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Examining the Influence of the Social Cognitive Factors and Relative Autonomous Motivations on Employees' Knowledge Sharing Behaviors

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ABSTRACT

By incorporating the perspectives of social cognitive theory and relative autonomous motivations, this study examines a model that depicts the influence of personal and environmental factors on employees' knowledge sharing behaviors (KSBs). Data that were collected from 294 professionals in the industry were analyzed using component-based structural equation modeling to examine the proposed model. The research results indicate that trust, relationship orientation, knowledge sharing self-efficacy, and relative autonomous motivation regarding KSBs are the key influencing factors of KSBs of professionals. A key implication is that managers must consider the impact of the level of employee-perceived autonomous motivation when they seek to facilitate KSBs. Finally, the theoretical and practical contributions are discussed, followed by the suggestions for future research directions. [Submitted: February 3, 2014. Revised: July 27, 2014. Accepted: December 20, 2014.]

Subject Areas: Knowledge Sharing Behavior, Social Cognitive Theory, Self-Determination Theory, Knowledge Sharing Self-Efficacy, Relationship Orientation, and and Relative Autonomous Motivation.

INTRODUCTION

The possession of knowledge that is valuable, rare, and difficult to imitate has been recognized as the key to providing organizations with a sustainable competitive advantage. Because knowledge tends to be distributed within an organization in a nonsymmetrical fashion, the key to developing competitive advantages is to facilitate effective knowledge sharing practices among employees. This fact implies that the success of organizational knowledge management (KM) is contingent to a significant degree on the intention of individuals to share knowledge. Therefore, researchers have intensively investigated the factors that influence individuals' intention to share knowledge among one another in various social contexts (Bakker, Leenders, Gabbay, Kratzer, & van Engelen, 2006; Brachos, Kostopoulos,

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Soderquist, & Prastacos, 2007; Goh, Chua, Luyt, & Lee, 2008). Despite the efforts of academics and practitioners with regard to promoting individuals' knowledge sharing behaviors (KSBs), managers often find it difficult to motivate their employees to share their ideas, experience, and knowledge due to various personal and social factors (Cabrera & Cabrera, 2002). Therefore, additional research that investigates how organizations may establish an environment that motivates KSBs from a holistic perspective is necessary in order to enhance the organizations' ability to plan for, evaluate, and justify their efforts to encourage employees' KSBs.

Previous studies imply that KSBs are mostly related to two important issues: the contextual factors (i.e., social influences) and personal perceptions (i.e., personal cognition) of such behaviors (Hsu, Ju, Yen, & Chang, 2007; Lin, Hung, & Chen, 2009). Therefore, social cognitive theory (SCT) (Bandura, 1986, 1997) is considered a useful and comprehensive theoretical foundation for investigating KSBs (Lin et al., 2009). Based on SCT, critical environmental/contextual factors and personal factors that are related to the self-perceptions of individuals regarding performing a specific type of behaviors have significant influences on the occurrence of such behaviors (Bandura, 1986; Sherif, Song, & Wilcox, 2009). SCT has been used in a number of studies that investigate KSBs in the context of virtual communities (Chiu, Hsu, & Wang, 2006; Hsu et al., 2007; Lin et al., 2009; Chang & Chuang, 2011). Two notable exceptions that examine knowledge sharing in other contexts focus on the behaviors of software development professionals (Lin & Huang, 2010; Tsai & Cheng, 2010). Consequently, our first objective is to adopt SCT as the basis for identifying the key factors that influence employees' KSBs in the workplace.

However, prior knowledge sharing studies that adopt SCT have common limitations in the misspecification of the personal factors that motivate individuals' KSBs, and thus constantly report inconsistent results regarding the effects of different personal factors on these behaviors (Wasko & Faraj, 2005; Chiu et al., 2006; Hsu et al., 2007; Lin, 2007; Lin & Huang, 2008; Lin et al., 2009). To be specific, the effects of personal factors are likely to be contingent on the research contexts, and thus such studies are inconclusive regarding the way in which individuals are motivated to perform KSBs. Self-determination theory (SDT), which is a well-established theory of motivation, has widely been adopted to investigate how and why a particular human behavior is motivated (Deci & Ryan, 1985; Deci, Koestner, & Ryan, 1999). SDT proposes that human behaviors may be encouraged by the externally induced incentives, which are termed as controlled motivations, and by internally evoked incentives, which are termed as autonomous motivations. SDT also indicates that adopting either controlled or autonomous motivations depends on how well these motivations satisfy individuals' basic psychological needs for autonomy (e.g., whether they are motivated from within), competence (e.g., job performance), and relatedness (e.g., reputation and status) (Gagne, 2009). Above all, SDT emphasizes that the more autonomously motivated that an individual appears to be regarding a particular behavior, the more likely the individual will perform the behavior continuously. Because SDT assumes the psychological need for autonomy (i.e., autonomous motivations) to be innate and universal to all individuals, the effect of individuals' sense of autonomy on a particular behavior tends to be universal across individual differences in demographic and social factors

