

Understanding the concept of individual level knowledge sharing: A review of critical success factors

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Abstract:

This paper identifies key factors enabling individual knowledge sharing in organizations and on projects. A literature review on the topic of knowledge sharing has been conducted with an aim of recognizing relevant factors that influence individual knowledge sharing. We take a holistic approach in examining knowledge sharing by factors pertaining to Theory of planned behaviour, Social capital theory, Social influence theory, Social exchange theory, Social-cognitive theory, and motivational theories augmented with additional aspects. Factors belonging to organizational, team and individual contexts interact and, in turn affect knowledge sharing behaviour of individuals working in organizations and on projects. Relationships between various success factors were found relevant in influencing knowledge sharing and integration of theories in order to develop knowledge sharing model is recommended.

Keywords: Knowledge sharing, Knowledge Exchange, Knowledge management, Tacit knowledge

1. Introduction

Knowledge sharing is perceived as an essential process of knowledge management as it positively affects work-environment creativity (Schepers and van den Berg, 2007) team performance, cohesion, knowledge integration and decision satisfaction (Mesmer-Magnus *et al.*, 2009). By sharing knowledge employees contribute to the knowledge base, innovativeness and ultimately competitive advantage of their organization (Jackson *et al.*, 2006) and the success of a project (Adenfelt, 2010). As a core process of knowledge management, quite a substantial number of studies have explored it on organizational, team and individual levels. Main actors that participate in sharing knowledge are headquarters and subsidiaries, various business units, departments (Yang and Chen, 2005; Zander and Kogut, 1995; Szulanski, 1996), teams and individuals. Our efforts are aimed at examining individual knowledge sharing.

In order for knowledge sharing to occur and be effective certain factors have to be in place so that an individual shares his knowledge with others. Factors influencing knowledge sharing of individuals in organizations and virtual communities have extensively been examined in knowledge sharing literature. Organizational (McDermott, 2001), team (Phillips *et al.*, 2003; Cummings, 2004), and individual context factors (Kamdar *et al.*, 2004; Cabrera and Cabrera, 2006; Chen *et al.*, 2009) have been found to be conducive to creating a knowledge sharing environment and driving knowledge sharing among individuals. The purpose of the paper is to identify significant factors enabling knowledge sharing among individuals within organizations and project teams. We conducted comprehensive literature review on critical success factors that influence knowledge sharing on an individual level. Our research helps deepen the understanding of knowledge sharing and the factors which are conducive to fostering a knowledge sharing environment. Findings from our study can be used to develop a knowledge sharing framework which includes factors critical for the success of individual knowledge sharing.

This paper is organized as follows. To begin with, the concept of knowledge sharing is introduced and discussed emphasizing relevant factors influencing knowledge sharing belonging to organizational, team and individual contexts. Secondly, organizational context factors and their importance for facilitating knowledge sharing is explored. Next, factors which are relevant to the team context are reviewed, followed by the analysis of the individual context factors. In the subsequent section we shed some light on the sociology and psychology theories which we were used for developing various knowledge sharing models. Finally, limitations of previous studies and future recommendations are addressed.

2. Critical success factors influencing knowledge sharing

In recent years a perspective emphasizing that knowledge is tacit, embedded in people, socially determined and related to daily practice has emerged (Cook and Brown, 1999; Lin 2007; Gangi *et al.*, 2012). Subsequently, a

notion arose that knowledge sharing can only be encouraged and not forced as it resides in an individual who either can be motivated externally or has the intrinsic desire to share knowledge.

Previous studies have explored and discussed various factors facilitating and hindering knowledge sharing of individuals. In their comprehensive review of knowledge sharing literature, Wang and Noe identify five areas of research and the respective factors influencing individuals' knowledge sharing behavior. Organizational context, cultural characteristics, interpersonal and team characteristics, individual characteristics, and motivational factors have been emphasized as significant in enabling and leading to knowledge sharing behavior (Wang and Noe, 2010). Many of the factors belonging to various contexts are inter-related and only by interacting effectively will they produce a desired outcome. This occurs when individuals provide relevant knowledge which when accepted will enrich the collective, and in turn the organization's knowledge base. Knowledge creation process in organizations depends on individuals sharing their knowledge with others (Nonaka and Takeuchi, 1995). Therefore, we focus on the individual level knowledge sharing where the individual is in the center of a complex set of factors which depending on how they are managed can either lead to knowledge sharing behavior or hinder it. By examining current knowledge management literature we identify three key contexts and their respective factors which interact to generate knowledge sharing behavior. Organizational, team and individual context factors are all relevant in leading to a favorable outcome, where knowledge is provided by the source and accepted by the recipient.

