Evaluating Interorganizational Knowledge Management: The Concept of IKM Orientation

Agnès Lancini
Aix-Marseille University, France – Cret-Log Research Center
agnes.lancini@univ-amu.fr

Abstract: For about 20 years, organisations have to work with more and more partners through networks, supply chains and other virtual structures, in volatile or just unstable environments. Networked organisational settings underline the need of managing knowledge across boundaries. The literature calls for more theoretical and empirical work to define what IKM is and examine its implementation. This paper responds to that call and investigates how to define and evaluate Interorganizational Knowledge Management (IKM), or the degree to which firms in the supply chain (or other interorganizational settings) demonstrate systematic implementation of IKM. To define IKM, we propose a theoretical framework drawing on the knowledge-based view, the relational theories and the capacity lens. The theoretical contribution of this work shows that IKM is more than a simple extension of the level of analysis; it is a new concept with unique definition, theoretical frames, and objectives. To evaluate IKM, we study the concept of IKM orientation. Based on an extensive literature review, this study conceptualizes IKM orientation as six interconnecting elements: frequency of exchanges of information and knowledge; nature of the exchanged information and knowledge; inter-organizational activities supported; IT infrastructure; scope, direction and strength of collaborative exchanges; and KM processes supported. Specifically, we provide a case study of a network of franchised convenience stores, to illustrate the several dimensions that comprise the measure of IKM orientation. This study could help managers to identify the IKM orientation in their firms, and the dimensions that need to be improved. Some implications of, perspectives on, and limits of IKM evaluation research and practice are discussed.

Keywords: Interorganizational Knowledge Management, evaluation, IKM Orientation, Supply-Chain, boundaries

1. Introduction

Research on Knowledge Management (KM) in organizations has been ongoing since the early 1990s (Alavi, 2000; Alavi and Leidner, 2001). Studies of KM adopt an intraorganizational focus and deal with KM projects developed within the firm in order to formalize, store, exchange, and share or create new internal knowledge. In response to competitive and environmental pressures, the structure of distributed organizations is changing with the emergence of networks and virtual organizations. KM involves going beyond the organizational boundary to extend networks to include business partners and, in turn, to improve performance (Bessant and al., 2003; Cao and al., 2010). Motivated by the need for a better understanding of the inter-organizational processes and dynamics related to KM projects, the present paper examines the following research question: How can we define and evaluate Interorganizational Knowledge Management (IKM)?

The first purpose of this article is to define IKM. The interorganizational perspective on KM is considered as an important conduit for value creation (Subramani, 2004; He and al., 2011). Nevertheless, the knowledge base in this topical area is still fragmented and it lacks definition. For example, little research has been undertaken to clarify the unique nature of IKM concept as opposed to KM. The article addresses these gaps in the literature by first identifying the theoretical framework that provide the conditions for IKM studies. Thus, we analyse the shift from an intra to an interorganizational focus and highlight the main theoretical frames in order to develop the theoretical foundations for the study. These are the knowledge-based view, the relational theories and the capacity perspectives.

The second purpose of this article is to give an answer to how we can evaluate IKM. To answer this question, we propose to study the concept of IKM orientation. This concept measures IKM capacity through the collaborative initiatives implemented by firms within a network.

Based on an extensive literature review, we propose a conceptual effort to develop the concept of IKM orientation as six interconnecting elements: (1) frequency of exchanges of information and knowledge; (2) nature of the exchanged information and knowledge; (3) inter-organizational activities supported; (4) information technology (IT) infrastructure; (5) scope and direction of collaborative exchanges; and (6) KM processes supported. Specifically we present a case study of a network of franchised convenience stores, to illustrate the several dimensions in the measure of IKM orientation.

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The first section of the paper justifies the special interest afforded to the interorganizational perspective on KM and proposes a theoretical framework to define IKM. The second section develops the concept of IKM orientation illustrated by a case study of a network of franchised convenience stores. The paper concludes with a discussion of some limitations of this study and some implications and perspectives.

2. Knowledge Management: From an Intraorganizational to an Interorganizational point of view

The significance of intraorganizational KM as a part of successful business is not in question, and attracts the interest of both scholars and practitioners. Numerous academic research papers have been published and, according to Babcock (2004), business spent over $4 billion in 2007 on KM. At the same time, some authors suggest that competitive advantage might be based on leveraging knowledge, not only in the organization but also in its network (Subramani, 2004 ; Malhotra and al., 2005, 2007; Cao and al., 2010; Marra and al., 2012). This is extending the scope of research on KM to the interorganizational level and the need for a clearer understanding its role. Section 1 addresses the question: What is IKM?

2.1 An intraorganizational perspective of KM – definition and theoretical frames

The resource-based view (RBV) (Penrose, 1959; Wernefelt, 1984; Barney, 1991) and the knowledge-based view (KBV) (Conner and Prahalad, 1996) of the firm reflect the centrality of knowledge in organizations. The strategic importance of knowledge and its management has been the motivation for many KM projects. To codify knowledge, to create new knowledge and to transfer knowledge are among the objectives of intrafirm KM projects. Schultze and Leidner (2002, p. 218) propose a definition that encompasses the great variety of KM initiatives: “Knowledge Management is the generation, representation, storage, transfer, transformation, application, embedding and protecting of organizational knowledge. Organizational Memory, Information Sharing and Collaborative Work are closely related concepts to Knowledge Management”. The notion of process is important and several authors consider KM as a sand of several organizational processes. For example, Alavi and Leidner (2001, p. 114) explain KM processes as “knowledge creation, storage/retrieval, transfer and application”.

We can identify two general approaches to intraorganizational KM. The first is the “repository model” (Alavi, 2000) or the “integrative approach” (Zack, 1999), which refers to the codification and storage of knowledge in order to facilitate reuse of expertise based on accessing the codified knowledge. The second is the “network model” (Alavi, 2000) or the “interactive approach” (Zack, 1999), which emphasizes knowledge exchange. This approach no longer emphasises the codification of knowledge but tries to identify experts and create linkages among individuals in order to facilitate knowledge exchange through direct interactions.

