SOCIAL IDENTIFICATION MEDIATED INTERDEPENDENCE DESIGNS FOR TEAM KNOWLEDGE SHARING

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Abstract

As the team-based structure is prevalent in modern organizations, it is promising to address the key problem of how to promote individuals to engage in knowledge sharing. Drawing upon the interdependence theory and social identity/self-categorization theory, this study develops a research model to elaborate how interdependence designs, including task and goal interdependence, elevate individuals' knowledge sharing behavior in a team by activating their social identification to the team. To test the conceptual model, a survey method was employed, involving 421 valid individual observations nested in 56 organizational teams. The empirical testing supports the important mediating role of team members' social identification processes linking the interdependence designs to knowledge sharing. The goal interdependence is found more effective than task interdependence to evoke individuals' social identification to the teams. Theoretical and managerial implications are discussed in this paper.

Keywords: Knowledge Sharing, Interdependence, Social Identification, KMS

1 INTRODUCTION

Individuals' knowledge constitutes intellectual capital that has a strategic significance for firms to thrive. The prevalence of team structure in contemporary organizations is under the assumption that team design is able to maximize the contribution of all members. However, the contradictory fact is the appearance of collective knowledge sharing bias and the hidden profile among team members. Team members are likely to share the commonly held knowledge but not the unique knowledge to deal with important tasks. They may also look guardedly at the knowledge offered by others and be unwilling to learn (Davenport & Prusak 1998).These phenomenon are not intended by the team structural design.

From the managerial artefact design perspective, interdependence can be an effective team design to enhance intra-team knowledge sharing (Pee et al. 2010; Pinjani & Palvia 2013). Interdependence designs such as task and goal interdependence aim to motivate individual members to exert themselves on behalf of the collective that goes beyond their own interests and concerns, therefore nourishing knowledge sharing among the interdependent team members (Van der Vegt et al. 1998; 2000; 2003; Wageman 1995). However, interdependence designs in a team may not directly result in the intended behavior, if such designs are not able to activate individuals' psychological engagement that is a key antecedent of behavior engagement (Kamoche et al. 2014). Consequently, the missing link between the interdependence design and knowledge sharing in a team is questioned. What is the underlying micro psychological process that leads interdependence design to team members' knowledge sharing behavior?

From the IT artefact design perspective, organizations tend to deploy knowledge management systems (KMS) to facilitate knowledge sharing among employees (Yu et al. 2013a). KMS consists of a class of information systems and applications with two basic functionalities, i.e., the knowledge coding and storage for sharing and reuse and the knowledge networking and community for communication (Pavlou & El Sawy 2006). KMS indirectly or directly enable knowledge sharing across team members that includes providing knowledge and receiving knowledge. Once an organization adopts the KM infrastructures, the infrastructures usually are standardized and shared within and across work teams providing a foundation for knowledge exchange. But, different work teams require autonomy for meeting specific IT needs and may utilize the applications in their agreed way for work (Foil & O'Connor 2005). Therefore, there is an appropriation of the organizational-wide KMS in each team, during team members utilize the technologies for knowledge sharing.

In the organizational team context, individuals should not be treated as separate entities. The core aspect of psychological engagement is the degree to which people identify with the social group, i.e., social identification. In fact, social identity theory and its derivate of self categorization theory has implicitly suggested the insufficiency of independence for collective behavior if social identification and self-categorization were not involved (Turner & Bourhis 1996). This can also be applied to IT artefacts. Given the availability of KMS applications to support a group of people's sharing behavior, social identification will also be involved during their usage of KMS. This group may relate the technologies to their internal structures and constraint or interpret the intended spirits (DeSanctis & Poole 1994), which results in the necessity of developing shared cognition on the given KMS.

Cognition and affection are two important components of social identification. Affection is about individuals' belonging feeling, while cognition is related to the construction of shared understanding with others (Yu et al. 2013b). Such sharing cognition can base on the team tasks as well as the systems as KMS are increasingly adopted. But the technological dimension in the cognitive process has been largely ignored in the social psychological research. As an important shared cognition construction, the consensus of technology appropriation plays an important role in influencing the group behavior (DeSanctis & Poole 1994; Salisbury et al. 2002). By expanding the communication capacity across individuals, KMS are conducive to the shared cognition of social identification (Foil & O'Connor

2005). Thus, it is necessary to extend the social identity theory by acknowledging the effect of technology-related cognition on individual behavior.

Combining interdependence theory and social identity theory, this study attempts to investigate how interdependence designs promote individuals' knowledge sharing by activating their social identification toward the team including the sharing cognition on team tasks, sharing cognition on systems and affective commitment to the team. Theoretically, this study will contribute to the interdependence literature by revealing the underlying micro psychological mechanism for explaining the impact of managerial artifact on individual behavior. This study will also contribute to the social identity theory by verifying the contribution of the system-based shared cognition construction to team members' knowledge sharing. Practically, our results will offer new insights of the managerial practices and technology utilization for team management.

