

A Comprehensive Model of Knowledge Sharing

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Abstract: Knowledge is a critical organizational resource that provides a sustainable competitive advantage in a competitive and dynamic economy. Organizations must therefore consider how to transfer expertise and knowledge from experts who have it to novices who need to know. That is, organizations need to emphasize and more effectively exploit knowledge-based resources that already exist within the organization. Research has shown that knowledge sharing (KS) and combination is positively related to reductions in production costs, faster completion of new product development projects, team performance, firm innovation capabilities, and firm performance including sales growth and revenue from new products and services. However, despite these investments it has been estimated that at least \$31.5 billion are lost per year by Fortune 500 companies as a result of failing to share knowledge (Babcock, 2004). An important reason for the failure of KMS to facilitate KS is the lack of consideration of how the organizational and interpersonal context as well as individual characteristics influence KS (Carter & Scarbrough, 2001; Voelpel, Dous, & Davenport, 2005). This paper presents a comprehensive model of knowledge sharing. It first presents a simple knowledge conversion model based of Nonaka and Takeuchi (1995). The comprehensive model of knowledge sharing argues that KS is affected by environmental forces, knowledge values of the organization, cultural and structural characteristics of the organization, personal characteristics of the individuals, teams and the context within the organization. The paper represents work in progress. The final version of the proposed model will be tested in knowledge organizations in Switzerland and Malaysia.

Keywords: knowledge sharing, enabling factors, tacit knowledge, learning organizations

1. Introduction

Knowledge is a critical organizational resource that provides a sustainable competitive advantage in a competitive and dynamic economy (e.g., Davenport & Prusak, 1998; Foss & Pedersen, 2002; Grant, 1996; Spender & Grant, 1996). Organizations must therefore consider how to transfer expertise and knowledge from experts who have it to novices who need to know (Hinds, Patterson, & Pfeffer, 2001). That is, organizations need to emphasize and more effectively exploit knowledge-based resources that already exist within the organization (Damodaran & Olphert, 2000; Davenport & Prusak, 1998; Spender & Grant, 1996). Research has shown that KS and combination is positively related to reductions in production costs, faster completion of new product development projects, team performance, firm innovation capabilities, and firm performance including sales growth and revenue from new products and services (e.g., Arthur & Huntley, 2005; Collins & Smith, 2006; Cummings, 2004; Hansen, 2002; Lin, 2007d; Mesmer-Magnus & DeChurch, 2009).

At its most basic level, KS involves the processes through which knowledge is channeled between a source and a recipient. Knowledge management involves the panoply of procedures and techniques used to get the most from an organization's tacit and codified know-how (Teece, 2000). The study of KS, which is the means by which an organization obtains access to its own and other organizations' knowledge, has emerged as a key research area from a broad and deep field of study on technology transfer and innovation, and more recently from the field of strategic management. KS has been viewed from two theoretical perspectives in this literature. Because of the potential benefits that can be realized from KS, many organizations have invested considerable time and money into knowledge management (KM) initiatives including the development of knowledge management systems (KMS) which use state-of-the-art technology to facilitate the collection, storage, and distribution of knowledge (Sheng Wang, Raymond, & Noe, 2009)

However, despite these investments it has been estimated that at least \$31.5 billion are lost per year by Fortune 500 companies as a result of failing to share knowledge (Babcock, 2004). An important reason for the failure of

KMS to facilitate KS is the lack of consideration of how the organizational and interpersonal context as well as individual characteristics influence KS (Carter & Scarbrough, 2001; Voelpel, Dous, & Davenport, 2005).

The paper represents work in progress, presenting a comprehensive model of knowledge sharing. To this, the authors first create a common ground of understanding by introducing a basic knowledge sharing model based on Nonaka and Takeuchi (1995). The comprehensive model of knowledge sharing then argues that environmental forces, knowledge values of the organization, cultural and structural characteristics of the organization, personal characteristics of the individuals, teams and the context within the organization affect KS. The final version of the proposed model will be tested in knowledge organizations in Switzerland and Malaysia.

2. A basic knowledge sharing model

With this model, the authors intend to create a common understanding of knowledge conversion applied in this paper. It can be seen as a variation of the SECI model of knowledge conversion (Nonaka & Takeuchi 1995) with an emphasis on the basics of knowledge sharing. For this reason, it is called “basic knowledge sharing model” (Fig. 1). Both models are based on the distinction of a) explicit and b) tacit knowledge. Differently from the SECI model, the basic knowledge sharing model (IECS) considers individuals and their knowledge bases and examines how knowledge conversions proceeds first: within the two individuals and then, between them. The model takes into account the fact that tacit knowledge makes the larger part of human’s knowledge (maybe 80% or more) base even if it cannot be expressed as easily as explicit knowledge. As Polanyi wrote: “one can know more than one can tell” (Polanyi 1966, p. 8), the model treats explicit knowledge as the shadow of tacit knowledge and shows that individuals share tacit knowledge through the process of socialization without having the need of making it explicit.