The intraorganizational aspect of KM has been widely studied but few studies have investigated the interorganizational level. Section 1.2 tries to clarify what we mean by IKM from a theoretical viewpoint and also compared to the intraorganizational view of KM.

2.2 The Interorganizational perspective of KM – definition and theoretical frames

The interorganizational perspective is new in the area of KM. Although interorganizational relations among firms are not a recent phenomenon, they are now better developed, that is, they extend beyond a transactional level to more collaborative relationships (Malhotra and al., 2005, 2007; Cao and al., 2010; He and al., 2011). However, it is important to define and understand IKM, whether it differs from intra-organizational KM or is simply a different level of analysis, or whether it has its own specificities, theoretical frames and objectives?

2.2.1 IKM: the reasons for a specific interest

It is posited that IKM goes beyond a simple shift in the level of analysis, and is a new concept with its own definition, theoretical frames and objectives. In the following, it could be presented some arguments to support this claim.

There are several reasons why we need a clearer understanding of IKM and a new framework for its study. First, the stream of work on intraorganizational KM has achieved a level of maturity and includes research on several descriptive and explanatory issues. Moreover, Relational theories of the firm underline that some strategic knowledge is no longer internal and remains located outside the firm (Dyer and Singh, 1998). There have also been some technological evolutions that have facilitated interorganizational firm integration to enable knowledge exchange (Rai and al., 2006). Thus, technology plays an intermediary role between intraorganizational KM and IKM.

There are some contextual and environmental reasons for an investigation of IKM. They include the growth of beneficial interfirm relationships and the frequency and quality of knowledge flows driven by the need for continuous innovation (Subramani, 2004; Malhotra and al., 2005). Also, networks, distributed organizations, and alliances are new organizational forms adapted to the core competence imperative and the willingness to outsource secondary activities. They have been developed to cope with environmental turbulence and the need for a rapid, collective, and appropriate response to the problems faced by networks. The existence of distributed forms of organization implies the need for interfirm exchanges and the interest in IKM (Malhotra and al., 2005;Marra and al., 2012).

2.2.2 Theoretical elements and definition

The interorganizational perspective of KM has been mostly overlooked and has no solid theoretical foundation. However, there are some theoretical frameworks that would seem to lend themselves to the study of IKM. The RBV and, especially, the KBV of the firm are interesting yand incomplete frameworks for studying IKM. Effectively, the KBV emphasizes the key role of knowledge in firm competitiveness. An appropriate complement is given by the concept of "dynamic capacities" which insists on the need, in changing environments, to constantly adjust competencies or develop new ones (Teece and al., 1997). The firm's dynamic capacities are based on the processes of reconfiguration and learning. Reconfiguration refers to the capacity of the firm to transform internal and external resources, in a changing environment. In relation to IKM, this is a useful concept since an imperative of dynamic capacities is generating new knowledge based on external resources (Josserand, 2007). Learning refers to the firm's capacity to transform its resources and relies on the logic of dynamic learning which is situated at the level of individual networks and firms networks (Grant, 1996). The resulting capacity to discover and combine knowledge or to innovate goes beyond the individual level (actor or enterprise) and is associated with the network level, and rather than referring to firm capacity the emphasis is on "network capacity". The works of Foss (1999) and Kogut (2000) are based on the concept of "network capacities". Foss (1999) describes them as key factors promoting coordination and learning, which emerge from firms' interactions.

In order to integrate the interorganizational dimension in the study of IKM, we add the relational view of the firm to this first frame of resources and capacities (Dyer and Singh, 1998). The relational view of the firm emphasizes that a firm's critical resources may span the firm's boundaries (Dyer and Singh, 1998). Thus, to sustain a competitive advantage, the firm must be able to leverage its interorganizational relationships ("social capital" according to Nahapiand and Ghoshal, 1998) to acquire external knowledge. The relational view is appropriate for the study of IKM at the level of analysis of the dyad or network. Dyer and Singh (1998) identify four determinants of a relational rent (profit generated in an exchange relationship): interfirm relation-specific assets; knowledge-sharing routines; complementary resources and routines; and effective governance. Interfirm knowledge-sharing routines correspond to partner-specific absorptive capacity, which is an extension of the concept of "absorptive capacity" developed by Cohen and Levinthal (1990) that includes the firm's ability to recognize and assimilate valuable knowledge from an alliance. Malhotra and al. (2005) developed a theoretical framework that combines the relational view and the concept of absorptive capacity to study collaborative practice within a supply chain. This approach can be used to study IKM because it allows a better understanding of how the organization absorbs and combines external knowledge to develop new knowledge. The relational approach highlights the capacity of two or more organizations to co-create knowledge or develop dyad-specific or network-specific assets (Levina and Vaast, 2005; Mesquita and al., 2008).

Another theoretical frame that can be used to study IKM is March's (1991) learning theory which is based on his exploration/exploitation classification of firms' actions. Exploitation involves refinement to and extension of existing competencies and routines; exploration involves experimenting with new alternatives and their interaction with the environment. IKM initiatives can fall into either of these categories. An exploration perspective includes interfirm collaboration aimed at joint creation of new routines to enhance innovation capacity. An exploitation perspective involves interfirm collaboration aimed at exchanging information and enhancing coordination.

In relation to the repository and network models, an interorganizational perspective on KM favors the network model. The important KM processes an interorganizational context are acquisition of new knowledge from partners (Swan and Newel, 2000; Malhotra and al., 2005), the capacity to share knowledge with partners, and creating new knowledge in collaboration (Dyer and Nobeoka, 2000, Min Antorini and al., 2012; Moyano-Fuentes and al., 2012). These processes of acquisition, transfer and creation of knowledge depend on the social dynamics and links among firms, which refers explicitly to the network model (Alavi, 2000).

