Investigating Inter-Organizational Knowledge Sharing Intention in Supply Chain Partnership

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Abstract

In today’s knowledge based economies, organizations cannot rely on acquiring the required knowledge solely from internal resources. This will make inter-organizational knowledge sharing an important issue. A great proportion of the current Studies mostly focus on the intention to share knowledge within an organization. This paper argues that there is a need to investigate the intention to share knowledge between organizations especially among supply chain partners because inter-organizational knowledge sharing is critical to supply chain activities. Based on the literature, the current study proposes a conceptual model showing the factors affecting inter-organizational knowledge sharing in supply chains, and how these factors may affect intention to share knowledge among the chained organisations. Through a systematic literature review, three major sets of factors were identified including: contextual factors, organizational factors and factors related to nature of knowledge. It is illustrated in the proposed conceptual model that contextual factors influence the intention to share knowledge in IO contexts. A plan is also proposed for both validation and testing of the conceptual model. For this purpose a mix methodology approach is proposed including interviews and a survey.

Keywords

Inter-organizational knowledge sharing, Inter-organizational relationship, Intention to share knowledge, Supply chain, Customer-supplier relationship

Introduction

Knowledge is regarded as the most important competitive asset for companies as well as a major source of competitive advantage. It is also argued that no single organization has the full range of expertise they need for their survival (Dyer & Singh, 1998). The new knowledge is acquired not only from internal knowledge resources but also from resources outside the organizations boundaries. Inter-organizational (IO) Knowledge Sharing has received increasing attentions by researchers and practitioners (e.g. Albino et al., 1998; and Nieminen, 2005; Hau and Evangelista, 2007; Wijk et al., 2008; and Cummings & Teng, 2003). Many of organizational relationships have been created to transfer knowledge. In supply chain activities knowledge sharing is not defined as the main target within supply chain partners and usually takes place informally and spontaneously (He et al., 2006). Supply chain partnership is a special type of IO relationship that is highly knowledge-intensive. Acquiring knowledge from a supply chain partner can help an organization to overcome many failures in supply chain (Speckman, 1998). One of the barriers to knowledge sharing is a lack of motivation to share knowledge. This in turn will lead to a lack of intention to share knowledge both at individual and organizational levels (Pfeffer, 2003). In the past, the majority of studies have focused on the intention to share knowledge within an organization (e.g. Bock et al., 2002). Intention to share knowledge however needs to be investigated in inter-
organizational level. Lack of intention to share knowledge is more important in supply chain activities because knowledge sharing may not receive appropriate attention as it is not the main objective of the relationship (He et al., 2006). Many studies have investigated inter-organizational knowledge sharing (e.g. Hau and Evangelista, (2007); and Easterby-Smith et al., (2008)) but very few have focused on identifying the factors affecting intention to share knowledge in IO context. This study aims to investigate the intention to share knowledge in IO contexts focusing on supply chain partnership.

This will lead us to the following research question:

RQ: What are the major factors influencing the intention to share knowledge between supply chain partners.

The above research question will be investigated through the following stages:

- Stage 1: Identifying the major requirements of knowledge sharing in IO context as related to the intention to share knowledge.
- Stage 2: Identifying major factors influencing IO knowledge sharing by conducting a systematic review of the existing literature.
- Stage 3: development of a conceptual model to illustrate the relationship between factors identified in stage 2 and the knowledge sharing requirements.
- Stage 4: Empirically examine the validity of the conceptual model and the model constructs through interview and survey methods.

Stages 1 and 2 are conducted through the literature review. Stage 3 is conducted by developing the conceptual model and hypotheses. Stage 4 is currently in progress and can be divided into two parts. The first part, the planning stage, is explained in the present paper whereas the implementation stage constitutes a future work.

**Literature Review**

**Knowledge Sharing in Customer Supplier Partnership**

The knowledge sharing activity in customer supplier relationship is not defined as the main target for the relationship and as a result it usually takes place informally. On the other hand, there are some forms of inter-organizational relationships that are based on formal agreements where exchanging knowledge is the main target of the relationship such as licensing agreement, research contract and equity position which fall outside the scope of the current study.