3. Organization context factors

Organizational context, predominately organizational culture is considered being an important element of an environment facilitating knowledge sharing of individuals in organizations, virtual communities and on projects (Chen and Cheng, 2012; Al-Alawi *et al.*, 2007) The nature of the organization and an effective knowledge management system (KMS) can lead the individuals to share their knowledge with others (King and Marks Jr., 2005). Contributing knowledge to Knowledge platforms, such as KMS and direct sharing between individuals are both significant for organization's and project success. Organization level factors refer to the way organizations are structured, the organization-individual interaction that is influenced by the organization culture and the infrastructure provided which is the basic requirement for knowledge sharing to occur. Organizational support and processes, values, leadership, incentives, information technology, structural diversity are all organization context factors relevant in facilitating individual's cognitive processes relevant for knowledge sharing behavior.

3.1 Leadership and management support

Leadership is a relevant factor influencing knowledge sharing (Søndergaard *et al.*, 2007). Empowering leadership not only leads to knowledge sharing, but also positively influences efficacy, consequently leading to better team performance (Srivatava *et al.*, 2006). Another important characteristic that can be attributed to a leader is fairness. Through fair treatment of employees a leader can influence a cognitive state which promotes positive behaviors leading to good outcomes. By affecting social exchange relationships of supervisors and organization with the members, procedural and interactional justice influence organization citizenship behavior of team members and supervisory and organizationally relevant outcomes (Rupp and Cropanzano, 2002; Schepers and van den Berg, 2007). Moreover, supervisory control has exhibited influence on contribution frequency and effort of individuals to contribute to the KMS (King and Marks Jr., 2005). For that reason leadership is a factor that plays an important role in affecting individuals' cognitive state and helping in sharing knowledge with others or contributing to KMS.

3.2. Structural diversity

Hierarchical organizational structures have a negative influence on knowledge sharing by inhibiting proper functioning of social networks (Seba *et al.*, 2012). Furthermore, knowledge sharing within teams and between the line organization and teams is influenced by hierarchy reflected in rank and age of employees, organizational context, micro-politics and suspicion. Often special project teams are created by organizations under the assumption that knowledge flows and innovation can be generated by stepping away from the dominant culture of the organization. However, despite an independent project teams being constructed to drive innovation, cross-disciplinary, cross-functional and cross-hierarchical design of the teams as well a cultural imprint of the line organization can present a barrier to successful knowledge sharing (Friesl *et al.*, 2011).

3.3. Values

At the core of the organization culture are values. However, just by being advocated by the organizations and by communicating it through other more visible aspects of organizational culture these values will not lead to the desired behavior. It is through the process of espousment and enactment by the organization and through the internalization by the individual, that values such as dialogue can affect knowledge sharing behavior (Michailova and Minbaeva, 2012). Additionally, values are seen as an important driver in the use of information technology in sharing knowledge (Delong and Fahey, 2000). When organizations emphasize trust (Kankankhalli *et al.*, 2005; Chiu *et al.*, 2006; Liao 2006), learning (Taylor and Wright 2004; Hsu, 2006), innovation (Bock *et al.*, 2005) and cooperation (Wang, 2004) individuals are more inclined to share knowledge.

3.4. Incentives

In some instances rewards were found significant in driving knowledge sharing behavior (Al-Alawi *et al.*, 2007; Weir and Hutchings, 2010; Kim and Lee, 2006). In addition, extrinsic rewards, such as higher pay, bonus and promotion exert positive influence on frequency of knowledge contribution to knowledge management systems (Kankankhalli *et al.*, 2005). On the other hand, individuals' knowledge-sharing attitudes were also negatively affected by anticipated extrinsic rewards (Bock and Kim, 2002). In electronic communities individuals share knowledge primarily out of community interest, generalized reciprocity and pro social behavior and not various tangible and intangible returns whereas, when knowledge is approached as organizational or individual property, sharing will be motivated by narrow self-interest (Wasko and Faraj, 2000). As research on rewards has been inconclusive both individual-based and collective-based rewards should match the organizational and social context of the project team.