2.2.3 IKM objectives

IKM has two main objectives: learning and legitimation. Learning refers to organizations engaged in an IKM project searching for knowledge that they do not possess in house. Mergers or collaboration among pairs of firms, or among the firms in a network can provide means of accessing knowledge (Barlatier and Thomas, 2007). However, learning goes beyond mere access to new knowledge and involves learning about new-to-the-firm innovative working practices in use by network partners (Pittaway and al., 2004). Thus, the learning objective includes the capacity of the firms engaged in the IKM initiative to share, transfer and combine their individual specific knowledge (Kogut, 2000). This increases competitiveness and creates value for the customer. Learning is about promoting the creation of new knowledge in the focal organization and in the firms in the network (Forgues and al. 2006). A specific aspect of IKM is the capacity for two or more organizations to co-create knowledge and develop dyad- or network-specific assets (Levina and Vaast, 2005; Mesquita and al., 2008).This process of co-creation underlines the importance in IKM of the network's innovation capacity. Supplier-oriented or competitor-oriented IKM projects are aimed at new ideas for products and joint new product development, while customer-oriented IKM projects focus on identifying new needs and reducing the risks of innovation and new development (Min-Antorini and al., 2012; Moyano-Fuentes and al., 2012; Pittaway and al., 2004; Sobrero and Roberts, 2001).

The second objective of IKM is the search for legitimacy. Analyses of interorganizational relationships show organization legitimacy is enhanced through association or collaboration with legitimate and prestigious firms. This idea is supported by the new institutionalization process which is defended by Powell and DiMaggio (1983) and Meyer and Rowan, (1977). According to IKM initiatives, the choice of business partners is crucial and affects the search for legitimacy. Also, implementation of an IKM initiative enhances the legitimacy of the whole network and institutionalizes it. Power is no longer associated with information retention but rather is related to information and knowledge diffusion: firms that share their knowledge with other firms in the network are seen as encompassing greater legitimacy. Consider the case of diffusion of norms and standards. For example, Sun Microsystems diffused its technical knowledge to its competitors to promote system compatibility. For Sun Microsystems this knowledge exchange contributed to its leadership within the network. Some authors consider that IKM allows organizational boundaries to be transcended, inclusion of business partners, improved firm performance and improved performance of the whole network (Fugate and al., 2009; Zhang and al., 2010; Mithas and al., 2011).

Firms that undertake IKM initiatives usually combine the two objectives of learning and legitimacy. However, achievement of either is not straightforward. Interorganizational forms reveal tensions, and conflicts can arise across the organization. Partners may be torn between competing and cooperating, between stability and the need to be creative (Kumar and Van Dissel, 1996 ; Bengtsson and Kock, 1999). This paradoxical position can be defined as coopetition. It seems that IKM initiatives will be implemented and be successful only if some balance can be struck between these opposing forces.

The theoretical foundations discussed above are presented in Table 1.

Table 1. Theoretical IKM framework

IKM		
DEFINITION	✓ « Network model » (Alavi, 2000) ✓ IKM Processes :acquisition, transfer and co-creation ⇩	
PURPOSES	**LEARNING**	**LEGITIMACY**
IMPACTS	⇩ Acquisition of knowledge between partners, co-creation of joint knowledge and increased innovation capacities of the firm and of the network	⇩ Increased status, legitimacy and performance of the firm and of the whole Network
THEORETICAL FRAMES FOR A STUDY OF IKM	**Resources/ capacities literature** • Resource Based View (Barney, 1991 ; Wernefelt, 1984) • Dynamic Capacities (Teece et al., 1997) **Relational literature** • Relational View (Dyer & Singh, 1998) • Absorptive capacity (Cohen & Levinthal, 1991 ; Zahra & Georges, 2002) • Network capacities (Foss, 1999 ; Kogut, 2000) • Organizational Learning theory : exploration/exploitation (March, 1991 ; Subramani, 2004)	

3. IKM orientation: Evaluating IKM

The first main section of the paper underlined the attraction of IKM as a research object. This interest falls into two main research perspectives represented by the two following questions:

- How can we promote IKM? This question deals with identification of the factors which contribute positively or inhibit the success of IKM initiatives. It is not the subject of the present paper.
- How can we evaluate IKM? This refers to evaluation of the degree to which firms in a supply chain (or some other interorganizational settings) demonstrate systematic IKM implementation. To encompass the total outcome of an IKM initiative, the IKM orientation of each firm participating in the project needs to be evaluated. We focus on this question in the present paper.

The objective is to propose a measure to evaluate IKM capacity through the collaborative initiatives implemented by firms within a network. Some measures to evaluate the level of KM within a firm (Wang and al., 2008; 2009) and within an organizational network (Halley and Beaulieu, 2005; Malhotra and al., 2005) have been proposed. We are interested in the interaction among different connecting dimensions of KM; our findings should enable network members to identify their level of IKM and improve it.

3.1 The methodological design of the research

To develop a measure of IKM orientation, we adopt a qualitative approach. We study the case of an organization (i.e. : SEJ "Seven-Eleven Japan") engaged in a project which could be considered IKM project. It is aimed at organizing and promoting information and knowledge exchange along with the supply chain in order to better satisfy customer demands. This case highlights several important aspects of measurement of collaboration in IKM, and underlined by the literature review. This qualitative approach combines empirical and theoretical elements.

We use the case of Seven-Eleven Japan (SEJ) and its IT system. The empirical investigation is based on secondary data from various professional and research papers on SEJ (Matsuo and Ogawa, 2007; Yahagi and Kar, 2009). It provides a rich picture of SEJ's business strategy and knowledge management within its competition strategy.

We have made a content analyse that crosses what the articles and documents said with the theoretical framework of IKM. This stage has permitted us to collect many research materials and to develop a contextual knowledge about SEJ organization. The case analysis below presents the main results. We first present the case.