Supply chain management aims at increasing utilization and synchronization of the chain, and reducing conflicts between organizations. Sharing knowledge and expertise among supply chain members will form a common knowledge base that is a facilitator for connectivity of the supply chain members. So, the members can respond to customer’s demand quicker.

Although supply chain partners have to share information related to material and cash flow to orchestrate the supply chain activities, it doesn’t extend to sharing knowledge such as skills of using particular process or tools that can add value to the organization’s partners (Pawar et al., 2003). This has led to many problems in supply chain management. Thus, in customer supplier partnership, knowledge sharing can take place informally and there should be sufficient intention for an organization to share knowledge with its partner. In different levels of customer–supplier relationship, a different level of information or knowledge is exchanged (Spekman et al., 1998). Knowledge sharing in customer supplier partnership has different characteristics from knowledge sharing in other types of IO relationships such as research contracts and joint ventures. Following characteristics are identified by He et al., (2006) for knowledge sharing between supply chain partners:

- Willingness to share knowledge with a particular partner depends on level of trust and commitment between the customer and supplier organizations
- Knowledge sharing is more likely to occur in conditions in which the need to a particular knowledge outweighs the risk of spill over.
- Supply chain knowledge sharing is generally non-targeted and less guaranteed and usually takes place in informal context.

Thus, Knowledge sharing between supply chain partners usually occurs informally and in appropriate conditions depending on the situations and whether the requirement for knowledge sharing are provided or not.
**Knowledge Sharing Requirements**

There are two major requirements that must be met before knowledge sharing can take place. These requirements are: (i) intention to share knowledge, and (ii) ability to share knowledge. These requirements are met as a result of overcoming respectively motivational and cognitive limitations toward knowledge sharing (Hinds and Pfeffer, 2003; Van den Hoof et al., 2003).

The notion of cognitive and motivational limitations toward knowledge sharing is proposed by Hinds and Pfeffer, (2003). They acknowledged that there are conditions in which knowledge cannot be easily transferred within organizations. They claimed that inadequate transfer of knowledge within organizations is because of two sets of limitations namely, motivational limitation and cognitive limitation (Hinds and Pfeffer, 2003). Cognitive limitation is associated with ability to share knowledge and motivational limitation is related to intention to share knowledge (Hinds and Pfeffer, 2003) (see Figure 1).

![Diagram showing the relationship between cognitive and motivational limitations and IO knowledge sharing](image)

**Figure 1**: The relationship between cognitive and motivational limitation with IO knowledge sharing.

**Intention to share knowledge**

Intention to share knowledge with organization partners is viewed as a driver and key requirement of knowledge sharing (e.g., Van den Hoof et al., 2003; Easterby-Smith et al., 2008; Nieminen, 2005; Ke and Wei, 2006). The organization that doesn’t have the intention to share knowledge is unwilling to devote time and resources to it (Szulanski, 1996). Based on the theory of motivation, individuals share their expertise more when they are provided incentives for doing so. Motivational limitation is related to disincentives such as risk and uncertainty that inhibit the sharing of knowledge. In a competitive environment having incentive to share knowledge is more critical because knowledge is power and organizations which have more knowledge, if it is applied, will have more power. It is not more likely that knowledge is shared in uncertainty condition in which there is risk of using the knowledge against the interests of the party providing it. Thus, by overcoming motivational limitations organizations will have more intention to share knowledge. In other words, since effective knowledge sharing cannot be mandated, there should be enough motivation that results in intention to share knowledge.