3.5. Information technology

In the study of organizational culture factors influencing knowledge sharing within organizations in public and private sectors in Bahrain, information systems have been proven relevant in facilitating knowledge sharing (Al-Alawi *et al.*, 2007). However, when organizational values are not supportive of knowledge sharing new technology has a limited effect (Wasko and Faraj, 2000).

Most of the studies prove that technology is a tool facilitating the process of knowledge sharing. However, regardless of effectiveness and ease of use being important factors in utilizing technology (King and Marks Jr., 2005) still the sheer existence of it does not lead to knowledge sharing. Other factors need to be in place in order for the technology to be of use (Siakas *et al.*, 2010). Taking, a more fragmented nature of project tasks and diversity of teams into account (Zakaria and Talib, 2011) it is ineffective to create an environment to fit the technology. Therefore, a more adaptive technological approach should be considered.

4. Team context factors

As work of individuals is highly interdependent; collaboration is a part of daily work. Knowledge that is possessed by an individual is more valuable when it is shared with others thus becoming a part of collective memory of an organization. One theory that has been widely accepted and used in examining knowledge sharing both in organizations and virtual communities is social capital theory. Relational, cognitive and structural dimensions of social capital encompassing interaction ties, network features, trust, reciprocity norm, identification, shared vision and shared language were found to influence quality and quantity of knowledge sharing in organizations and virtual communities (Chiu *et al.*, 2006; Wu *et al.*, 2007; Kane *et al.*, 2005; Nahapiet and Ghosha, 1998). In their research of knowledge sharing in electronic networks of practice Wasko and Faraj find that a more central position in a network will positively influence knowledge sharing and that reciprocity and commitment to the network also influence knowledge sharing when individuals perceive that it enhances their professional reputation, and because it is enjoyable for them to share knowledge (Wasko and Faraj, 2005). Still the influence of reciprocity and commitment is not strong, suggesting that virtual community context is more affected by a different form of reciprocity and trust development process. Research also suggests that team membership has the largest effect on the density of knowledge sharing (Bakker *et al.*, 2006) and that people obtain useful knowledge from their strong ties, which are formed when interacting closely and frequently (Levin *et al.*, 2002) Weak ties are also significant as they provide access to non-redundant information (*Ibid.*, 2002). Due to the temporary nature of projects, there is a lack of shared identity and trust and a large number of weak ties might exist between team members.

4.1. Diversity

In addition to the social capital factor residing in teams' inter-relationships, characteristics rooted in the diversity of its members are relevant in influencing knowledge sharing behavior of individuals. Diversity encompasses differences in professional background, personality of team members, national culture, tenure and many other team member characteristics. Cummings argues that when groups are more structurally diverse, namely when employees are located on many geographic locations, more managers there are to report, more function and business units work group members belong, larger will be the effect of external knowledge sharing on their performance (Cummings, 2004). In a controlled experiment influence of congruent and incongruent ties on knowledge utilization was examined, finding that when group members with social ties share same information and stranger possesses unique information a more positive effect on information utilization is exerted than in groups with incongruent social and knowledge ties. However, when sub-groups within congruent and incongruent groups were of the same size, performance was the same implying dependence of decision-making and knowledge sharing on the group composition (Phillips et al., 2003).

4.2. Cooperation and competition

Cooperation and communication between team members and the discussion structure enhance knowledge sharing while: information distribution, informational interdependence, and member heterogeneity defer team members from sharing knowledge (Mesmer-Magnus *et al.*, 2009). Coopetition theory and social capital theory were used by Baruch and Lin to establish a knowledge sharing model exhibiting that the influence of social capital namely, trust, social interaction and shared vision, together with team politics on knowledge sharing is positively mediated via cooperation and negatively through competition (Baruch and Lin, 2012). Overall, knowledge sharing on a team level has not been comprehensively studied and consequently factors belonging to the team context other than social capital factors have not been sufficiently explored. Team characteristics, diversity and processes within project teams require further examination.