2 THEORETICAL BACKGROUND

2.1 Interdependence Theory

Interdependence is fundamental to designing team work and understanding individual behavior within a team. Interdependence within work teams generally stems from role differentiation, distribution of skills and resources, the processes by which members execute the work, the way goals are defined and achieved, and the way performance is rewarded and feedback is given. Task and goal interdependence are mutually independent constitutes two dimensions of the concept of interdependence(Stanne et al. 1999; Van der Vegt et al. 2003; Wageman 1995). Task interdependence refers to the interconnections among tasks such that the performance of one definite piece of work depends on the completion of other definite pieces of work, while goal interdependence refers to the degree to which group members are presented with group goals or provided with group-based feedback (Van der Vegt et al. 2003).

Both task and goal interdependences foster a culture where team members' cooperation is a necessity. It is reasonable to assume the crux of successful team design roots in the interdependence of individual members. Previous researchers have shown the positive relationship of interdependence with job design (Kiggundu 1983), team performance (Wageman 1995), employees' organizational citizenship behavior (Van der Vegt et al. 2003), and so on. Following the similar rationale, a group of people with interdependence are more likely to share knowledge than those under an individualistic team structures, because the interdependent structures imply the need for people to achieve concerted action. However, designs should not end in themselves. We need advanced knowledge of the micro psychological processes that are the sequences of interdependent team designs.

According to interdependence theory, intra-group interdependence constitutes inter-reliance on in-group members for fulfilling important needs, increasing degree of perceived interdependence arouses individuals' cognition and affect on the relevant situation and persons, and therefore yields persistence in interactions and longevity in relationships (Rusbult & Van Lange 2003). Once a group is formed, interdependence directly affects how people perceive their interests and results in the development of collective, shared interests. Besides the interdependence theory, we need to seek for other decent theories to disclose such socio-cognitive processes that enable the transformation of hard design features into vivid actual behavior.

2.2 Social Identity Theory

Tajfel defines the concept of social identity as an individual's knowledge of belonging to a certain social group together with some emotional and value significance to him of this group membership (Tajfel 1972). Identity can be described along a continuum ranging from personal identity at one end to social identity at the other. Personal identity is self conceptions in terms of unique and individualistic characteristics. In contrast, social identity deriving from category memberships is a

sense of belonging. As a perception of belonging to a particular work team, identification is triggered when situational cues such as independent tasks and goals, shared experiences, perceived similarities to others highlight common fates between an individual and the team.

Social identification is the process whereby individuals see themselves as on with another person or group of people. It has two fundamental components: cognitive and affective identifications (Ellemers et al. 1999; 2004). Cognitive identification is to categorize people into group and invest in the meaning of a group. The cognitive process is thus shaped by the co-construction of shared understandings on the tasks and systems in use. People cognitively represent groups in term of prototypes, the fuzzy sets of interrelated attributes that simultaneously capture similarities and structural relationships within groups and differences between the groups, and prescribe group membership related behavior (Turner et al. 1987). Identification as a team member is not only derived from rich interpersonal interactions but also is facilitated by computer-mediated communication (Postmes et al. 1998). In particular, the consensus use of KMS within a team defines a specific virtual situation in team terms and enhances the salience of the team identity. Affective identification is a process of emotional engagement, through which an individual feel an attachment to this particular group.

In a social identification process, individuals' identity shifts from the personal level to the collective level (Turner et al. 1987). In other words, the self is perceived as an interchangeable exemplar of social category rather than a unique person. With a salient team identity, the involved members are likely to draw less sharp a disjunction between their own outcomes and those that accrue to other group members (Kramer 2001). Social identification enhances concern for the group processes and outcomes, thus increasing chances that the opportunity for exchange will be recognized. Salient group identification nourishes not only the perceived opportunities for knowledge sharing but also the actual sharing behavior, while the distinct and contradictory identities within a group constitute significant barriers to knowledge sharing, learning, and other cooperative behavior.

2.3 Interdependence and Social Identification

Interdependence design in a team and individuals' social identification are not conflicting but reconcilable. As aforementioned, interdependence is a fundamental definition of the situation in team terms. Team identification derived from interpersonal ties among individual members is facilitated by situational factors that enhance the salience of the social category (Ellemers et al. 2004). In fact, social identification reveals a group psychological process that would lead the appropriate interdependence designs to individuals' sharing behavior, but not rule out the effect of interdependence.

