contain the relevant knowledge aspects that should be shared within the organization and the persons that are involved in the knowledge sharing process.

The objectives for knowledge sharing are deducted from the ones for knowledge management which are mainly based on organizational strategic objectives. Based on Probst, Raub & Romhardt (1998) knowledge objectives at three different levels can be distinguished. Normative knowledge objectives (know-why) are related to the desired values and norms, which are of importance for a long-term, sustainable competitive advantage. Strategic knowledge objectives (know what) formulate on the one side how the existing knowledge should be applied in order to achieve organizational success and on the other side, which knowledge has to be created in order to be able to take advantage of new business opportunities. At the third level which is called operative level the objectives for the daily business are defined.

Knowledge objectives can be defined for the optimization of existing processes, products and services or the creation of new ones. Based on the defined knowledge sharing objectives the relevant measures for achieving them have to be defined. A knowledge sharing strategy has further to define who should share the knowledge with whom, when it should be shared and the appropriate media for knowledge sharing.

Mattson and Sarraste (2002) also emphasize the importance of the existence of a knowledge sharing strategy. They differentiate between a personalization knowledge transfer strategy which defines the knowledge that has to be transferred via face to face contacts between the organizational members and the codification transfer strategy. This strategy defines objectives and suitable measures for the transfer of explicit knowledge in a codified way.

In an in 1999 conducted empirical study by the Conference Board (encompassing 200 senior executives from 158 global companies) it was shown that *21 percent of companies have a formally communicated knowledge-sharing strategy. Among them is a diversity of strategies and approaches. Most knowledge strategies are currently based on increasing efficiencies mainly because it is easier and more immediate to exploit what is known. Few firms have a strategy focused on innovation, knowledge creation, or customer loyalty.* (The Conference Board 2000, p. 5) This relatively high

percentage of companies that have formally communicated knowledge sharing strategies underpins the importance of such a strategy for the effectiveness and efficiency of the organizational knowledge sharing.

Table 1. KM Assumptions

Assumption	Explanation	Reference
A1 Trust	Efficient knowledge sharing requires a foundation of trust.	Ardichvili et al 2003; Bluhm, 1987; Barney 1999; Barney & Hansen 1995; Buckley & Casson, 1988; Chetty & Eriksson 2002; DeCremer, Snyder & Dewitte 2000; Ghosal & Moran 1996; Granovetter, 1985; Gulati, 1995; Hwang & Burgers 1997; MacAllister, 1995; Poppo & Zenger, 2002; Porter, Lawler & Hackman, 1975; Ring & Van De Ven, 1992; Rosseau, 1985; Szulanski 1996; Zaheer, McEvily & Perrone, 1998
A2 Roles	Efficient knowledge sharing requires clarity of roles.	Abecker, Bernardi, Maus, Sintek, and Wendel, 2000; Callon, 1986; Callon, 2001; Tsui, Gardner and Staab, 2000; Ferraiolo, Sandhu, Gavrila, S., Khun, and Chandramouli, 2001; Georgakopoulus, Hornick, and Sheth, 1995; Leamann, Altenhauber, 1994; Latour, 1987; Law, 1998; Staaba, Snurr, 2000; Turner, Keegan, 1999; Turner, Keegan, 2000
A3 Culture	Efficient knowledge sharing requires a strong knowledge sharing culture	APQC, 1999; Bennet & Bennet, 2001; Bullinger, 1998; Davenport, 1999; Jarvenpaa & Staples, 2000; Kleinfeld, 2001; Lotus, 1998; Panhans, 2004; Probst ,1998; Smith, 2000; The Conference Boards, 2000; Zucker, 2000
A4 Language	Efficient knowledge sharing requires the existence of a common language.	Barner-Rasmussen, 2003; Davenport, 1999; Disterer, 2001; Holsaplle, 2002; IBM, 2002; Jones, 2004; Mattson, 2002; Romhardt, 1998; Von Krogh, 2000
A5 Strategy	Efficient knowledge sharing requires a clear knowledge sharing strategy.	Davenport, 2002; Mattson, 2003; North, 2001; Pommier, 2000; Probst, Raub & Romhardt 1998; The Conference Board, 2000; UNFPA, 2004
		58 papers

4 Results

The results of the workshops contain two separate sets of data, one stems from a survey with the aim of capturing the workshop participants initial opinion of the assumptions. The second part of the data is based on a qualitative summary of the active part of the workshops when the practitioners where asked to further elaborate on

the assumptions towards possible design implications for a KMS. In total, 5 workshops where conducted. The number of participants in each workshop range between 4 and 8. The workshop coordinator (project participant) was responsible for reporting a summary of the workshop. This summary comprises both the survey and the elaboration of assumptions.