**Ability to share knowledge**

In addition to having intention to share knowledge, organizations and individuals should be able to share their knowledge. Ability to share knowledge is related to capabilities of both organizations involved in knowledge sharing process to share and absorb the knowledge. As it is discussed, cognitive limitation causes difficulties in knowledge sharing and as a result it has impact on the ability to share knowledge. Cognitive limitations inhibit sharing of knowledge and are associated with the way that experts store, process and state their knowledge referred as cognitive factors. These factors are important in understanding why knowledge is sometimes difficult to share and communicate. Bridging the expertise gap (i.e., ‘differences in perspective between experts and novices’), and articulating tacit knowledge are cognitive problems in sharing knowledge (Hinds and Pfeffer, 2003). By overcoming these limitations organizations will have the ability to share knowledge.

**Determinants of IO Knowledge Sharing**

A systematic review is conducted to identify factors that are most frequently addressed in the literature as determinants of IO knowledge sharing. Certain keywords used to search 4 databases (Inspec, Web of science, Sciedirect, IEEE explorer, along with Google scholar) to identify empirical and Conceptual studies that investigated factors influencing IO knowledge sharing. The findings of these studies were thoroughly examined.
and as a result 3 groups of factors affecting IO knowledge sharing were identified that are depicted in Figure 2. The most frequently cited factors in the literature are then used for development of the conceptual model of the present study. In the next sections, factors in each group are introduced.

![Figure 2: Three sets of factors affecting IO knowledge sharing](image)

**Developing the Conceptual Model and Hypotheses**

Figure 2 was derived from the existing literature and shows the factors that may influence the Intention to share and ability to share knowledge. As mentioned earlier, three sets of factors have effect on IO knowledge sharing. Some of the factors identified through the systematic review are closely related like trust, risk and uncertainty or reflect the same concept such as dependency and power; cultural proximity and shared values. Thus, in developing the conceptual model factors with the same effect on knowledge sharing are considered as one factor.

Next sections describe the constructs of the model and the hypotheses. In addition, the constructs of the proposed model are examined to determine their contribution in any of the intention to share knowledge or the ability to share knowledge.

As shown in Figure 2 the present study argues that intention to share knowledge depends on contextual factors and organizational factors and nature of knowledge have influence on ability to share knowledge.

**Contextual Factors**

Contextual factors basically relate to the properties of the relationship and include factors such as trust, dependency, geographical proximity, uncertainty, culture and shared values (Nieminen, 2005; Hau and Evangelista, 2007; Wijk et al., 2008; Cummings & Teng, 2003; Easterby-Smith et al., 2008; Albino et al., 1998, Wijk, 2008).
Trust

Trust can be interpreted as a belief or having faith in, reliance upon, or confidence in another party, e.g., supplier partners. It can be simply a belief that one organization acts in a consistent manner and will perform in accordance with expectations and intentions (Spekman et al., 1998). The concept of trust is highly related to risk and protectiveness of knowledge. Lower inter-organizational trust will result in higher risk of losing critical knowledge due to leakage or opportunistic behaviour of the partner. This drives organizations to be more protective of their knowledge and as a result there is less intention to share knowledge.

In inter-organizational contexts the basis that trust is build on, is related to two groups of factors: process-based trust, and institutional trust. Process-based trust reflects the partner’s reliability, predictability, honesty and ability to perform desired tasks within the relationship (Sevensson, 2004). Institutional trust is based on the organization’s certificate, ability and willingness to develop the mutual relationship (Parkhe 1998, Child 2001).

Various factors are required for building or enhancing trust in a relationship including common social, cultural framework; common experience; and the prior relationship with the partner organizations (van den Hooff et al., 2003, Nieminen, 2005). The role of trust is especially highlighted if knowledge sharing is taking place through informal ways such as knowledge sharing between a customer and supplier organizations.

H1: Trust has positive impact on knowledge sharing intention between supply chain partners.