Increasing interdependence will activate the situation- and person- relevant attention, cognition, and affect. When a group member's tasks and the consequent outcomes are governed by others' actions, he or she is likely to dedicate considerable effort to understanding what the situation is about, what are others' concerns, etc. Therefore, interdependence yields patterns of cognition and affect that promote congenial interaction that results in knowledge sharing (Rusbult & Van Lange 2003). On the other side, the social identification theory and self-categorization theory suggest that the social identification serve as a carrier delivering interdependence design to individuals' sharing behavior. Turner et al. (1996) explicitly propose that the perceived interdependence of people could function as a cause of individuals' psychological engagement in collective actions. The shared interests, experience, and similarity are the criterion of social categorization to produce the awareness of shared social identity, while the common fate and regularly received group-based feedback arouse individual members' emotional attachment to the group. When people's psychological engagement is wakened up, they are experiencing the social identification process in which the individual self is transformed into a collective self. As a result, individuals are willing to share knowledge, especially the uniquely held knowledge, for collective performance enhancement.

Relying on interdependence theory and social identity theory, we develop a research model as shown in Figure 1. We gauge the social identification processes as the micro psychological level and regard the identification as the underlying mechanism. Individuals' identification towards the team can be

activated by interdependence design. Further, such identification is able to translate the managerial design features into the actual sharing behavior in the team. The social identification is compassed by the construction of shared cognition on tasks and systems, and affective commitment to the team.

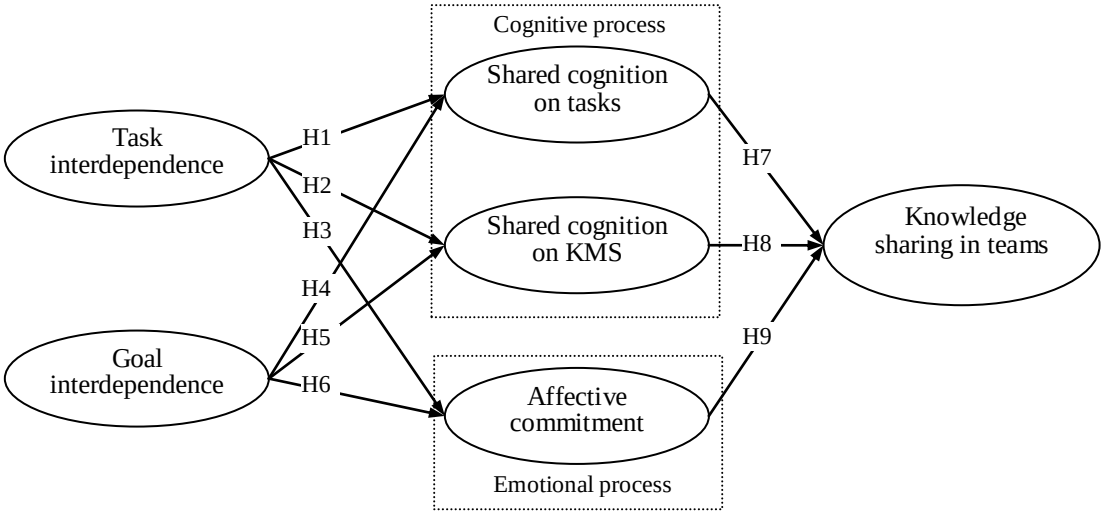

Figure 1. Research model

3 HYPOTHESES

3.1 Task interdependence, Shared cognitions and Affective commitment

Task interdependence is the degree to which a team member needs information, materials, and support from other within-team members to be able to carry out his or her job (Van der Vegt et al. 2003). The work team design in which organizational work is divided among work teams and further divided among individuals who occupy different jobs or roles within their teams brings different patterns of task interdependence among the involved members. Van der Vegt et al. (2003) assert that the members will perceive varied degree of task interdependence with others, although such perceptions within a team might sometimes be similar.

Socio-cognitive processes do not occur in a vacuum but are influenced by the context that nourishes the willingness to engage in the joint effort to build and maintain shared cognition among a group of people (Van den Bossche et al. 2007). Groups designed by task interdependence with one another provide opportunities for developing members' cognitive structures. Task interdependence necessitating social interaction promotes individuals' cognitive engagement through which individuals reconcile difference between their own values, methodologies and languages with those of others, therefore co-construct the shared cognitive structure (Olivera & Straus 2005). Such shared cognition is shaped not only by shared understanding on task-related knowledge (Cannon-Bowers & Eduardo 2001) but also by the reached consensus on how to use advanced technologies for work (Salisbury et al. 2002).