Table 2. KM Assumptions

KM Assumption #	Survey 1(low) – 5 (high)		Elaboration	
	Mean	Range	Statements	Metods/Tools used as support
1. Trust	4,6	3 - 5	- Knowledge will only be provided for those people to which I have trust and from which I know, that they will not misuse the knowledge or use it against me. - Trust is a pre-requisite for open communication between partner and hence for the transfer of knowledge and information within cooperative networks - Without trust the people in the organization are not willing to share their knowledge - Sharing knowledge without a foundation of trust leads to a holdback of important parts of knowledge, the consequences is that the other knowledge becomes less quality because of the missing parts - Relevant knowledge is the ultimate power tool and therefore is guarded carefully and will not be let over to "anybody"	-Clear rules, consequences of misuse -Bi- and multilateral meetings, definition of network rules, definition of common vision, mission , strategy - First the network project is created, then the responsibilities are defined, Knowledge is used to create value for everyone, win-win - One-to-one meetings in combination with unofficial activities - Gentlemen's agreements in every specific situation - Where appropriate IP rights are claimed - Where appropriate information is classified
2. Roles	3,6	2 - 5	- It is not important who has one role in a network. This does not reflect the competence of the knowledge one person has. - An efficient knowledge sharing does not necessarily demand the definition of "knowledge" roles in such a small network. - People within an organization are either not allowed or not willing to share their knowledge, therefore the rules and roles must be defined. Information overload – therefore only the knowledge to those who really need it, competence and knowledge matrix - Basic role descriptions are necessary but there should be a possibility to change rol to another more efficient one - Unclear roles contribute to confusion, timewaste in searching for who to contact, uncertainty, mistrust	- Organizational chart, collaboration rules, definition of responsibilities - Kick off meeting – introduction, organizational chart, expert databank - Contract, definition of competence within each workgroup - Agreement on roles - Formal descriptions for roles -Contracts and legal agreements
3. Culture	4,4	3 - 5	- Only when partners communication in an open way an efficient knowledge sharing can take place - Yes the reason is clear - The knowledge culture does not need to be perfect in the beginning, but basics need to be there to work on - Efficient knowledge may be arranged by creating trust and organizing work to support knowledge sharing. Motivation for sharing knowledge is a stronger factor	- Common definition of vision, mission strategy, services, network rules, ongoing meetings, lessons learnt inputs transparency over project ideas and potential customers contact details - Guidelines and principles of a company, intrinsic and

			than culture	extrinsic motivation, IT is thereby the sufficient factor - Creation of a knowledge board
4. Language	4,2	2 - 5	- Effective knowledge sharing is only possible when all partners use main terms in a common sense. A difference in the usage of terms causes misunderstanding and reduces the efficiency and effectiveness of collaborations. A common language can be seen as an output of ongoing collaboration - To communicate we must all speak the same language, for common understanding we must have the same goal, dictionary, abbreviation list - Terms need to have the same meaning for everyone to create the same knowledge at each - A common language (in terms of concepts, frame of reference, wording, symbolics) is created among the actors in the process of knowledge sharing. Thus, it can not be based only on a pre-existing language	- e-learning, corporate academy, intranet - Events consist of people of same qualification, problems arise on terms that are special for a company, no methods in use - In specific areas a vast professional language and terminology may exist e. g. medicine, but still it is not sufficient per se to avoid misinterpretations -Models/modeling, natural language definitions, formal definitions, glossary, reference to literrature
5. Strategy	3,8	2 - 5	- The need for a clear definition of such a knowledge strategy is not seen as an indispensable factor for efficient knowledge sharing - It's the challenge of the head of the company to support and promote the knowledge sharing strategy in order to make an organization in a global, open community successful by always knowing who needed help and provided the knowledge they needed - Members need a target and a reason - Knowledge sharing often occurs in situations with a high degree of uncertainty regarding what knowledge is/ will be needed to share, motivation for sharing is more important than a clear strategy	- Be up-to-date, always have the latest info, mind map, component of the strategic identity - Competence analysis in combination with planning further steps

Based on the data regarding the assumptions (Table 2), possible KMS design issues where identified (Table 3).