3.2 A case of Supply Chain (SC) collaboration

SEJ manages a national network of independently-owned convenience stores. SEJ is ahead of the competition because of its ability to anticipate customer needs. SEJ tries to forecast customer demand accurately and to innovate and develop new products and services. Its management of its franchise stores combines a willingness to satisfy customer

demand with a major effort to maximize the limited floor space of its stores. Inventory management is very important: it is essential that customers are able to find the products they want, and it is equally essential for SEJ to minimize waste related to perishable goods (Weill and Vitale, 2001). SEJ analyses point-of-sale (POS) data, store-by-store, item-by-item, hour-by-hour, and correlates these data with local, social and environmental factors to develop a predictive model. To implement its strategy, SEJ exploits IT and its relations with network partners, including suppliers, logistics providers, franchise stores and customers. Thus, alongside management of the physical goods in the supply chain, information and knowledge management are given priority along the whole value chain (Halley and Beaulieu, 2005; Fugate and al., 2009).

To achieve its objectives, SEJ operates as follows. The data relating to every purchase are stored (product purchased, location of purchase, date of purchase, time of purchase) (1) (Cf. Figure 1). These data are combined with data on customer profiles (gender, approximate age) (1') which are entered by storekeeper and environmental data (weather, holidays, neighbourhood events) (2). The data are centralized, stored and returned to SEJ for analysis and input to a continuous record of SEJ's predictive model of consumer purchasing behaviour.

In each store, there is a graphic order terminal which the storekeeper can consult to see a visual display of several types of reports based on the SEJ analysis (3), such as sales trends, stock levels, scrap rates and stock out rankings by item (Bleistein and and al., 2006). These reports and graphics are invaluable for informing stock order decision-making.

Each franchise uses the predictive model to forecast customer demand and is able to order from different suppliers, and to receive delivery by a logistics provider (4), (5), (6).

SEJ has implemented just-in-time stock management made possible by the analysis of real time sales data.

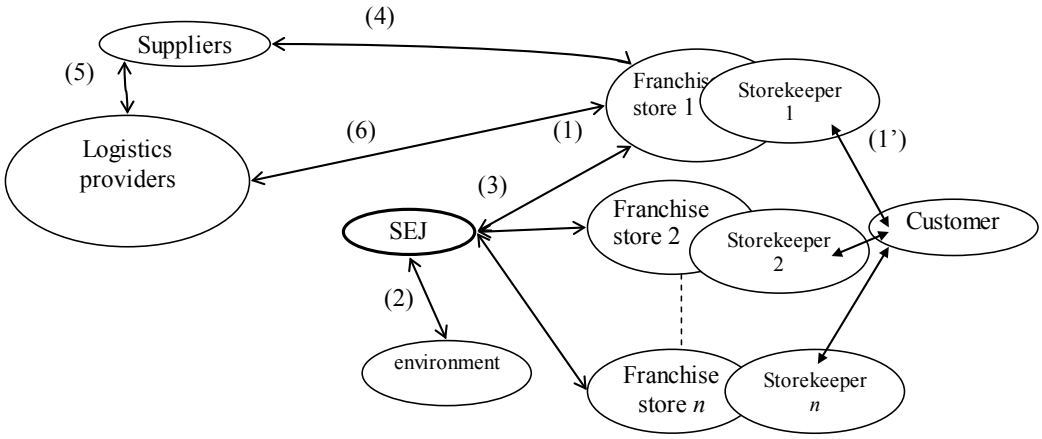


Figure 1. SEJ's relations within the supply chain

We analyse the case of SEJ highlighting some critical dimensions of IKM orientation.

3.3 SEJ's case analysis and proposition of IKM evaluation: toward a measure of IKM orientation

The reality of interorganizational relationships may differ from coordination to strong collaboration. Not all IKM initiatives involve high levels of collaboration within the nand work. Evaluation of IKM initiatives is important and we examine the main dimensions in an IKM orientation.

Based on an extensive review of literature, we discuss the SEJ case in relation to work on IKM and proposed measures for KM (Lancini, 2003), to emphasize the critical dimensions of an IKM orientation.

It is important first to distinguish two dimensions. The first is related to quantitative elements and the second to qualitative features. To evaluate the knowledge management between two entities (organizations, services, persons), several authors include a quantitative dimension represented generally by the frequency of information and knowledge exchange (Dyer, 1997; Halley and Beaulieu, 2005), that is, the frequency and number of exchanges within a dyadic relationship. However, measuring the level of knowledge management implies a multi-dimensional construct. The second – qualitative - dimension is composed of several sub-dimensions which are discussed below.

a. The nature of the information and knowledge exchanged

The RBV and the KBV of the firm both insist on the link between the nature of knowledge and the development of distinctive competencies as directly contributing to the maintenance of competitive advantage. Collaboration and learning based on the sharing of information within a network is critical. Malhotra and and al. (2005) develop a construct called "rich information exchange" referring to the extent of coordinated information exchange on the one hand, and the breadth, quality and degree of privileged information exchange on the other. In SEJ's case and the SC context more generally, most of the information exchanged is generic and relates to operational processes. It includes POS information, inventory levels, delivery schedules, etc. This exchange is focused on day-to-day information and aims at improving coordination and making operational processes more efficient. Malhotra and and al. (2005) note that, beyond a certain point, coordination information can lead to information overload and can hinder enterprises from using strategic information to understand their environment. The case of SEJ, however, also demonstrates a willingness to share other information such as markand trends or changes in customer preferences, enabled by the predictive model. It should be noted that the borderline between operational, tactical or strategic information is blurred and it seems that it is the utilization of the information exchanged that determines it. For example, information exchange between a retailer and a supplier of sales projections can be considered strategic if it enhances the supplier's knowledge of markand trends and allows the supplier to reconsider its production. The same information exchange can be considered tactical if the information is used only to improve production planning and support coordination.

b. Types of activities supported

What are the outputs of IKM? Does IKM mean coordination and knowledge exchange among individuals or joint activities to innovate and co-develop new products to satisfy customer needs? The above paragraph on the nature of the information exchanged suggested various types of activities. The SEJ case shows that the activities supported by IKM are linked to stock management, and delivery and replenishment of goods. Activities related to new product creation are to an extent also a response to customers' needs.