Task interdependence can foster individuals' affective responses such as team satisfaction and commitment. Task interdependence produces experienced responsibility for the work of others, which in turn lead to a shared responsibility on the team level (Van den Bossche et al. 2007). Under the condition of task interdependence where frequent personal interaction occurs in fellow members, there are opportunities for individuals to cultivate camaraderie and friendship and therefore gradually have such feelings of belonging and attachment to the group (Van der Vegt & Bunderson 2005; Van der Vegt et al. 2003; 2006). Accordingly, we hypothesize that,

H1: Task interdependence in a team has a positive impact on the individual members' shared cognition on tasks.

H2: Task interdependence in a team has a positive impact on the individual members' shared cognition on systems usage.

H3: Task interdependence in a team has a positive impact on the individual members' affective commitment to the team.

3.2 Goal interdependence, Shared cognitions, and Affective commitment

Goal interdependence is the degree to which group members are presented with group goals or provided with group feedback (Van der Vegt et al. 2003). A psychological readiness to categorize oneself socially is related to the motives, values, expectations and goals served by the social categorization (Turner et al. 1994). The realistic group conflict theory also posits that whether a group of people experience common goals largely determine the degree to which this group of people can experience collective identification and comfortable cooperation. In a desirable team design, the team goals and the distribution of members' roles for achieving those goals are visible. The clear goals demarcate the internal relationships of team members as well as the boundaries between in-groups and out-groups, while the regular team-based feedback makes the category stable and salient. Goal interdependence helps stirs up individual motives to categorize themselves as memberships of this particular team. The presence of group goals stirs up individual motives to. Regular group-based feedback helps fulfill individuals' needs for uncertainty reduction, thereby facilitate the identification development.

From the socio-cognitive view, people always check their cognition against social reality to reduce uncertainty. Such uncertainty is reduced as similarity in individuals or agreement on certain team attributes appear (Hogg & Terry 2000). Goal interdependence fosters symbolic cooperation that requires a strong similarity of the core values, attitudes, philosophies, and methods (Williams 2001). Working under a circumstance with positive goal interdependence, individuals intend to believe the shared team goals will lead other members to act in the best interest of the ingroup, and would be open regarding others' arguments and desires. They therefore more inclined to develop a team mental model in which the sharedness among this group of people is maximized while their diversities are minimized. In contrast, working without common goals nor feedback about team functionalities, members lack aspirations to the team, thus become reluctant to affectively commit to this team. When individual members' feel independent to the team pursuing for their own interests rather than the collective interests, they may behave competitively rather than cooperatively with one another. Thus, goal interdependence invokes the individuals' consciousness to transform the individual self to a collective self, i.e., the social identification process. Accordingly, we hypothesize that,

H4: Goal interdependence in a team has a positive impact on the individual members' shared cognition on tasks.

H5: Goal interdependence in a team has a positive impact on the individual members' shared cognition on systems usage.

H6: Goal interdependence in a team has a positive impact on the individual members' affective commitment to the team.

3.3 Shared cognition on tasks and Knowledge sharing.

Shared cognition on tasks refers to the extent to which the work values, philosophy, and problem-solving approaches of a group of members are similar. The development of shared cognition facilitates coordinated action because it ensures that all participants are solving the problem and helps exploiting

the cognitive capabilities of the entire team (Klimoski & Mohammed 1994; Van den Bossche et al. 2007).The reach of shared cognitions is through the process where interactions among members occur.

Shared knowledge structure on work tasks serves as a heuristic for knowledge sharing. Meaningful exchange of knowledge requires at least some level of shared understanding, e.g., shared language and methodology of dealing with tasks. As knowledge sharing occurs in a dual direction with knowledge providing and receiving, an effective heuristic not only reduces knowledge adoption cost by reducing the effort required to internalize other fellow members' knowledge, but also reduce knowledge contribution cost by decreasing the effort required to understand the needs of other members and to represent contributions accordingly (Darr & Kurtzberg 2000).

The developed shared cognition through working together creates attraction from one another and arouses the cognitive categorization. The research in social psychology demonstrates that people will more willing to share knowledge with those who hold similar attitude, philosophy, and experience and intend to agree with them (Darr & Kurtzberg 2000). Previous studies have shown the importance of similarity-based connection in which team members' interaction is nourished smoothen the knowledge flow within a group of people (Borgatti & Cross 2003; Makela et al. 2007). Thus, individual members are likely to share their knowledge with those who display shared task related cognition such as the work values, philosophies, methodologies, attitudes, etc. Accordingly, we hypothesize that,

H7: Team members' shared cognition on tasks has a positive impact on individuals' knowledge sharing in the team.

3.4 Shared cognition on systems and Knowledge sharing.

The other facet of shared cognition is reflected in the consensus of how to use supportive technologies for work. Shared cognition on systems in this paper is defined as the extent to which group members agree about how to jointly use KMS as interventions. Advanced information technologies are those that support coordination among people and provide procedures for accomplishing interpersonal exchange (DeSanctis & Poole 1994).