(Deci & Ryan, 2000). However, previous knowledge sharing studies tend to overlook the important role that the concept of relative autonomous motivation (i.e., sense of autonomy) plays in influencing individuals' KSBs, with a few exceptions (Gagne, 2009; Cockrell & Stone, 2010). Therefore, our second objective is to examine KSBs by incorporating the concept of relative autonomous motivation with SCT to better comprehend the manner to which the personal motivating factors affect individuals' KSBs in the workplace.

THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

SDT

The central premise of the SDT is that individuals may be motivated to perform certain behaviors both externally (i.e., controlled motivation) and internally (i.e., autonomous motivation) (Cockrell & Stone, 2010). Autonomous motivation refers to the incentives based on which individuals perform certain behaviors that do not contribute to their core-self needs and benefits. Individuals feel autonomously motivated when they perceive self-determination in selecting their objectives freely based on self-interest, curiosity, care, or abiding values. In contrast, controlled motivation refers to the incentives based on which individuals perform certain behaviors that explicitly contribute to their core-self needs and benefits. Individuals who feel that they are being controlled with regard to performing a behavior in the sense that they experience pressure or the necessity of performing the behavior to achieve desirable outcomes. SDT asserts the distinction between autonomous and controlled motivations in terms of their underlying regulatory processes and associated experience, and it thus suggests that behaviors may be characterized in terms of the degree to which they are autonomous versus controlled (Gagne & Deci, 2005; Cockrell & Stone, 2010).

Additionally, SDT proposes a controlled-to-autonomous continuum (i.e., a self-determination continuum) to describe the degree to which an externally regulated motivation (i.e., a fully controlled motivation), which is initiated and maintained by entities that are external to an individual (e.g., a supervisor's surveillance on an employee), has been internalized (e.g., the employee works even though the superior is not watching). A greater internalization of externally regulated motivation leads to subsequent behavior that is more autonomously motivated (Gagne & Deci, 2005; Cockrell & Stone, 2010). Therefore, based on this controlled-to-autonomous continuum, motivations are further divided into three essential categories (Ryan & Connell, 1989; Gagne & Deci, 2005; Ryan, Lunch, Vansteenkiste, & Deci, 2011). The first category is termed as amotivation, which means that individuals have little or no perceived values, incentives, and competence for action. The second category is termed as extrinsic motivation, which includes four subcategories: controlled motivation/external regulation (an individual is motivated by external rewards or punishment contingencies); moderately controlled motivation/introjected regulation (an individual is motivated by self or others to avoid guilt, disapproval, or other undesirable implicit consequences); moderately autonomous motivation/identified regulation (an individual is motivated by the

conscious value of the behavior and willingly accept the responsibility for regulating the behavior); and autonomous motivation/integrated regulation (an individual is motivated by recognizing that the value of performing the behavior fits with his or her personal goals and values). Finally, the last category is termed as intrinsic motivation (i.e., inherently autonomous motivation). When individuals are autonomously motivated, they engage in a particular behavior because of its inherent satisfaction (i.e., the behavior is itself interesting and enjoyable).