In a SC context, three main types of supported activities can be identified. The first two are related to exchanges of operational information aimed at improving the operational efficiency of activities such as procurement, production, stock or delivery management. Exchanges of tactical information support these activities in order to optimize performance. They enable collaborative practices such as Collaborative Planning Forecasting and Replenishment (CPFR) and interorganizational cost management (Cooper and Slagmulder, 2004). The third type is exchange of strategic information to support supply-side with activities, such as new product development, co-conception, etc. Ulrich and Eppinger, 2004) and aggregation of POS data based on Customer Relationship Management (CRM) systems.

c. Types of IT and systems

Much IT is mature and there are numerous systems that support interorganizational exchanges. IKM initiatives are usually supported by a technical infrastructure as in the case of SEJ. Choosing an appropriate interorganizational IT system requires taking account of the firm's network position and existing information system(s) (IS). The systems supporting interorganizational exchange are referred to as Interorganizational Information Systems (IOS). There are three main types of IOS used in a SC context (Premkumar, 2000; McLaren and and al., 2002); those supporting communication, coordination and collaboration.

- **Systems supporting communication:** These systems transmit information to business partners. They may or may not be integrated into the existing IS. They include fax, e-mail, Electronic Data Interchange (EDI), Extensible Markup Language (XML) and radio frequency identification (RFID) technology.
- **Systems supporting coordination:** These systems not only support the sharing and transfer of information among business partners they also integrate these data into their IS such as EDI matched with Enterprise Resource Planning (ERP) systems, applications allowing advanced planning and scheduling or SC execution which use integrated demand-side information to optimize order management. Electronic procurement hubs, portals and marketplaces support coordination by facilitating the purchase of goods or services along the SC.
- **Systems supporting collaboration:** These systems facilitate the collaborative sharing of information among partners. For example, retailers can share information on user needs with its business partners to develop joint promotional campaigns. The IOS may include a portal to access a web site (intranand or

extranet) dedicated to a specific community. The services can include collaborative planning, forecasting and replenishment, and electronic procurement functions. KM or CRM applications and Datamining can be enabled by the portal.

d. Scope, direction and strength of exchanges

Whatever the interorganizational configuration, it is important to identify the direction of the exchanges among partners, the number of firms involved, and the frequency and type of exchange. It would be interesting to know the scope of the IKM initiative and whether some interorganizational dyadic relationships are more collaborative than others. We can identify three main directions: supply-side (toward suppliers), demand-side (toward customers) and lateral (toward business partners). The number of organizations involved in the IKM initiative is important: exchanges can be bilateral or involve more than two enterprises (Dyer and Nobeoka, 2000).

e. KM processes supported

The outcomes of information exchanges within a network or SC can be assimilated to the different phases of KM process. The concept of absorptive capacity focuses on the intraorganizational side, suggesting that the firm uses external knowledge or creates new knowledge to sustain competitive advantage (Zahra and Georges, 2002). The interorganizational perspective considers three knowledge processes: acquisition, transfer, and creation of knowledge. Acquisition involves collecting the knowledge that exists in the organization or in the environment and involves partners supplying pieces of knowledge not encompassed by the firm (Swan and Newel, 2000; Malhotra and and al., 2005). It can be achieved through the codification of knowledge by internal experts, through mergers, or through new recruitment. It enables the transfer of knowledge among individuals, groups or organizations. In the IKM perspective, knowledge exchange has a positive effect on knowledge contribution and knowledge diffusion (Alavi, 2000; Gupta and Govindarajan, 2000; Kankanhalli and al., 2005); it requires good levels of trust. Several authors emphasize the role of trust in collaboration, and the need for a balance between trust and control in order to implement IKM initiatives. Creation (see Nonaka, 1994), implies dynamic interaction among the actors to develop new knowledge (Dyer and Nobeoka, 2000). In a SC context, the creation of new knowledge will depend on the frequency and the quality of the relationships among organizations (Malhotra and al. 2005). It involves the co-development of a joint field of knowledge (Levina and Vaast, 2005; Mesquita and al., 2008; Moyano-Fuentes and al., 2012)

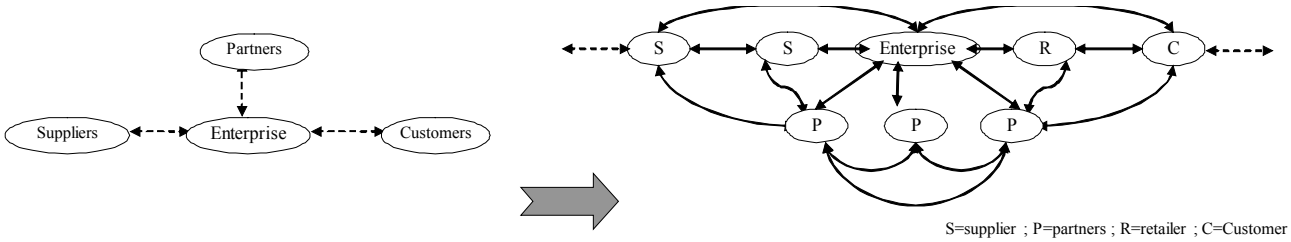
All these dimensions must be part of an IKM evaluation. A proposed measure and its dimensions are presented in table 2.

Table 2. Measure of IKM orientation

Dimensions	Items	References
Frequency of exchanged information and knowledge	Low, medium, high	Malhotra et al., 2005
Nature of information and knowledge exchanged	Operational Tactic Strategic	Halley & Beaulieu, 2005 Malhotra et al., 2005
Supported activities	Production, stock, delivery, procurement New product development, Co-conception, innovation Make Intelligence	Cooper & Slagmulder, 2004 Ulrich & Eppinger, 2004
IT infrastructure	Systems supporting communication, coordination or collaboration	Premkumar, 2000 McLaren et al., 2002
Scope, direction and strength of collaborative exchange	Direction: Supply-side, Demand-side and lateral-side Scope: How many organizations involved? Strength: How strong is the dyadic relationship?	Dyer & Nobeoka, 2000 Mesquita et al., 2008
KM processes supported	Aquisition, exchange, co-creation of knowledge, development of joint knowledge	Swan & Newel, 2000 ; Zahra & Georges, 2002 Malhotra et al., 2005 Levina & Vaast, 2005 Mesquita et al., 2008 Moyano-Fuentes et al., 2012

This proposed IKM orientation is a first step and needs development and operationalization. It does not allow for identification of a typology of collaborative configurations. However, analysis of the empirical contexts related to this measure highlights recurring configurations.