5. Individual context factors

Ultimately it is up to individuals to share or not to share their knowledge. The cognitive dimension is crucial in determining their behavior. For that reason both organizational and team context factors only in interaction with an individual's mind can influence the voluntary act of knowledge sharing. Consequently, much of the research done on the topic of individual knowledge sharing in organizations, virtual communities and on projects adopted sociological and psychological perspectives in explaining an individual's behavior.

Attitude, subjective norm, intention, trust, self-efficacy, outcome expectations, personality, perceived behavioral control, trust and emotions are significant factors explored through existing sociological and psychological theories applicable for explaining knowledge sharing behavior of individuals. In a number of studies attitude and a subjective norm were used to explain knowledge sharing by using knowledge sharing intention as an indicator of knowledge sharing behavior (Ryu *et al.*, 2003; Chen *et al.*, 2009). However, intention has sometimes failed as an indicator of knowledge sharing behavior due to organizational context barriers such as mistake-free culture and tendency of others to deliberately misinterpret sharing that may cause negative consequences to the knowledge source. Control beliefs that reflect people's capacity that may overcome such environmental obstacles should therefore be explored (Kuo and Young, 2008).

A positive impact of job attitude encompassing job involvement and job satisfaction on knowledge sharing has been found (Teh and Sun, 2012). Furthermore, attitudes of eagerness and willingness exert positive influence on the intention to share knowledge. Emotion of pride influences knowledge sharing intention both via willingness and eagerness showing both ego-focused and other-focused elements while the emotion of empathy influences knowledge sharing intention only through willingness (Hoof *et al.*, 2012).

Applying Social cognitive theory Hsu and Ju found that knowledge self-efficacy has both direct and indirect influence on knowledge sharing and on community and personal outcome expectations, and in turn those personal outcome expectations have influence on knowledge sharing (Hsu *et al.*, 2007). Self-efficacy has been a strong explanatory factor of knowledge sharing in many studies (Quigley *et al.*, 2008). Particularly, a strong correlation was found between performance goals and the recipient's self-efficacy when recipient of knowledge trusted the provider (*Ibid.*, 2008). Therefore, organizational and team context factors should be aimed at

enhancing individuals' self-efficacy and creating a psychologically pleasant and safe environment that encourages them to share knowledge.

Role trust plays in making both provider and recipient of knowledge expose themselves to uncertainty have been emphasized in the literature. Competence-based trust and benevolence-based trust are important factors both for the provision and the receipt of knowledge between employees (Levin *et al.*, 2002; Abrams *et al.*, 2003). Furthermore, trust development which ultimately leads to knowledge sharing can be seen as a sequential and interdependent process. First, economy-based trust needs to exist for information-based trust to be developed which finally might lead to identification-based trust which will influence knowledge sharing behavior (Hsu *et al.*, 2007). Additionally, trust in management increases knowledge sharing through reducing fear of losing one's unique value and improving willingness to document knowledge (Renzl, 2005). On the other hand, trust was also found to be a poor explanatory of knowledge sharing (Bakker *et al.*, 2006). On occasion, due to the nature of work and how it is organized there just is not sufficient time for the trusting relationships to be cultivated. As a result, in addition to trust other psychosocial factors essential in creating a psychologically pleasant environment should be included in the research on knowledge sharing behavior.