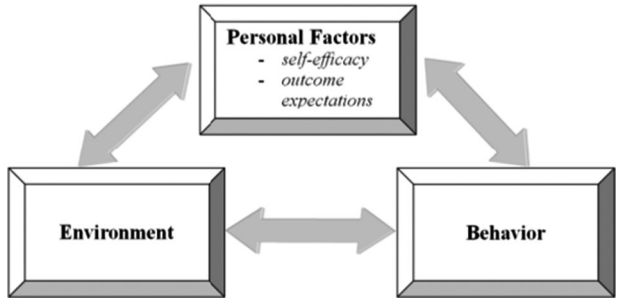
Prior studies that adopt SDT indicate the importance of autonomous motivations for human behavior, and they suggest that researchers should pay attention to the effect of the degree to which individuals internalize externally regulated motivation on a particular human behavior by adopting the controlled-to-autonomous motivation continuum to form a relative autonomy index (RAI) (Ryan & Connell, 1989; Gagne & Deci, 2005). In the area of knowledge sharing, several studies indicate that autonomous motivations play a more important role than controlled motivations in facilitating KSBs (Cruz, Perez, & Cantero, 2009; Foss, Minbaeva, Pedersen, & Reinholt, 2009; Cockrell & Stone, 2010). Autonomous motivations are based on the value that exists within the mind of an individual, and they thus may lead to sustained passions and efforts regarding specific behaviors. These findings indicate that individuals' attitude toward sharing knowledge tend to be positive when they internalize the value of knowledge sharing. Given the contributions of prior knowledge sharing studies, researchers have noted the underemphasis of the effects of autonomous (relative to controlled) motivation (i.e., the RAI) on knowledge sharing in the existing literature (Gagne, 2009; Cockrell & Stone, 2010).

SCT

SCT provides a comprehensive framework for understanding human behaviors by proposing a triadic relationship among individuals' attitude, beliefs, cognition, environment, and behaviors (Ambrose & Chiravuri, 2010). Specifically, SCT explains human behaviors in terms of triadic reciprocal causation, in which behavior, personal/cognitive factors (e.g., attitudes, beliefs, cognition, affect, and conation), and environmental factors operate as interacting determinants that influence one another bidirectionally (Bandura, 1986; Compeau & Higgins, 1995bb), as presented in Figure 1. According to SCT, personal behaviors are shaped and influenced by variations of personal/cognitive factors, as well as the conditions of associated social environments/networks (Bandura, 1986). This theory does not imply that the levels of strength of different sources of influence are equal, or that reciprocal influences occur simultaneously.

Additionally, SCT proposes that the two personal/cognitive constructs of self-efficacy and outcome expectations guide human behaviors (Bandura, 1986; Hsu et al., 2007; Ambrose & Chiravuri, 2010). Self-efficacy refers to an individual's own judgments regarding his or her capabilities of organizing and executing the courses of action that are required to achieve specific types of performance (Bandura, 1986). In addition, outcome expectation is defined as an individual's estimation of the consequences of a given behavior, and may be regarded as incentives/motivations that regulate or affect human behaviors in different ways

Figure 1: The triadic reciprocality of SCT.



(Compeau & Higgins, 1995aa; Bandura, 1997). In the knowledge sharing studies that adopt SCT, outcome expectations are measured by two constructs, namely, personal- and performance-related outcome expectations (Compeau & Higgins, 1995bb; Compeau, Higgins, & Huff, 1999; Hsu et al., 2007; Lin & Huang, 2008). Personal-related outcome expectations are related to the personal benefits that are generated by specific personal behaviors, including personal rewards and promotions. Performance-related outcome expectations are associated with individuals' perceptions of the variations in their job performance. Individuals' outcome expectations that are derived from a specific behavior are largely contingent on their self-efficacy, which represents their self-evaluation concerning how well they are able to perform the behavior (Bandura, 1997). Individuals who consider themselves to be highly efficacious will expect favorable outcomes.

Factors Influencing KSBs

The prior studies that adopt SCT have chosen a number of factors that may shape the environmental conditions for knowledge sharing, including shared value, shared norm, social ties, group identification/shared identity, and trust (Hall, 2001; Hall & Graham, 2004; Chiu et al., 2006; Lin et al., 2009; Lin & Huang, 2010; Chang & Chuang, 2011). However, from the perspective of SDT, the concepts of the majority of these factors are strongly associated with the controlled-to-autonomous continuum that can significantly motivate specific types of personal behaviors (Ryan et al., 2011). For example, SDT argues that people can be motivated from within (i.e., intrinsically motivated or integrated regulated) by factors including abiding value, which is similar to the idea of shared value/norm. Additionally, SDT indicates that people can be somewhat externally motivated by others to receive approval or to avoid disapproval from significant others (i.e., introjected regulation). This external-oriented cognitive process of motivation incorporates the influences of social factors, such as group identification/shared identity and social ties, on human behaviors. Based on this discussion, we consider these factors to be personal-related factors that contribute to the external- or internal-oriented motivations to perform specific behaviors.