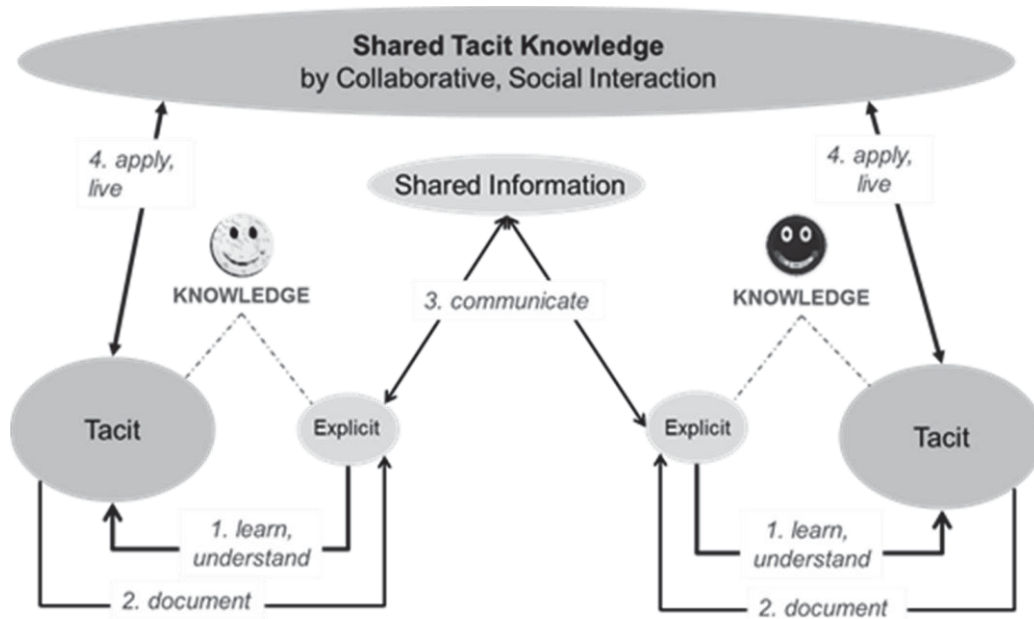


Figure 1: Basic knowledge sharing model – IECS

First stage: individual knowledge conversion

1. a person converts his explicit into tacit knowledge by learning respectively understanding (internalization)
2. a person converts his tacit into explicit knowledge by e.g. documenting (externalization)

Second stage: knowledge conversion between individuals

3. individuals share their explicit knowledge by exchanging information, e.g. communicating (combination)
4. individuals share their tacit knowledge by interacting and collaborating, e.g. applying or living (socialization)

Considering the comprehensive model of knowledge sharing, introduced in the next chapter, the IECS model provides the following preliminary considerations:

- Individuals share explicit as well as tacit knowledge. It is more challenging to share tacit knowledge since it cannot be easily expressed.
- Tacit knowledge makes the bigger part of human knowledge.
- Individuals share their knowledge in different ways, depending on the dimension of their shared knowledge.
- KS starts at an individual level since every person has tacit and explicit knowledge to share with others.
- With respect to the various ways to share knowledge (from information exchange to social interaction), further affecting factors to frame and attend the social process of KS have to be identified and considered.

3. A comprehensive model of knowledge sharing

The comprehensive model introduced in this chapter presents and discusses various kinds of enabling or affecting factors of KS such as motivational, organizational and interpersonal factors, knowledge values and individual characteristics (Fig. 2).