To a great extent it depends on the personality of individuals how they will react to outside stimuli. In recent year personality has been studied more extensively and significant relationship was found between the personality traits and knowledge sharing within teams (Matzler *et al.*, 2008). In their vignette based experiment Kamdar finds that high and low self-monitors share knowledge differently depending on which type of incentive they expect to receive (Kamdar *et al.*, 2004). Additionally, openness of individuals to experience (Cabrera and Cabrera, 2006), emotional intelligence (Chen *et al.*, 2009) and exchange ideology (Lin, 2007) have exerted influence on knowledge sharing. Due to the fact that individuals are predisposed for certain attitudes and behaviors we can assume that different aspects of personality when combined with proper factors may lead to knowledge sharing. This disposition finds its roots in national culture as well. In recent years the aspect of national culture has been introduced in explaining knowledge sharing, specifically in the context of people's inter-relationships. Findings show that cultural interpretations of knowledge sharing practice help in explaining culturally specific conceptions and applications of knowledge sharing at multiple organizational levels and suggests that western notions could be misleading when followed in promoting knowledge sharing in non-western context (McAdam *et al.*, 2012; Huang *et al.*, 2008) Cultural differences in terms of socialization, externalization, combination and internalization between Arab and Chinese culture were explored emphasizing the importance of personal networks and demonstrating that sharing knowledge can be facilitated only by relationships based on trust, which in these societies takes a long time to develop (Weir and Hutchings, 2005). Additionally, more individualistic and universalistic cultures like Americans participate in knowledge sharing for the feeling of self-worth (Jiacheng *et al.*, 2010). Whereas Chinese engage in knowledge sharing to attain group harmony and positive result, avoid conflict, save face of group members and managers, Russians desire to dominate the group for self-interests (Michailova and Hutchings, 2006).

6. Discussion, limitations and recommendations

Much of the research has been based on psychology and sociology theories and in some studies multiple theories were combined in order to build a satisfactory knowledge sharing model (Wasko and Faraj, 2005; Kuo and Young, 2008; Ryu *et al.* 2003; Chen *et al.*, 2009). Block *et al.* grounded their research on Theory of reasoned action integrating it with, social-psychological forces, organizational climate factors and extrinsic motivators that are believed to influence individuals' knowledge sharing intentions (Bock *et al.*, 2005). Goal-setting theory, social cognitive theory, social motivation and incentive theories were used in explaining mechanisms underlying knowledge exchange process and the influence exerted on individual performance as well (Quigley *et al.*, 2008). In addition, Chiu integrated Social capital theory and Social cognitive theory and constructed a model which he used to investigate peoples' motivation behind knowledge sharing in virtual communities (Chiu *et al.*, 2006) Theory of reasoned action posits that intention to engage in a specific behavior is a good indicator of the occurrence of the behavior and that this intention reflects the subjective norm and attitude determined by belief about the outcome of the behavior (Fishbein and Ajzen, 1975). We assume that these social expectations regarding the behavior are shaped by organizational context factors like values, leadership, incentives and social capital which is embedded in interpersonal relationships existing among individuals (Nahapiet and Ghosha, 1998). Reciprocity, social interaction, network influence, shared vision and language exhibit influence on the attitude and the subjective norm of the individual which in turn influence intention to share knowledge. What's more, revised Theory of planned behavior integrated with Theory of reasoned action can be used in explaining

how individual factors of cognitive efficacy shape the belief about the outcome of the behavior. Likewise, individuals with high self-efficacy set higher goals for themselves resulting in a desired behavior.

Social exchange theory (Blau, 1964) can be used to address the analysis of tangible and intangible benefits and costs of knowledge sharing that may regulate individuals' self-interest behavior (Davenport and Prusak, 1998). Determining the relationship between organizational and team context factors influencing knowledge sharing and integrating social capital theory, social influence theory, social exchange theory and social-cognitive theories to build a complete model should be attempted. In addition, a fact that individual's behavior and attitude is affected by the interaction of the psychological traits, such as personality, and the social context should be considered.

Limitations and recommendations

One major limitation of the existing literature is that none of the studies took a holistic approach in examining factors influencing knowledge sharing and the existing relationship between them. Although there were some attempts to determine critical success factors for knowledge sharing (Al-Alawi *et al.*, 2007) they failed to involve all the significant factors and have not addressed the question of how factors from different contexts interact together to lead to knowledge sharing. By integrating above mentioned theories in an interactive form a complete model of critical success factors for sharing tacit and explicit knowledge should be build while taking a holistic approach in explaining the process of knowledge sharing between knowledge provider and a knowledge recipient.