Identical technologies can occasion similar dynamics and yet lead to different structural outcome, because technology does not determine behavior, instead, people generate social constructions of technology using resources, interpretive schemes, and norms embedded in the group context (Orlikowski 2000). According to the adaptive structuration theory when a group of people use KM technologies, they are not merely information processing entities but have a social existence that influences individuals' sensemaking towards these technologies for work. Users of KMS are active producers of meaning rather than passive users. Team members may choose to appropriate the technological feature in different instrumental uses or purposes, thus, the degree to which members agree on the using mode is crucial to ensure maximum utility of the technologies for a particular team. Shared cognition on systems can be viewed as the local development and understanding of a methodology of utilizing certain systems. Such co-constructed meaning of utilizing certain systems for intended tasks will promote the fulfillment of users' responsibilities. Greater shared cognition on the technologies, less uncertainty in the team's usage patterns, therefore more occurrences of knowledge sharing behavior when using the supportive technologies. Therefore, we hypothesize that,

H8: Team members' shared cognition of systems has a positive impact on individuals' knowledge sharing in the team.

3.5 Affective commitment and Knowledge sharing

Affective commitment is defined as the emotional significance that the members attach their membership in that particular work team (Van Der Vegt & Bunderson 2005). According to social identity theory, social identification leads individuals to perceive themselves in terms of the characteristics they share with other members rather than their distinctive characteristics (Turner 1982).

It turns the group, psychologically, into a part of the self, blurring the distinction between the self and the group. Team identification is the merger of the self and the team, with people defining themselves in terms of their group membership. Such an emotional social identity has been shown to most clearly "supply the motivational force" leading to action or the "readiness to engage in or disengage from interaction" (Bergami & Bagozzi 2000).

Nahapiet and Ghoshal (1998) argue that social identification nurtures one's motivation to share knowledge, in contrast, distinct and contradictory identities within communities set up barriers to knowledge sharing. Given the human natural tendency of hoarding knowledge, people would not contribute knowledge unless they recognize as themselves as part of the team and the contribution is conducive to their welfare. The affective team identity, implying an emotional involvement with a particular team, fosters loyalty and citizenship behaviors (Ellemers et al. 1999; van der Vegt & Janssen 2003). Such identification renders individuals to maintain a positive self-defining relationship with other members, and therefore elevate their activeness of knowledge sharing within a group, especially the tacit knowledge sharing.

H9: Team members' affective commitment to the team has a positive impact on individuals' knowledge sharing in the team.

4 METHODOLOGY

4.1 Sample and Data Collection

We employed the survey method for data collection, which was conducted in China. The survey instruments originally developed in English, were adapted for this study in Chinese using Brislin's (1986) the conventional back-translation method. The instruments were translated back and forth between English and Chinese by a group of bilingual researchers, and this process was repeated until both versions converged. Before administering the survey in multiple organizations, we conducted several pilot tests followed by in-depth interviews to determine the face validity, clarity and relevance of the questionnaire.

We collected 421 effective individual responses which were nested in 56 work teams. The team size ranged from 3 to 21 members (mean=7.5, s.d.=3.7). The average within-group response rate was 90.7%. The mean age of the respondents was 35.6 years (s.d.=11), and the mean position tenure was 10.4 years (s.d.= 11.3). In all the respondents, 66% were males and 34% were females.

4.2 Measures

The questionnaires consisted of self-reported 7-points Likert items that were validated measures for the corresponding constructs. Specifically, according to previous research (Van der Vegt et al. 2003), respondents were asked to indicate their perceptions on task interdependence and goal interdependence in their work teams respectively. The item for task interdependence was like "We often had to share materials and ideas to get our work done". The items for goal interdependence were like "We receive feedback on the basis of our collective performance" and "We are informed about the goals we should attain as a team".

The measures for the shared cognition on tasks were adapted from Ko et al. (2005). The sample statement was like "My team members and I solve problems in a similar way". We adopted the five items from (Salisbury et al. 2002) to measure the concept of shared cognition on systems. Respondents were asked to indicate the extent to which group members agree on how apply KM technologies to their work. A sample question was like "Our team reached mutual understanding on how we should use the adopted KM tool(s) to perform our task". As for affective commitment, we adapted five items

from (Van der Vegt & Bunderson 2005; Wasko & Faraj 2005). The sample statement was like "I feel a strong sense of belonging to my team".

Knowledge sharing in this study is defined as providing and receiving work-related knowledge with group members. To capture to dual direction of sharing, we asked respondents to indicate the frequency of exchange several types of knowledge. Such tactic was used in Cummings (2004). We asked the exchange frequency of knowledge of work experience or know-how from work, know-where/know-whom, know-why and expertise from education or training between the respondents and their fellow members (Bock et al. 2005).