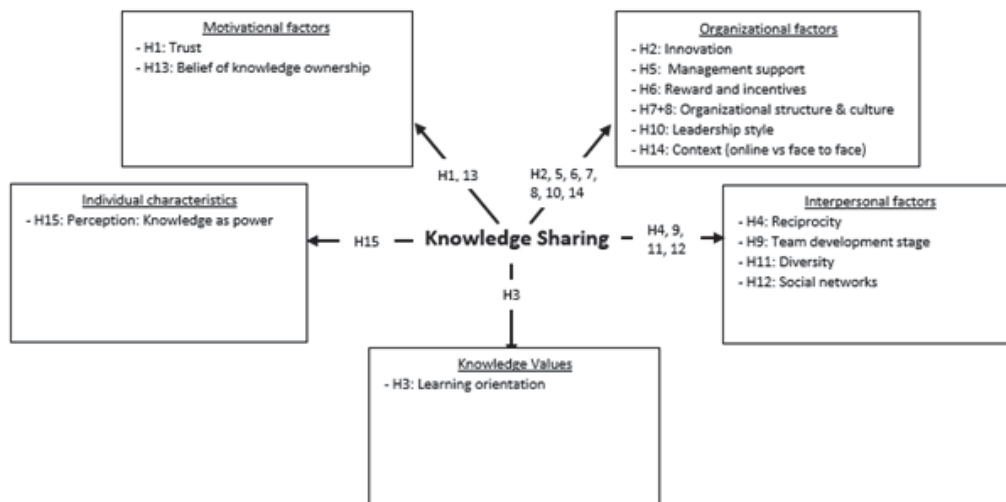


Figure 2: A comprehensive model of knowledge sharing

3.1 Trust

There are a number of cultural dimensions that may affect KS. However, trust was heavily emphasized by researchers. Cultures that emphasize trust help alleviate the negative effect of perceived costs on sharing (Kankanhalli, Tan, & Wei, 2005). They have also been linked with the implementation of intranet-based KMS, individual KS, and firms' capability of knowledge exchange and combination (Chiu, Hsu, & Wang, 2006; Collins & Smith, 2006; Liao, 2006; Ruppel & Harrington, 2001; Willem & Scarbrough, 2006). Likewise, organizational climates that emphasize individual competition may pose a barrier to KS whereas cooperative teams' perceptions help create trust which is necessary for KS (Schepers & Van den Berg, 2007; Wang, 2004; Willem & Scarbrough, 2006).

H1 the higher is the trust among organizational members the higher is the KS level

3.2 Innovation

Yesil et al. (2013) state that KS and innovation have been subject to many studies as both are important and interrelated. Yesil et al. (2013) explained that KS has implication for organizations' innovation capability and innovation performance. Further, innovation capability affects innovation performance of the organization. However, results from the same study moderately confirm the influence of KS process on innovation capability. Moreover, the hypothesized influence of KS process on innovation performance was not realized. In an inverse relationship, Ruppel and Harrington (2001) explore factors affecting the implementation of intranets, as a technology base for knowledge management. Results indicate that intranet implementation is facilitated by a culture that emphasizes an atmosphere of trust and concern (ethical culture), flexibility and innovation (developmental culture), and policies, procedures and information management (hierarchical culture). Yesil et al. (2013) stress the need for further studies to understand KS and innovation dynamics and implications. Overall we propose the following hypothesis:

H2 The existence of an innovation culture results in higher KS levels.

3.3 Learning orientation

Taylor and Wright (2004) found that a climate that encouraged new ideas and focused on learning from failure was positively related to effective KS. Hsu's (2006) case study also advocated continuous learning initiatives. Learning orientation affects the information that an organisation attends to, interprets, evaluates, and ultimately accepts or rejects (Argyris and Schon, 1978; Dixon, 1992; Hedberg, 1981). Sinkula, Baker and Noordewier (1997) described three organisational values routinely associated with the predisposition of the firm to learn. These values are: commitment to learning, open-mindedness, and shared vision. Companies that are committed to learning value the need to understand the cause and effects of their actions (Shaw and Perkins, 1991). If an organisation places little value on learning and sharing knowledge, little learning or sharing is likely to occur (Sackmann, 1991). Galer and van der Heijden (1992) described a shared vision as 'goal convergence.' If the employees and management in an organisation have an understanding and an agreement on KS as an important end/journey then it is more likely that it will take place. Finally, open-mindedness is linked to the notion of unlearning (Nystrom and Starbuck, 1984). When organisations proactively question long-held routines, assumptions, and beliefs, they are engaging in the practice of unlearning. The paper, therefore, makes the following proposition:

H3 The higher the degree of learning orientation of an organization the higher the level of KS is within the organization.