In contrast to the factors discussed above, trust can shape the configuration of a particular environment or organization. Specifically, trust serves as an

underlying principle that determines the structure of a specific environment (e.g., the structure and density of relationship networks and the stability of relationships among entities in an organization) and the behaviors that individuals in the environment perform (McEvily, Perrone, & Zaheer, 2003). Thus, these authors emphasize the importance of research efforts in examining how trust defines and alters the configuration of organizations (e.g., operational policies, intra-/interorganizational network structure, and the social motives of individuals' work performance) and the consequences of actions, such as KSBs. Deci, Connell, and Ryan (1989) argue that an individual's trust in significant others (e.g., subordinates, peers, and supervisors) at workplace may promote his or her perception of self-determination regarding a specific behavior, because such trust creates an atmosphere in which the individual would believe that those significant others will be responsive to satisfying his or her psychological needs for autonomy, competence, and relatedness. Furthermore, a number of prior studies indicate that mutual trust among individuals in a particular social environment is the foundation for strong interpersonal ties, which, in turn, represent important environmental conditions for facilitating knowledge sharing (Hall, 2001; Chiu et al., 2006; Hsu et al., 2007; Lin & Huang, 2010). Yang and Wu (2008) also imply that whether an organizational climate involves interpersonal trust is critical to predicting interpersonal knowledge sharing in the organization. Consequently, we adopt trust as an important environmental factor that shapes human behaviors because it represents individuals' assumptions about the intentions of other parties in a specific social context, and it thus provides them with a frame of reference for determining the most viable and beneficial behaviors (McEvily et al., 2003). Nonaka (1994) claims that trust between two individuals may help to create an atmosphere/environment that facilitates knowledge sharing in a particular social context, such as a team/group or an organization. Hsu et al. (2007) also state that trust is one of the key determinants that lead to the formation of organizational characteristics (e.g., predictability, reliability, and fairness), and they propose that the organizational environment that is shaped by trust influences the personal factors and individual behaviors within an organization.

Additionally, a number of studies emphasize the importance of relational-oriented factors in characterizing a social environment, including guanxi (i.e., interpersonal connections/relationships), face-saving, face-gaining, and relationship orientation (Chen, Lee-Chai, & Bargh, 2001; Huang, Davison, & Gu, 2008; Huang et al., 2011; Davison, Ou, & Martinsons, 2013). Individuals' tendency to pursue desired relationships with others is associated with how they perceive and characterize their social environments/contexts and how they behave in those environments (Chen et al., 2001; Bock, Zmud, Kim, and Lee, 2005; Huang et al., 2008). In this study, we adopt the construct of relationship orientation, which is defined as the extent to which people value and proactively pay attention to their interpersonal relationships (Huang et al., 2008), as an important environmental factor that reflects employees' tendency to maintain a strong relationship with their peers. Individuals with a strong relationship orientation generally conceptualize interpersonal relationships in continuous terms and are relatively more empathic when interacting with others with whom they have positive relationships (Greenhalgh & Gilkey, 1993). The orientation of employees toward having healthy, harmonious relationships with their colleagues is likely to make interpersonal knowledge

sharing more worthwhile and more effective through environmental/organizational settings (Mujtaba, 2010).

Previous knowledge sharing studies that adopt SCT have constantly included self-efficacy as one of the key personal factors, and SDT provides further support of this approach. SDT asserts that perceived competence or efficacy is a prerequisite of all behaviors. Low self-efficacy or a lack of thereof reflects a particular type of amotivation, whereas high self-efficacy is a prerequisite of any forms of outcome expectations and can sustain motivations with various degrees of autonomy (Ryan et al., 2011).

Additionally, both SCT and SDT are different from the traditional self-efficacy-based theories because they argue that simply having self-efficacy is insufficient to motivate individuals to engage in a behavior. Motivations that are associated with individuals' expectations of favorable outcomes are required to encourage them to perform a particular behavior (Bandura, 1986, 1997; Compeau & Higgins, 1995aa; Compeau et al., 1999; Gagne & Deci, 2005; Ryan et al., 2011). According to SDT, the outcome-expectations-related constructs that are adopted in prior knowledge sharing studies mostly refer to motivations that are initiated and sustained by forces/entities that are external to individuals' minds, such as external regulations/controlled motivations (e.g., rewards, punishments, and promotion) and introjected regulations/moderately controlled motivations (e.g., personal reputation and self-esteem that are contingent on performance).