5 RESUTLS AND DISCUSSION

The analysis of moment structures (AMOS) was used for data analysis. Following recommended two-step procedure by Anderson and Gerbing (1988), the constructs were first assessed for reliability and validity. With this held, a structural model was examined.

Before checking the measurement and structural models, we relied on Harman's single-factor, a widely used method, to check for common method variance that may threaten the internal validity (Podsakoff 1986). According to this approach, common method variance is present if a single factor accounts for the majority of the covariance in the dependent and independent variables. In this study, there was no dominant factor emerging from the factor analysis, implying that common method variance was not a serious problem.

5.1 Measurement Model Assessment

The construct reliability and validity were assessed through exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The constructs were assessed for reliability using Cronbach's alpha (Cronbach 1951). The Cronbach's Alpha values ranged from 0.736 to 0.958, indicating adequate reliabilities (Nunnally 1978). The items for convergent validity were assessed using CFA. As shown in Table 1, the estimated standard loadings ranged from 0.633 to 0.922, above the commonly used cut-off value of 0.50. All loadings were shown at $P<0.001$ level of significance, indicating good convergent validities.

Constructs	**Items**	**Standardized Loadings**	**S.E.**	**C.R.**	**P**
Task interdependence (α= 0.834)	TI1	.757			
	TI2	.839	.077	14.933	***
	TI3	.786	.077	14.728	***
Goal interdependence (α= 0.736)	GI1	.686			
	GI2	.633	.085	11.066	***
	GI3	.674	.091	11.469	***
Shared cognition on tasks (α= 0.848)	SCT1	.763			
	SCT2	.759	.060	15.296	***
	SCT3	.778	.065	15.564	***
	SCT4	.699	.062	14.499	***
Shared cognition on systems (α= 0.958)	SCS1	.909			
	SCS2	.923	.030	31.937	***
	SCS3	.866	.035	26.674	***
	SCS4	.918	.032	30.945	***
	SCS5	.922	.031	31.452	***
Team identity (α= 0.936)	AC1	.808			
	AC2	.862	.048	21.590	***
	AC3	.905	.050	23.074	***
	AC4	.908	.049	23.004	***

	AC5	.791	.053	18.962	***
Intra-group knowledge sharing (α= 0.852)	KS1	.773			
	KS2	.844	.062	17.332	***
	KS3	.645	.060	13.377	***
	KS4	.781	.062	16.249	***
*** P<0.001					

Table 1. Assessment of Instrument Reliability and Convergent Validity

Discriminant validity was assessed by EFA with principal components analysis and varimax rotation. As shown in Table 2, the items loaded more highly on their intended constructs than on other constructs (Cook & Campbell 1979). Loadings of 0.63 to 0.70 are considered very good, and above 0.71 are considered excellent (Comrey 1973).

Items	**TI**	**GI**	**SCT**	**SCS**	**AC**	**KS**
TI1	**.785**	.188	.133	.108	.140	.155
TI2	**.857**	.098	.063	.032	.155	.141
TI3	**.843**	.109	.163	.052	.021	.115
GI1	.084	**.767**	.161	.203	.186	.142
GI2	.207	**.728**	.220	.201	.031	.153
GI3	.197	**.634**	.130	.164	.244	.270
SCT1	.099	.244	**.666**	.185	.328	.159
SCT2	.101	.114	**.810**	.168	.088	.208
SCT3	.096	.141	**.811**	.232	.154	.095
SCT4	.210	.115	**.659**	.191	.311	.153
SCS1	.028	.146	.147	**.883**	.151	.141
SCS2	.020	.143	.139	**.889**	.175	.130
SCS3	.085	.103	.154	**.869**	.070	.106
SCS4	.084	.136	.191	**.888**	.134	.119
SCS5	.062	.120	.142	**.896**	.148	.139
AC1	.093	.164	.101	.101	**.820**	.181
AC2	.052	.028	.153	.112	**.863**	.210
AC3	.094	.082	.190	.116	**.860**	.178
AC4	.084	.118	.160	.160	**.862**	.203
AC5	.107	.128	.163	.183	**.780**	.157
KS1	.122	.051	.162	.134	.239	**.784**
KS2	.098	.168	.151	.169	.212	**.809**
KS3	.119	.141	.208	.165	.210	**.751**
KS4	.174	.211	.058	.110	.202	**.676**
Explained variances of total: 76.28%; Eigenvalue>1						

Table 2. Assessment of Discriminant Validity

5.2 Structural Model Assessment

The model fit indices (Table 3) demonstrated the goodness of proposed research model. The important robust indices of comparative fit index (CFI), normed fit index (NFI), incremental fit index (IFI), and Tucker-Lewis Index (TLI) were above their criterion levels (Hair et al., 1998), and root mean square error of approximation (RMSEA) were less than the criterion of 0.08 (Browne & Cudeck 1993).