Some of the management research on SC management identifies two extreme configurations: where relationships involve transactions to exchange operational information and where relationships are frequent, and rich, usually supported by IT and are *many-to-many*, involving extranand or internand portals (Cf. figure 2). Note that some rich dyadic relationships allow a collaborative SC configuration.



INITIAL STATUS OF A SUPPLY CHAIN : TRANSACTIONAL RELATIONSHIP

Dimensions	Values
Frequency of exchanged information and knowledge	Low
Nature of exchanged information and knowledge	Operational
Supported activities	Production, stock, delivery, procurement
IT infrastructure	Absent or Systems supporting communication or coordination (EDI)
Scope, direction and strength of collaborative exchange	Sum of some bilateral relationships with suppliers, customers or partners
KM processes supported	Aquisition and storage

MATURITY PHASE OF A SUPPLY CHAIN : HIGH COLLABORATIVE RELATIONSHIP

Dimensions	Values
Frequency exchanged of information and knowledge	Medium to high
Nature of exchanged information and knowledge	Operational, Tactical, Strategic
Supported activities	Production, stock, delivery, procurement and co-conception activities, co-conception, innovation Business Intelligence
IT infrastructure	Systems supporting communication, coordination (EDI, XML) and collaboration (KM, CPFR)
Scope, direction and strength of collaborative exchange	Direction: Supply-side, Demand-side and lateral side Scope: multilateral relationship, emergence of a network identity Strength: Strong but limited in direction and scope
KM processes supported	Acquisition, storage, co-creation of new and joint knowledge, diffusion and reuse of knowledge

Figure 2. The evolution of a Supply Chain from an IKM perspective

Figure 2 shows that the SC management focus has shifted from improvements to individual processes (initial status) to a phase of maturity focused on collaboration within the network (McLaren and al., 2002; Folinas and al., 2004). This emphasizes the importance of the time dimension for SC collaboration. Organizations cannot immediately achieve high levels of IKM orientation. Several studies propose others phases between the two extremes presented here. They propose a step-wise development to achieve SC collaboration. The importance of time suggests the need for a longitudinal study for future research. Although the present study is not longitudinal, the SEJ case is useful.

Analysis of the SEJ case highlights a SC in which all the stakeholders actively collaborate to transfer operational and tactical information (POS data) (Cf. table 3), whose accumulation results in strategic knowledge creation. This transfer deals with the "nature of exchanged information and knowledge dimension". This strategic knowledge enables management of stock and improves levels of customer satisfaction. Intensive collaboration between SEJ and its suppliers revealed a high frequency of exchanged information and resulted in highly coherent quality standards as well as a large number of original products within the store assortments (Yahagi and al., 2009). However, there are improvements that could be made to improve it even further. For instance, SEJ could integrate information on customer dissatisfaction. The emergence of social media and data analytics could allow SEJ and its franchised stores to understand why a product is difficult to sell. This information is strategic because it allows suppliers to make improvements to product features. SEJ could involve all its franchise stores in collaboration by implementing shared procurement management which would improve its procurement process and delivery efficiency.

Table 3. The IKM orientation of SEJ

Dimensions	Values
Frequency of exchanged information and knowledge	High
Nature of exchanged information and knowledge	Operational and Tactical (POS Data, Orders, customer profile) Strategic (information emerging from predictive model)
Supported activities	Production, stock, delivery, procurement
IT infrastructure	Systems supporting communication, coordination: (terminal) and collaboration (executive board)
Scope, direction and strength of collaborative exchange	Direction: Supply-side, Demand-side Scope: multilateral relationship
KM processes supported	Aquisition and storage (POS data) and creation, diffusion and reuse of knowledge (predictive model)

Considering these elements, we can say that the level of IKM orientation in SEJ is relatively high. Therefore, SEJ seems to be on the way of a high collaborative knowledge-based network.

4. Conclusion

4.1 First conclusions

An interorganizational perspective opens up new avenues for research on KM. This paper provides some guidelines for organizations that want to improve collaboration by implementing an IKM project. Thus, our study offers two main contributions to the KM field.

First, by analysing the shift from an intra to an interorganizational focus, we proposed the theoretical foundations that provide the conditions for IKM studies. This theoretical framework comprises the knowledge-based view, the relational theories and the capacity perspectives.

Our second contribution involved measuring IKM capacity through the collaborative initiatives within its network. Building on the case Seven-Eleven Japan and the relationships of the firm within its supply-chain, we developed the concept of IKM orientation, as six interconnecting elements. This framework and the measures proposed enable a better understanding of the collaborative nature of interorganizational relationships. Indeed, business managers need to be able to identify the level of their collaboration and their status within the network and the nature of their relationships with stakeholders. Thus, this work could help managers to identify their firm's IKM orientation and identify the dimensions to be improved to achieve mature KM practices within the network.

5. Limitations and further research directions

Our paper's findings must be viewed in light of its limitation. First, the measure of IKM orientation suggested applies to the relationships within the network (each dyad). It should be emphasized that networks are constituted by both good collaboration and less rich relationships. So is it possible and appropriate to try to evaluate the collaborative level of an entire network? Second, future research could extend the present study to provide a more robust measure of IKM orientation. Future research may consider additional items and would benefit from including other key elements as organizational culture and structure. Third, the empirical investigation of IKM initiatives in this paper is based on secondary data. Moreover, we relied on a single case study. Future research could apply the proposed framework to organizations engaged in IKM projects. Several different interorganizational contexts could be chosen in addition to the SC, for example, joint ventures for product development or interorganizational communities of practices. Fourth, we hope that this work will stimulate researchers to explore other factors that promote IKM success. We underlined the importance of the time dimension for the development of collaboration in a network. This implies that identifying reasons and factors conducive to high IKM orientation would be relevant.