An empirical study addressing the limitations of previous studies on knowledge sharing should be conducted. Another limitation of existing studies is a possibility of a common method bias occurring because in a number of studies a questionnaire completed by a single source at one time period to measure all constructs was used. With the intention of avoiding the threat of common method bias data can be collected from two different sources, for examples both managers and employees in organizations, or both project managers and project team members on projects. At the same time only a handful of studies have examined knowledge sharing in organizations and on projects characterized by a dynamic labor environment suggesting that knowledge sharing in such atmosphere is influenced by factors different from those in more traditional working environments (Chalkiti, 2012). Often project work involves complex tasks and teams are characterized by geographic dispersion, electronic dependence, dynamic structure and national diversity of its members (Gibson and Gibbs, 2006). For example, when it comes to virtual work, by applying four aspects of "virtuality" it can be determined how influence of factors on knowledge sharing differs on how effectively geographic dispersion, IT utilization, team diversity and task coordination are managed, and how different cultures deal with facets of virtuality (Duranti and Almeida, 2012; Zakaria and Talib, 2011). In such working environments due to the cultural differences, task organization, lack of face-to-face interaction and geographical dispersion there is a lack of shared identity, sense of belonging and trust in others (Au and Marks, 2012). Consequently, misunderstanding and conflict among project members are prevalent (Richards and Bilgin, 2012). Moreover, future studies should distinguish between sharing of tacit and explicit knowledge they are quite different in nature and for that reason are under the influence of different factors.

Finally, universal approach in explaining factors influencing knowledge sharing behavior of individuals was taken in most of the studies. A more particularistic approach to knowledge sharing is required as some factors may be insignificant in certain cultures. For instance, empowering leadership, fairness and shared decision process might not be relevant in non-Western cultural context (Ma *et al.*, 2008). Due to the collectivistic nature of the Chinese culture, factors aimed at achieving collective benefit of knowledge sharing by emphasizing the individual's value may be not very effective. Instead, leadership that fosters harmonious ties and focuses on the individual-collective relationship might be of a greater value in achieving knowledge sharing between employees. Therefore, a more culturally sensitive approach to leadership, as well as the factors should be taken in examining leadership characteristics that influence knowledge sharing behavior.

Additionally, future efforts should be exerted in developing a conceptual framework which will be used to analyze knowledge sharing between the members of different cultures cooperating on global projects. Cultural principles developed by Hofstede can be applied in order to investigate how cultural characteristics and background relates to critical success factors influencing knowledge sharing. This is possible through the summary of extensive literature written both on national culture and knowledge sharing, as well as other team processes in various organizations and projects which are affected by national culture (Ma *et al.*, 2008).

7. Conclusion

In this paper we provided a thorough literature review of key factors influencing individual knowledge sharing which enables managers and researchers to better understand the importance of knowledge sharing and knowledge management on complex projects and in organizations. We included relevant organizational, team and individual context factors which need to be managed effectively in order to achieve an optimal knowledge sharing behavior by individuals.

In the reviewed literature knowledge sharing has been analyzed using relevant psychology and sociology theories. All theories have proven successful in explaining individual level knowledge sharing behavior in past studies. Theory of reasoned action, Theory of planned behavior, Social capital theory, Social influence theory, Social exchange theory, Social-cognitive theory, Goal-setting theory and motivational theories augmented with certain factors were used to explain how and why individuals share knowledge.

Additionally, we conclude that knowledge sharing models are not universally applicable and that knowledge sharing is not a natural behavior for all cultures, especially in transition economies where loss of knowledge is a major barrier to knowledge sharing. In summary, organizational context factors are aimed to generate positive factors among organization employees or project team members which in turn will affect the cognitive component of an individual which will lead him to share valuable knowledge. Despite the fact that the importance of knowledge sharing factors has been recognized in the existing literature, still inter-factor relationships and interaction should be identified and analyzed in order to build a superior knowledge sharing framework.

A refined conceptual design of the knowledge sharing model integrating relevant sociology, psychology, organizational and cultural theories and corresponding knowledge management practices necessary for creating a knowledge sharing environment should be constructed in future studies. This gap should be filled by integrating these theories and providing a holistic approach to knowledge sharing with the purpose of designing a comprehensive framework for examining knowledge sharing encompassing relationships and interactions between various factors.

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