Table 3. Possible KMS design issues

Assumption	KMS design issues
1. Trust	Creation of Inter-personal trust High level of control of information Definition of responsibilities
2. Roles	Access control Control of knowledge flow to prevent information overflow
3. Culture	Make inter-personal communication possible Definition of common values and rules
4. Language	Need for common language Definition of terms/dictionary
5. Strategy	Definition and communication of target and reason

5 Discussion

Below follows a discussion concerning the applicability of the derived design issues. In order to reach a nuanced view of the issues, we choose to view them from an IOC-setting. This perspective is well described in Olivers article: Determents of interorganizational relations (Oliver, 1990) or as short version in this article (p. 3). Oliver argues that one of the central aspects for understanding an interorganizational collaborative context is through the underlying motives for the collaboration, thus, we use Olivers motives to evaluate a number of general KM assumptions.

When it comes to the first theoretical assumption (trust) the IOC-setting defined by Oliver (1990) is supported through the relationship between trust and power, stability and goals. The IOC-setting is a highly political one where participators create alliances between one another on an inter-organizational level, and hence the existence of inter-firm trust is of utmost importance as a mechanism of stability and protection against opportunism (Barney, 1999). This relates the activities of KM to a political agenda, and along the lines of Foucault, the distinction between knowledge and power becomes a difficult one (Foucault, 1980). In relation with the derived KMS design issues, “Creation of inter-personal trust” can be assessed as somewhat of a simplification of the political context.

Regarding the KMS design issue “High level of control of information”, it too can be related to the political agenda of the IOC. Most of the IOC’s we have come in contact with, show an asymmetrical display of power. When concerning the design of a KMS for this context, these asymmetries must be taken into considerations and be supported by the prospective system. This implies a centralization of control over the transparency of the system, along with ample support for the control of information flow. Given this, we found that the basic assumption regarding trust is applicable to IOC KM, despite the fact that the design issues were somewhat simplified.

The theoretical assumption concerning roles (assumption number two) was found highly difficult to elaborate on by most of the workshops and as an affect of this the KMS design issues displayed were hard to relate to an IOC-setting. Given the context of the KM being IOC’s, the sharing of knowledge is conducted in parallel on two separate levels. The inter-firm level requires one set of roles while the inter-personal requires another. This proved to be one of the most profound difficulties to elaborate on and formalize around, and a symptom of this can perhaps be seen in the display of different types of control being mentioned as design issues for the KMS. Access- and knowledge flow- control should perhaps more be regarded as affects of the

formalization of roles in the IOC (and subsequently KMS). All and all the assumption regarding roles was highly problematic and found oversimplified for the IOC-setting.

The theoretical assumption regarding culture was found to be problematic due to a multiplicity of cultures displayed in the IOC (e.g. inter-firm and intra-firm cultures). With this in mind the existence of one knowledge sharing culture kicking in and acting as a holocoen for the knowledge exchange between the participators in the IOC is oversimplified. Instead the existence of parallel cultures is apparent and needs to be addressed in the design of the KMS. This is nicely portrayed in the design issue "Definition of common values and roles" that illustrates the IOC (and subsequently KMS) as being an entity in itself, requiring a set of variables defining the culture of its own. Hence, the assumption of Culture needs to be related to the IOC as a third-party in the collaboration, and the KMS as being a manifestation of the knowledge exchange between the participators.

When it comes to the fourth theoretical assumption (language) the evaluation is tightly intertwined with the discussion concerning Culture above. The "Need for common language" and "Definitions of terms/dictionary" are relevant design issues given the collaboration as a third entity requiring its own culture and language for the knowledge sharing to be efficient. However, the same critique concerning a simplification of the context of KM is applicable to this assumption.

Concerning Strategy as the fifth theoretical assumption this was found to be highly difficult to elaborate on in the workshops, and hence we can see an illustration of over-simplification in the design issue "Definition and communication of target and reason". Regardless of what (if any) different explicit or implicit KM-strategies the collaborating parties display on an intra-firm level, the exchange of knowledge through in IOC KMS will most likely require a rigorous explicit intra-firm KM-strategy. Hence, the assumption is over-simplified and suffers from a lack of contextual awareness regarding the IOC-setting.

To summarize our findings from the workshops the theoretical assumptions regarding KM used as a basis for discussion were found to be too general in nature and not directly applicable to the context of IOC.

6 Concluding remarks

Given the results from the study, three key implications follow; (i) Research and projects that base their scope on traditional KM assumptions whilst working in an IOC

setting should re-examine their basic assumptions against fundamental motives for IOC. This concerns, above all, software vendors developing software tools supposedly for IOC's; (ii) Projects addressing KM in an IOC setting should start from an IOC perspective and move into respective content, e.g. KM, not the opposite; (iii) Increased attention should in the future be given to relating/questioning theoretical assumptions relevance to investigate the context/problem at hand. This could prevent other projects to fall into the same trap as we did.

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