Dependency and power

Dependency is highly related to the distribution of power between the two partners (Nieminen, 2005). According to Resource Dependency theory, dependency on an organizational partner is actually dependency on the partner’s resources. Organizations are dependent on one another when their interactions and collaboration are vital to remain in a competitive environment. They need to assist each other in order to be sure that both partners are not vulnerable in different situations. Knowledge sharing will lead partners to not only exist but also to develop their knowledge as a valuable resource. Especially in a customer supplier partnership, this interdependency is more important (He et al., 2006). High level of interdependency will reduce the risk of opportunistic behaviour because both parties will recognize the importance of each other to perform the supply chain activities. Moreover, the interdependence will lead to anticipated future cooperation (Heide and Miner, 1992). Dependency between organizations can be created as a result of environmental complexity. Wood and Gray, (1991) argued that, in a complex environment organizations tend to start collaboration activities with other organizations to reduce the complexity of the environment. As a result new dependencies between organizations might be created (Wood and Gray, 1991, Peter and Love, 1999).

Figure 3: Factors affecting IO knowledge sharing in supply chain context
In supply chain contexts one of the important sources of dependency to a partner is lack of alternatives. The lack of an alternative means that one of the partner organizations is more dependent on the performance of the other partner (He et al., 2006). For example the dependency of a customer organization to its supplier can be due to the situation in which other alternatives are not accessible. In this case, the power is not balanced and one partner is more powerful than the other party. A more powerful partner can restrict the flow of knowledge in order to protect its competitive resources or market position. Thus, the more interdependent the organizations are to one another, the more will be the intention to share knowledge among them. Accordingly this study will hypothesize:

H 2: The more customer-supplier are interdependent to each other the greater the intention to share knowledge between them.

Cultural proximity and shared values

Culture is referred as a set of parameters such as assumptions, values, beliefs, interpretations of events shared by social collectives such as groups, nation and organizations (Abou-Zeid, 2004). In inter organizational level, Cultural proximity is related to the context that knowledge sharing process takes place. Two organizations have cultural proximity when they share the same or close culture based on factors including language, norms, values, meanings, and beliefs. It is addressed in the literature that Cultural proximity is closely related to and referred as concepts such as shared values, shared vision, shared norms and shared identity (Nieminen, 2005; Li, 2004; speckman, 1998, Adobor, 2006, Cummings and Teng, 2003).

Since knowledge sharing occurs through communication between partners, there is a need for a common vision and meanings between partners so that they can exchange idea and information. As sharing tacit knowledge needs more face to face interactions between two parties the role of organizational and national culture is more critical in sharing tacit knowledge (Hau and Evangelista, 2007). Similarly, cultural proximity and shared vision as cognitive dimensions of social relationship facilitate knowledge sharing by promoting mutual understandings and by providing crucial bonding mechanisms between two parties (Wijk et al., 2008).

In addition, Cultural proximity shared vision and shared values play a critical role in increasing the ability to share knowledge. In the context of customer supplier partnership, cultural proximity positively contributes in sharing knowledge between partners. When organizational cultures are similar, organizations are expected to interact more easily and with better results without any need to explicate difficult interpretations. As a result, the process of building trust will be enhanced. Apart from the effects on the ability to share knowledge, Cultural proximity will increase the trust between organizations. Having discussed that trust contributes to intention to share knowledge this study hypothesizes that:

H 3: Cultural proximity between supply chain partners positively affects knowledge sharing intention through the mediating role of trust

Prior Experience

If organizational partners have a positive prior experience in their relationship with each other, there will be more trust between them. Good prior experience enables organizations to predict the behaviour of their organization’s partner in future business cycle. Positive experience will also reduce uncertainty and the risk of opportunistic behaviour from organization partners in sharing knowledge. As a result of good prior experience an organization can consider that its trading partner is trustworthy so it has more intention to share knowledge with the partner. Accordingly this study hypothesizes that

H4: Positive prior experience positively affects intention to share knowledge through the mediating role of trust.

Organizational Factors

There are a set of factors that related to the features and characteristics of organizations which either share knowledge with, or acquire knowledge from, other organizations. Factors such as intention to learn, absorptive capacity, ICT supports, age, size and geographical location of organizations indicate different characteristics of source and recipient organizations. Next sections describe these factors.