References

Alavi, M. (2000), "Managing organizational knowledge", in Framing the domains of IT management: Projecting the future … from the past, R.W. Zmud (Ed.), Pinnaflex Educational Resources, Cincinnati, Ohio, pp. 15-28.

Alavi, M. and Leidner, D (2001), "Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues", MIS Quarterly, Vol. 25, No. 1, pp. 107-136, March.

Babcock, (2004), "Shedding Light on Knowledge Management", HR Magazine, Vol. 49, No. 5, pp. 46-50.

Barlatier, J. and Thomas, C. (2007), "Savoir-voir collectif etdéveloppement des capacités réseaux", Revue Française de Gestion, vol. 33, No. 170, pp. 173-190.

Barney, J.B. (1991), "Firm resources and sustained competitive advantage", Journal of Management, vol. 17, pp. 99-120.

Bengtsson, M. and Kock S. (1999), "Cooperation and Competition in relationships between competitors in business Networks", Journal of Business and Industrial Marketing, Vol. 14, No. 3, pp. 178-190.

Bleistein, S.J., Cox, K., and Verner J., (2006), "Validating strategic alignment of organizational IT requirements using goal modeling and problem diagrams", Journal of Systems and Software, Vol. 79, No. 3, pp. 362-378.

Bessant, J., Kaplinsky, R. and Lamming, R. (2003), "Putting supply chain learning into practice", International Journal of Operations & Production Management, Vol. 23, No. 2, pp. 167-184.

Carlile, R. (2004), "Transferring, Translating, and Transforming: An Integrative Framework for Managing Knowledge Across Boundaries", Organization Science, Vol. 15, No. 5, pp. 555-568.

Cao, M., Vonderembse, M. A., Zhang, Q. and Ragu-Nathan, T. S. (2010), "Supply chain collaboration: conceptualisation and instrument development", International Journal of Production Research, Vol. 48, No. 22, pp. 6613-6635.

Cohen, W.M. and Levinthal D.A. (1990), "Absorptive Capacity: A New Perspective on Learning and Innovation", Administrative Science Quarterly, Vol. 35, No. 1, pp. 128-152.

Conner, K., and Prahalad, C.-K. (1996), "A Resource-Based Theory of the Firm: Knowledge versus Opportunism", Organization Science, Vol. 7, No. 5, pp. 477-501.

Cooper, R. and Slagmulder, D. (2004), "Interorganizational Cost Management and Relational Context", Accounting, Organizations and Society, Vol. 29, No. 1, pp. 1-26.

DiMaggio, P. and Powell, W. (1983), "The Iron-Cage Revisited : Institutional Isomorphism and Collective Rationality in Organizational Field", American Sociological Review, Vol. 48, April, pp. 147- 160.

Dyer, J.H. (1997), "Effective Interfirm Collaboration: How firms minimize transaction costs and maximize transaction Value", Strategic Management Journal, Vol. 18, No. 7, pp. 535-556.

Dyer, J.H. and Nobeoka, K. (2000), "Creating and managing a high-performance knowledge-sharing network: the Toyota case", Strategic Management Journal, Vol. 21, No. 5, pp. 345-367.

Dyer, J.H. and Singh, H (1998), « The relational view: cooperative strategy and sources of interorganizational competitive advantage », Academy of Management Review, Vol. 23, No. 4, pp. 660-679.

Folinas, D., Manthou, V., Sigala, M. and Vlachopoulou, M. (2004), "E-volution of a supply chain : cases and best practices", Internand Research, Vol. 14, No. 4, pp. 274-283.

Forgues, B, Fréchet, M. and Josserand, E. (2006), "Relations inter-organisationnelles –conceptualisations, resultats and voies de recherche", Revue Française de Gestion, Vol. 32, No. 164, pp. 17-31.

Foss, N.J. (1999), "Networks, capabilities and competitive advantage", Scandinavian Journal of Management, vol. 15, pp. 1-15.

Fugate, B. S., Stank, T. PP. and Mentzer, J. T. (2009), "Linking improved knowledge management to operational and organizational performance", Journal of Operations Management, Vol. 27, No. 3, pp. 247-264.

Grant, R.M. (1996), "Prospering in dynamically-competitive environments: Organizational Capabilities as knowledge Integration", Organization Science, Vol. 7, No. 4, pp. 375-387.

Gupta, A. K., and Govindarajan, V. (2000), "Knowledge flows within multinational corporations", Strategic Management Journal, Vol. 21, p. 473-496.

Halley, A., and Beaulieu, M. (2005), "Knowledge Management Practices in the context of Supply Chain Integration : the Canadian Experience", Supply Chain Forum, Vol. 6, No. 1, pp. 66-81.

He, Q., Gallear, D. and Ghobadian, A. (2011), "Knowledge Transfer: The Facilitating Attributes in Supply-Chain Partnerships", Information Systems Management, Vol. 28, No. 1, pp. 57-70.

Kankanhalli, A, Tan, B.C. and Wei, K.K. (2005) "Contributing Knowledge to electronic Knowledge Repositories: an Empirical Investigation", MIS Quarterly, Vol. 29, No. 1, pp. 113-143.

Kogut, B. (2000), "The network as knowledge: generative rules and the emergence of structure", Strategic Management Journal, Vol. 21, pp. 405-425.

Kumar, K. and Van Dissel, H. G. (1996), Sustainable Collaboration: Managing Conflict and Cooperation in Interorganizational Systems, MIS Quarterly, 20: 3, 279-300.

Lancini, A. (2003), « Identification des facteurs favorisant le succès d'adoption des SGC: étude de cas d'une mutuelle d'assurances », *Systèmes d'Information et Management*, Vol. 8, n°2, p. 11-40.

Levina, N. and Vaast, E. (2005), "The emergence of boundary spanning competence in practice: implications for implementation and use of information systems", MIS Quarterly, Vol. 29, No. 2, pp. 335-363.