Goodness of fit indices	**Structural model**	**Desired levels**
CMIN	605.747	Smaller
df	243	-
CMIN/df	2.493	< 3
CFI	0.949	>.90
NFI	0.918	>.90
IFI	0.949	>.90
TLI	0.937	>.90
RMSEA	0.060	<.08

Table 3. Structural Model Fit Indices

As indicated in Figure 2, our theoretical model explained 39.5% of the variance of individual members' sharing of their unique knowledge with ingroup people. Interdependence design was found with significant contribution to develop team members' shared cognitions on tasks and systems, explaining 54.9% and 31.0% of their variance respectively. Interdependence was also found with substantial contribution to individuals' affective commitment, explaining 40.0% of its variance. All the hypotheses expect H2 were supported by our empirical data.

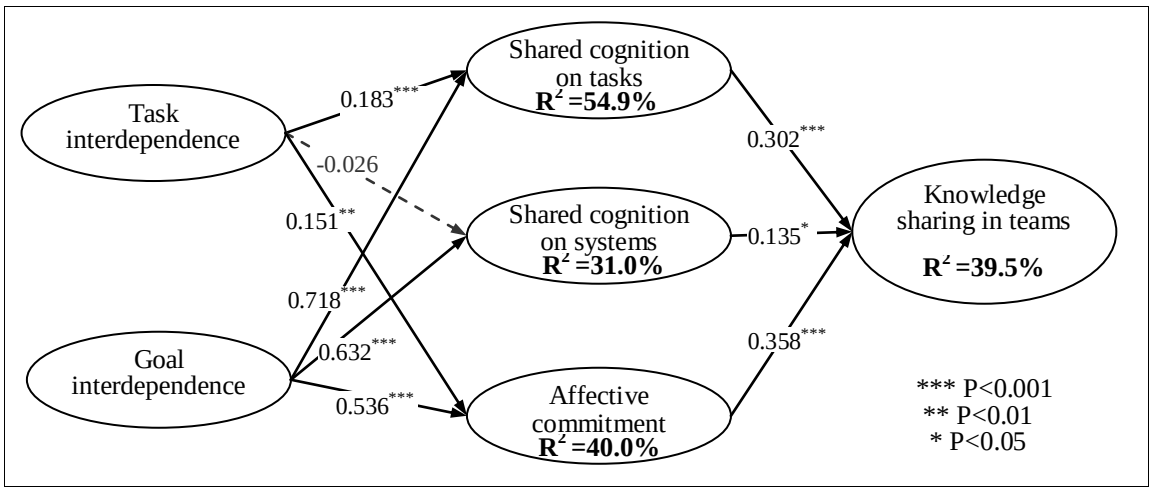

Figure 2. Path Coefficients of Structural Model

Our result demonstrates individuals' psychological engagement plays a vital role in transforming the organizational design features to individuals' knowledge sharing behavior. Task interdependence among a group of people significantly influences their social construction of shared cognition on tasks and individuals' affective commitment to the team (H1&3 supported). Task interdependence design explicitly pushes individuals' collective cognitive process in which they co-construct the meaning of tasks and jointly develop methodology of completing the team work. Interdependence of task, to some extent, implies individuals' output depends on that of the whole team. The absolutely necessary interaction from time to time within the team promotes individuals' emotional attachment to the collective. Our result indicates a non-significant relationship between task interdependence and shared cognition on systems (H2 unsupported). A plausible explanation would be that the technologies in this study are focused on KM tools that function as a complementary support for team works rather than directly relate to the tasks in those various teams. Therefore, the task interdependence within a team might not leverage such collective cognition on using the KM tools.

Goal interdependence of a team is shown have strong influences on promoting individual members' cognitive and affective identification to the team (H4~6 supported). Consistent with prior research (Van der Vegt & Bunderson 2005; Van der Vegt et al. 2003), setting team goals and regularly provide team-based feedback are expected to arouse individual members' consciousness of developing shared understanding with others and increase their intention of reaching a consensus on how to utilizing those supplementary technological support to share knowledge, in order to realize the team goals ultimately. Such goals and feedback make people feel that they have a common fate, thus team members would be more attached themselves to the collective.

Our results also indicate that the two dimensions of interdependence have different impacts on individuals' social identification process in magnitude. Specifically, the effects of goal interdependence on individuals' cognitive and affective identification are much stronger than those from task interdependence respectively. Indeed, the simple team design using task interdependence is not adequate to promote individuals' psychological engagement in collective actions (Wageman 1995). Individuals' perception of goal interdependence is more likely to make them recognize the similarity with fellow members and further transform their differential self identity to the team identity.