Intention to learn

Intention to learn is viewed as an important factor in acquiring external knowledge (Barson et al 2000; Cummings and Teng 2003; Smith et al., 2008). Learning intention can be defined as the ‘extent of desire and the will of one firm to acquire knowledge from its partner’ (Tsang 2002, Simonin 2004). The concept of learning intent focuses on the level of effort the organization makes for the purpose of learning and its awareness of the significance of learning (Hau and Evangelista, 2007). It is more likely that a recipient organization takes actions that facilitate the transfer of knowledge if they realize that a particular knowledge can provide a sustainable
competitive advantage (Pérez-Nordtvedt et al., 2008). Thus, the organization with a strong intention to learn from external resources would provide any type of resource that is required and create an appropriate environment for knowledge sharing. As a result, learning intent facilitates the ability to share knowledge. Accordingly, the next hypothesis is:

H 5: Intention to learn has positive impact on knowledge sharing ability between supply chain partners.

Absorptive Capacity
The concept of absorptive capacity was theoretically presented by Cohen and Levinthal, (1990) as ‘an organization’s ability to (1) recognize the value of new external knowledge, (2) assimilate it, (3) apply it to commercial end’. Based on this concept, Lane et al., (2001) found supports for the influence of an organization’s absorptive capacity on its ability to understand new knowledge held by its partner. Based on the above definition of absorptive capacity, Knoben and Oerlemans, (2006) present the concept of technological proximity. To share knowledge successfully, there should be a similar knowledge base in both source and recipient organizations. As a result the interactions related to knowledge sharing will be easier due to the common understandings of the shared knowledge. Having a similar knowledge base will help to bridge the gap between experts and less experts organizational members, that is one of the barriers to share knowledge (Hinds and Pfefer, 2003). Thus, absorptive capacity facilitates the ability to share knowledge between organizations. This study Hypothesize that

H6: Absorptive capacity has positive impact on ability to share knowledge between supply chain partners.

ICT Infrastructure
ICT supports in the form of extranet, web service and intranet play major role in bridging gaps of time and space between members of knowledge communities (Van den Hoof, 2003). Technology is considered as one of the components of KM systems to link the members together and support members to use and share knowledge within the KM system (Barson et al., 2000). Similarly, He et al., (2006) confirmed that to optimize IO relationships and in particular supply chain partnerships, there should be strong ties and links between organizations. This will enable the flow of knowledge between members of the system. Moreover, the challenge of capturing, organizing, and disseminating knowledge in IO contexts can be facilitated by effective ICT supports.

ICT may be effective in three ways. First, it can remove some of the barriers involved in knowledge sharing by facilitating access to databases and stored data. It provides quick and accurate access to information and knowledge needed. Secondly, it creates a link between organizations increasing the connectivity between them by providing Internet-based discussion groups or electronic meetings in which organizations can discuss what knowledge they can share and what knowledge they need. They also might be able to gain their required knowledge (Turban 2006; Hendriks, 1999). Finally, the ICT may improve the processes involved in knowledge sharing by providing supporting systems like CBR (case-based reasoning) systems that improve the knowledge sharing process by extracting knowledge from past cases for use in current situations. Expert systems are other examples of ICT supports (Hendriks, 1999). Thus, in relation to the ICT infrastructure facilitating knowledge sharing between organizations, this study claim that ICT will increase the ability to share knowledge.

H7: ICT supports have positive impact on ability to share knowledge between supply chain partners.

Geographical Proximity
Geographical proximity refers to the geographical distance between two organizations. Organizations in the same city or area have more geographical proximity than organizations which are located in different countries or cities. Geographical Proximity fosters the face-to-face communication and brings companies together. It can result in a level of richness in communication and facilitate the exchange of especially tacit knowledge (Knoben and Oerlemans, 2006). Thus geographical proximity increases the ability to share knowledge and next hypothesis is:

H8: Geographical proximity has positive impact on knowledge sharing ability between supply chain partners.