3.4 Reciprocity

Researchers in social exchange examined the idea of reciprocity (Blau, 1964). Reciprocity is a behavioural response to perceived kindness and unkindness, where kindness comprises distributional fairness as well as fairness intention (Falk and Fischbacher, 2001, p.2). Further studies were dedicated to study reciprocity and its relationship with KS (Endres et al. 2013; Cabrera and Cabrera, 2005; Nahapiet and Ghoshal, 1998). Endres et al. (2013) investigate the effects of expected reciprocity on KS, as moderated by team and individual variables. Results indicate that the effectiveness of reciprocity in KS depends on some factors relating to the team and individual. Chen and Hung (2010) suggest that norm of reciprocity, interpersonal trust, KS self-efficacy, and perceived relative advantage were significant in affecting KS behaviors. However, inconsistent results were found by Wasko and Faraj (2005) who claim that people engage in KS when they perceive that it enhance their professional reputation, when they have the experience to share, and when they are structurally embedded in the network, regardless the expectations of reciprocity. On the other hand, Cabrera and Cabrera (2005) claim that expectation of reciprocity shall create a positive attitude toward KS as well as enhancing the creation of conducive environment to KS. Consequently, more attention should be paid to enhancing the positive mood state for social associations, which precedes KS behaviours. This leads to the following hypothesis:

H4 The higher the expectation of reciprocity (among organizational members) within the organization the higher is the level of KS.

3.5 Management support

From a macro view, Lin (2006) states that organizational support is positively associated with organizational perceptions of innovation characteristics (perceived relative advantage and compatibility) and interpersonal trust, which in turn are positively related to organizational intentions to facilitate KS. Regarding management support, Lin (2007) states that top management support significantly influence KS process. Similarly, Smith and McKeen (2003) based on experts focus group opinions argue that managers play an important role in stimulating or inhibiting KS, as they play a critical role in leading KS efforts by example, communicating the importance of KS and practicing what they sermonize, recognize and reward the sharing behaviors the organization wishes to encourage. This point was emphasized by Cabrera et al. (2006) who state that top management can send strong messages about the importance of KS either directly or indirectly, through modelling reward and recognition. Cabrera et al. (2006) state that people who perceive their colleagues and supervisors value KS feels more willing to engage in such behaviour. These findings emphasize the importance of top management and supervisors support to KS. Accordingly we expect that management support creates a positive KS culture. This leads to the following hypothesis:

H5 Increased management support results in higher levels of KS

3.6 Rewards and incentives

The empirical results of studies examining the effects of extrinsic rewards are not unanimous. Bock & Kim (2000) found that expected rewards correlate negatively with the attitude of KS. According to the authors, especially monetary rewards should be seen critically regarding KS. Among other reasons, the authors mention the punitive and relationship-breaking effects of rewards as possible explanations. However, Bock & Kim (2000) conclude that rewards can be seen as a potential trigger for KS. According to Yao, Kam, & Chan (2007), missing incentives can even hinder KS across cultures. Beside these findings, Kankanhalli et al. (2005) found a correlation between organizational rewards and the frequency of knowledge contribution. This seems to be particularly valid for employees who identify with their organization (Kankanhalli et al., 2005). In this context, Cabrera & Cabrera (2005) suggest that an organization that rewards the KS behaviour of its employees demonstrates KS as an organizational value.

Regarding non-monetary rewards, various studies found that recognition and appreciation can help to establish a supportive culture and boost KS (e.g., Hansen, Nohria, & Tierney, 1999; Liebowitz, 2003; Nelson, Sabatier, & Nelson, 2006). However, the findings of Wolfe & Loores (2008) suggest that, regardless the type of incentive, the consideration turns out to be a critical success factor. If the existing types of rewards are sufficiently considered and carefully monitored, KS can be promoted more easily. In contrast, insufficient incentives can lead to the phenomenon of knowledge-hoarding.

These findings lead to the following hypothesis:

H6: A reward system for KS that is considered and monitored sufficiently supports higher levels of KS

3.7 Organizational structure and culture

The structure of an organization and its culture are inherently connected. Regarding organizational structure, Kim & Lee (2006) found that a less centralized organizational structure might have a positive influence on the promotion of KS. The reasons are various: in organizations with a less centralized structure it is more likely to find a working environment, where employees are more engaged to interact with each other (Jones, 2005). Furthermore, this kind of organizational structure facilitates interdepartmental communication but also informal meetings and exchange (Liebowitz, 2003; Liebowitz & Megbolugbe, 2003; Yang & Chen, 2007). Finally, Kubo, Saka, & Pam (2001) suggest seeing job rotations and dynamic job descriptions as another factor that promotes social interaction and therefore KS. Organizational culture: considering De Long & Fahey (2000), Cabrera & Cabrera (2005) conclude that the culture of an organization plays a fundamental role for both creating, using and sharing knowledge. According to them, it is critical to establish a trustful and caring environment for facilitating KS, since individuals that feel safe and trusted are more engaged to share their knowledge. Besides, the authors claim that establishing norms and values towards KS is a powerful way for organizations to influence KM behaviors. These findings lead to the following hypotheses:

H7: A less centralized structure that creates opportunities for social interactions results in higher levels of KS

H8: A culture that emphasizes on trust and care and that creates KS norms and values results in higher levels of KS

3.8 Leadership style

In a team of knowledge workers, like for instance our team at FFHS, leadership style should be “facilitative” rather than “impositional” (“command & control”), “listening” rather than “talking” and “coordinating” rather than “controlling”. In summary: it should be informal rather than formal. In fact, in our team the informal structure (a kind of “informal subordination” or “no subordination”) is far more important than the formal structure of a team leader who controls team members; our informal structure is based on the principle of promoting participation in decision-making, inspiring initiative and supporting personal ownership for all members of the unit, like in a social network (Bettoni et al., 2016). By social network we understand here a self-organising, emergent and complex set of socially-relevant nodes (people) connected by one or more relationships (Marin & Wellman, 2011). When, like in our case, the relational focus is on knowledge processes, then we can speak of a “knowledge network team”. The “facilitative” team leader tries to be neutral and not to

use the decision-making authority accorded by the formal position. His main task is “to help the group increase its effectiveness by improving its process and structure” (Schwarz, 2005), like in group facilitation.

This creates an environment in which all knowledge processes flow more efficiently and effectively, particularly KS (Lee et al., 2010). Online communication is therefore more or less content-driven.

H9: Facilitative leadership results in an increase in KS

3.9 Diversity

Diversity is associated with the risk that communication and cooperation between employees decreases because of stereotyping and demarcation, while at the same time conflicts and fluctuation increases. The extent to which the potential of diversity can actually be exploited depends on whether the integration of the different skills, experiences and knowledge backgrounds succeed (Sollberger, 2009). Studies using the similarity–attraction approach have shown, that people tend to have a pessimistic view of diversity in teams. In this paradigm, individuals will be more attracted to similar others and will experience more cohesion and social integration in homogeneous groups (Mannix & Neale, 2005).

Team members who considered themselves a minority in criterias like gender, marital status, or education were less likely to share knowledge with other team members. Studies have examined, that socially isolated members are more likely to disagree with others and that they contribute their unique knowledge better within a heterogeneous team (Thomas-Hunt, Ogden, Neale, 2003). Especially R&D teams in large organizations were more likely to engage in KS when they had higher female–male ratios (Thomas-Hunt & Phillips, 2004). The acknowledgement of the team members’ expertise also helps to increase KS within a functionally diversified team (Roberson, 2013).

H10: The better the integration of the different skills of a person within the organization is, the higher are the levels of KS

3.10 Social networks

In organizations with flat and decentralized structures, people have increased opportunities to establish interpersonal contacts (Chow & Chan, 2008). These contacts can be seen as another facilitator of KS behaviours. Various studies suggest social networks with its interpersonal ties as enablers of knowledge transfer in general (e.g., Cross & Cummings, 2004; Hansen, 1999; Reagans & McEvily, 2003). Further, these interpersonal connections can also help to improve the information quality.

According to the concept of tie strength, people are connected through social relationships, which can from weak to strong. In this context, Chow & Chan (2008) suggest in their conceptual study that people who are connected among each other through strong social ties have more positive feelings about sharing their knowledge. Furthermore, strong ties may cause some social pressure on individuals to share their knowledge because of higher expectations of colleagues. The authors suggest that an existing social network as well as shared goals have a significant impact on facilitating KS attitudes. According to them, a good relationship can enhance KS attitudes and behaviours. Similarly, other studies suggest that KS can be supported in communities of practice by establishing interpersonal connections (e.g., Kankanhalli et al., 2005; Nahapiet & Ghoshal, 1998). For virtual communities, various authors found that the more strong ties and personal relationships exist, the more people share their knowledge and perceive the shared knowledge as helpful (Chiu et al., 2006; Wasko & Faraj, 2005). This leads to the following hypothesis:

H11: The existence of strong interpersonal connections results in a higher social pressure towards KS

4. Conclusion

This paper presents a comprehensive model of KS starting from a literature review. It represents work in progress on the way to an empirically validated model. First, it introduces a simple knowledge conversion model based on Nonaka and Takeuchi (1995) to create a common understanding of KS. The paper then argues that various factors such as motivational, organizational and interpersonal aspects, knowledge values and individual characteristics affect KS. A selection of these factors and their impact on KS is reviewed and discussed. The final version of the proposed model will be tested in knowledge organizations. In this follow up studies, the authors

will complement and compare the enabling factors discussed in this model with those identified by Nonaka & Takeuchi (1995).

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