Malhotra, A., Gosain, S. and El Sawy, O.A. (2005), "Absorptive capacity configurations in supply chains: gearing for partner-enabled markand knowledge creation", MIS Quarterly, Vol. 29, No. 1, pp. 145-187.

Malhotra, A., Gosain, S., and El Sawy, O.A. (2007), "Leveraging Standard Electronic Business Interfaces to enable Adaptative Supply Chain Partnerships", Information Systems Research, Vol. 18, No. 3, pp. 260-279.

McLaren, T., Head, M and Yuan, Y. (2002), "Supply Chain collaboration alternatives: understanding the expected costs and benefits", Internand Research: Electronic Networking Applications and Policy, Vol. 12, No. 4, pp. 348-364.

March, J.G. (1991), "Exploration and exploitation in organizational learning", Organization Science, Vol. 2, No. 1, pp. 71-88.

Marra, M., Ho, W. and Edwards, J. S. (2012), Supply Chain Knowledge Management: A Literature Review, Expert Systems with Applications, 39, 6103-6110.

Matsuo, H. and Ogawa, S. (2007), Innovating innovation:The case of Seven-Eleven Japan, International Commerce Review -- ECR Journal, 7: 2, 104-114.

Mesquita, L. F., Anand, J. and Brush, T. H. (2008), "Comparing the resource-based and relational views: knowledge transfer and spillover in vertical alliances", Strategic Management Journal, Vol. 29, No. 9, pp. 913-941.

Meyer J. and Rowan B. (1977), "Institutionalized Organizations : Formal Structure as Myth and Ceremony", American Journal of Sociology, Vol. 83, pp. 340-363

Min Antorini, Y., Muniz, J. a. M. and Askildsen, T. (2012), Collaborating With Customer Communities: Lessons From the Lego Group. (cover story), MIT Sloan Management Review, 53: 3, 73-79.

Mithas, S., Ramasubbu, N. and Sambamurthy, V. (2011), "How information management capability influences firm performance", MIS Quarterly, Vol. 35, No. 1, pp. 137-157.

Moyano-Fuentes, J., Sacristán-Díaz, M. and Martínez-Jurado, P. J. (2012), Cooperation in the supply chain and lean production adoptionEvidence from the Spanish automotive industry, International Journal of Operations and Production Management, 32: 9, 1075-1096.

Nonaka, I. (1994), A dynamic theory of knowledge creation, Organization Science, Vol. 5, No. 1, pp. 14-37.

Penrose, E. (1959), The theory of the growth of the firm, Wiley, New York (NY).

Pittaway, L, Robertson, M., Munir, K., Denver, D. and Neely, A. (2004), "Networking and innovation: a systematic review of evidence", International Journal of Management Reviews, Vol. 5/6, No. 3&4, pp. 137-168.

Premkumar, G. (2000), "Interorganization systems and supply chain management: an information processing perspective", Information Systems Management, summer, Vol. 17 No. 3, pp.56-70.

Rai, A., Patnayakuni, R. and Seth, N. (2006), "Firm performance impacts of digitally enabled supply chain integration capabilities", MIS Quarterly, Vol. 30, No. 2, pp. 225-246.

Schultze U. and Leidner D.E. (2002), "Studying Knowledge Management in Information Systems Research: discourses and theoretical assumptions", MIS Quarterly, vol.26, No. 3, pp. 213-242.

Sobrero, M. and Roberts, E.B. (2001), "The trade-off between efficiency and learning in interorganizational relationships for product development", Management Science, Vol. 47, No. 4, pp. 493-511.

Subramani, M., (2004), "How do suppliers benefit from information technology use in supply chain relationships ?", MIS Quarterly, Vol. 28, No. 1, pp. 45-53.

Subramani, M. and Venkatraman, N. (2003), "Safeguarding investments in Asymmetric Interorganizational Relationships: Theory and Evidence", Academy of Management Journal, Vol. 46, No. 1, pp. 46-62.

Swan, J. and Newel, S. (2000), "Linking Knowledge Management and Innovation", Proceedings of the 8th European Conference on Information Systems, pp. 591-598.

Teece, D.J, Pisano, G. and Shuen, A. (1997), "Dynamic capabilities and Strategic Management", Strategic Management Journal, Vol. 18, pp. 509-533.

Ulrich,K. and Eppinger, S. (2004), Product Design and Development,McGraw-Hill, New-York, 3rd Ed.

Wang, C. L., Ahmed, K. and Rafiq, M. (2008), "Knowledge management orientation: construct development and empirical validation", European Journal of Information Systems, Vol. 17, No. 3, pp. 219-235.

Wang, C. L., Hult, G. T. M., Ketchen, D. J. and Ahmed, K. (2009), "Knowledge management orientation, markand orientation, and firm performance: an integration and empirical examination", Journal of Strategic Marketing, Vol. 17, No. 2, pp. 99-122.

Weill, P. and Vitale, M. (2001), Place to space: moving to e-business models, Harvard Business School Publishing Corporation, Boston.

Wernefelt, B. (1984), "A resource-based view of the firm", Strategic Management Journal, Vol. 5, No. 2, pp. 171-180.

Yahagi, T. and Kar, M. (2009), The process of international business model transfer in the Seven-Eleven group: US - Japan - China, Asia Pacific Business Review, Vol. 15, N° 1, pp. 41-58.

Zack, M.H. (1999), "Managing codified knowledge", Sloan Management Review, Vol. 40, No. 6, pp. 45-58.

Zack, M.H. (2003), "Rethinking the Knowledge-Based Organization", MIT Sloan Management Review, Vol. 44, N° 4, pp. 67-71.

Zahra, S. and Georges, G. (2002), Absorptive capacity: a review, reconceptualization and extension, Academy of Management Review, Vol. 27, No. 2, pp. 185-203.

Zhang, H., Shu, C., Jiang, X. and Malter, A. J. (2010), "Managing Knowledge for Innovation: The Role of Cooperation, Competition, and Alliance Nationality", Journal of International Marketing, Vol. 18, No. 4, pp. 74-94.