Nature of knowledge
The nature of knowledge refers to tacitness or explicitness of knowledge. In the literature, the nature of knowledge is regarded as a variable that influences knowledge sharing (e.g. Wijk et al., 2008; Cummings and Teng, 2003). Tacit knowledge in particular is embedded in the individual’s mind, rooted in their direct experiences, skills, ideas and emotions gained through actions and activities. It does not have a numerical or linguistic form, and therefore it is hard to communicate and formalize. Sharing this type of knowledge is more complicated than explicit knowledge (Nonaka, 1994). Findings of a study by Chen (2004) suggest that
knowledge sharing is positively affected by the tacitness of knowledge, as explicit knowledge is transferred in a more effective way. Articulating the tacit knowledge is addressed as one of the barriers to the ability to share knowledge. Thus, explicitness of knowledge will facilitate the ability to share knowledge. As a result, this study adopts the ‘nature of knowledge’ as one of the factors that affects knowledge sharing in IO knowledge sharing. This argument may be extended by claiming that any efforts made to increase explicitness of a tacit knowledge will enhance ability to share that knowledge. Accordingly this study hypothesizes that:

H9: Nature of knowledge affects ability to share knowledge between supply chain partners.

Control Variables

Beyond the constructs explained in previous sections, other organizational variables could also influence the IO knowledge sharing. Organization’s size and age are also could impact on the knowledge sharing with organization partners. So these variables will be measured in the final empirical work as control variables.

Methodology

This study adopts a deductive positivist approach which is consistent with the objective of the present study for testing the conceptual model in the particular domain of customer-supplier relationship. To test the proposed conceptual model, this study adopts both qualitative and quantitative methods including survey (structured questionnaire) and interviews (semi-structured questionnaire) for data collection. The interviews are pre-test of the survey and will be conducted prior to the survey. Qualitative data include point of views of relevant individuals from key firms that are known for knowledge sharing activities in relation to the proposed model. In these interviews the interviewees are asked to give their opinions about what items should be included within the survey. Interviewees may also propose some new factors that had not been considered in the proposed model. As a result, potential model can be improved and then the questionnaires can be designed according to the revised conceptual model.

Since that this research is about supply chain partnership, the organizations that are involved in the supply chain activities will be selected. The participating organizations will be chosen among the first tier suppliers of the manufacturing firms that currently are involved in knowledge sharing at organizational level.

In order to test the validity and reliability of the instruments, two pilot studies will be performed prior to conducting the interviews and survey. The pilot study for interviews will be conducted using interview questionnaire for 2-3 participants in the same condition that the final interviews will be performed. Participants are asked to express their opinions about the structure and format of the questionnaire, adequacy of the time for completing it and the ability of questionnaire to provide enough data. As a result of pilot study the interview questionnaire will be improved.

Pilot study for survey will be conducted with 50 participants. Exploratory Factor Analysis will be used in order to analyse the data collected from pilot study of survey. As a result of this analysis, the items of the questionnaire may be changed.

Conclusion

In this research the major factors affecting IO knowledge sharing are identified through the systematic review. A conceptual model has been developed which illustrates the factors affecting intention to share knowledge and ability to share knowledge in supply chain context. The methodology of conducting the empirical work is proposed. The result of this study will provide new insight into requirements and enablers of IO knowledge sharing that is useful for organizations which are involved in IO knowledge sharing process or aim to embark on sharing knowledge with their supply chain partners.

Limitations

One of the limitations of this study is that in this research, the most frequent factors addressed in the literature are selected and considered in the conceptual model (Figure 3). These factors are identified by conducting systematic review. Thus, some factors are not considered in the proposed model. However, it is expected that this issue would be covered by the results of the interviews there is still the possibility of ignoring some factors. In future studies results can be improved by addressing these factors. Future studies can also be conducted to enhance the external validity by incorporating cases from outside Australia with different national and organizational culture.
REFERENCES


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