The path coefficients of the structural model also show that the promoted shared cognition on tasks and systems, and affective commitment to a team significantly increase ingroup members' sharing of uniquely held knowledge with a magnitude of effect in 0.302, 0.135 and 0.358 respectively (H7~9 supported). Shared cognition on tasks, shaped by the co-constructed meanings, languages, philosophies on team works, decreases the sharing cost of knowledge providers and receipts. Such shared cognition ensures team members understand one another, therefore facilitates the meaningful knowledge exchange. Shared cognition on systems is the result of adaptive structuration between a group of people and the supportive KM technologies. When team members reach an agreement on how to use the technologies for intended sharing purpose, the capacity of the technologies would be maximized. Therefore individual members' actual sharing behavior would be enhanced. Furthermore, people may favor to use lean media, in particular KM technologies in this study, to share knowledge. The affective commitment reflects that individuals really love the team and feel attached to this team. With such an emotional identity, they are less vigilant to their fellow members while more willing to share knowledge, even unique, within the team.

6 CONCLUSION, IMPLICATIONS, AND LIMITATIONS

This study reveals how task and goal interdependence designs promote individuals' knowledge sharing in teams by invoking the cognitive and affective identification process among team members. Individuals' psychological engagement, whether cognitive or emotional, is intangible for team designers, but, such engagement is critical to mobilize the managerial designs to tangible sharing behavior. In other words, the effectiveness of team design in organizations for intended purpose largely depends on the aroused social identification and self-categorization in individuals' minds.

The present study significantly contributes to the extant literature by finding an accommodation between the interdependence theory and social identity theory. We interpret the effect of interdependence design on knowledge sharing from a new angle, that is, the cognitive and emotional identification to a collective are the underlying processes. Unlike previous research, we rely on the theory of social identification and its derived theory of self-categorization to redirect the motivational focus from evaluative to structural factors, in particular the co-constructed meaning, the reduction of uncertainty, and the nourished feeling of belonging. In fact, individual members sharing knowledge, even sharing their unique knowledge, is not always because they are extrinsically motivated by external rewards or reciprocal benefits from their colleagues. The sharing behavior can be caused by the accomplished depersonalization of the individual members, which produces within-group conformity and patterns of ingroup liking, trust and solidarity (Hogg et al. 2004), especially in collectivism oriented countries. Our study also provides an alternative explanation for the surprising finding in Korea by Bock et al. (2005) – "a felt need for extrinsic rewards may very well hinder rather than promote the development of favorable attitudes toward knowledge sharing".

Beyond the traditional social identification process where individuals often categorize themselves to a team based on the developed sharedness on work tasks, experience, philosophies, etc., this study views the cognitive sharedness on systems as one aspect of social identification to prescribe team members' sharing behavior. As advanced information technologies are widely used to support team work, the co-developed shared cognition on the way of utilizing those technologies for intended work allows them work more closely, therefore the social identification of the situated people should also attribute to the consensus on systems usage. The technology appropriation of consensus differentiates teams from one another, even teams in the same organization, because the consensus is the result of interaction between the unique social structure of each team and the structure of technologies (DeSanctis & Poole 1994; Salisbury et al. 2002). The present study contributes the social identity theory by addressing this void. Empirically, our results demonstrate the shared cognition on systems is worth to describing and prescribing knowledge sharing behavior within a team.

For team leaders or senior managers, they could get new insights from the collective results in this study. Regardless the various types of teams operating in organizations, such as self-managed work

teams, project teams, multifunction work teams or virtual teams, individual members could be allocated with interrelated tasks to foster interactions. More importantly, managers need to recognize the inadequacy of mere task interdependence, and set team-based goals and regularly provide team-based feedback to members, because goal interdependence is more likely to arouse social identification to the team. Finally, to promote individuals' sharing behavior, management should concern the people's psychological changes. An effective design is able to lead the individual members to depersonalize themselves and internalize the team identity as the self identity. When individuals would exert cognitive and emotional engagement in collective actions, they are intrinsically motivated to share their unique knowledge to other ingroup members rather than keep silent during team working.

Results of this study must be interpreted in light of its limitations. First, the cross-sectional design of this study makes the posited causal relationships can only be inferred, although the research model is firmly drawn upon generally accepted theories. A longitudinal or experimental design in the future may help further prove such causality. Second, this data from China may produce a halo effect, that is, the respondents might be more likely to make sense to social identity because of the highly collectivism national culture in nature (Hofstede 1991). Therefore, the second future direction is to investigate our theoretical model in other distinctly different cultures so as to improve its vulnerability. Thirdly, our analytic unit is still individuals in this study. The results cannot account for the variances between teams. In the next study, we will adopt a multi-level method aggregating the data from an individual level to a team level to advance our knowledge on the overall team mechanism.

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