However, autonomous motivations, compared to controlled motivations, are more internal (i.e., within the self) and they are thus more likely to lead to desirable individual and organizational outcomes (Gagne & Deci, 2005; Cruz et al., 2009; Cockrell & Stone, 2010). Although some knowledge sharing studies have discussed the effects of motivating factors that are relatively more internal/autonomous, such as integrated regulation/autonomous motivations (e.g., altruism and enjoyment in helping others) and intrinsic/inherently autonomous motivations (e.g., passion for work and self-expression) (Kankanhalli, Tan, & Wei, 2005; Wasko & Faraj, 2005; Lin, 2007; Chang & Chuang, 2011), these studies share a common flow of contrasting the external and internal ends of the controlled-to-autonomous continuum, while they ignore the middle-level motivations in the continuum (Ryan & Connell, 1989). Because there is little that an individual can do to affect other people's enduring individual differences in their orientations toward the initiation and regulation of their behavior, focusing on how to develop an environment that promotes autonomous-oriented motivations may be a more effective approach to promoting a particular behavior (Gagne & Deci, 2005).

Consequently, in conjunction with SCT, we adopt the construct of autonomous (relative to controlled) motivation, which is represented by a composite RAI that encompasses the underlying controlled-to-autonomous continuum of motivations that are proposed by SDT (Grolnick & Ryan, 1987; Ryan & Connell, 1989; Gagne & Deci, 2005; Cockrell & Stone, 2010), to investigate the overall effect of expectation-related motivational factors on individuals' KSBs. The RAI, as a multidimensional measure, is determined by the extent of autonomous minus controlled motivations. The RAI is calculated using the following equation (Grolnick & Ryan, 1987; Cockrell & Stone, 2010):

$$\text{RAI} = \left[(2 * \text{intrinsic motivation}) + \text{identified regulation}\right] - [\text{introjected regulation} + (2 * \text{external motivation})].$$

Thus, the higher the RAI is, the more autonomous the motivations regarding a particular behavior are. To conclude, incorporating the construct of autonomous motivation (i.e., the RAI) in our research framework can enable us to account for the overall quality of motivations in terms of their level of autonomy, which can help to better predict the quantity and the usefulness of knowledge sharing (Gagne, 2009; Cockrell & Stone, 2010).

Trust

Bhattacherjee (2002) summarizes several commonalities that may be observed in prior knowledge sharing studies. First, trust is different at different individual/group levels, and it thus cannot be applied across different individual or group settings and different measurement scales are required to measure it. Second, trust may be viewed as or a domain-specific psychological state that is influenced by exogenous social factors in a given context, and it is relatively stable and insensitive to situational stimuli. Finally, trust, as a psychological state, is clearly different from, but antecedent to, behavior.

We define trust as the degree to which an employee believes that his or her colleagues will act in his or her best interest (Lin & Huang, 2010). Trust represents an individual's confidence that the behavior of other individuals will be benevolent toward others and be consistent with his or her expectations (Hart & Saunders, 1997). As individuals are all independent, not fully predictable and almost uncontrollable by other individuals, interacting with others to make certain decisions tends to be very complex, and this can significantly inhibit an individual's intentions to perform many behaviors (Gefen, 2000). Trust has been considered one of the critical factors that can reduce this type of complexity, and thus facilitate traditional face-to-face and emerging information technology-enabled interpersonal interactions, communications, and knowledge sharing (e.g., Konovsky & Pugh, 1994; Staples & Webster, 2008; Yang & Wu, 2008).

Research indicates that trust may facilitate individuals' KSBs (Bakker et al., 2006; Brachos et al., 2007; Hsu et al., 2007; Lin et al., 2009), because it encourages the disclosure of knowledge to others and reduces the screening of knowledge that is received (McEvily et al., 2003). Additionally, Nonaka (1994) argues that the establishment of interpersonal trust can facilitate collaborative interaction, and thus create an atmosphere that encourages knowledge sharing. Gefen (2000) also argues that trust can reduce the complexity associated with the interactions among individuals, and thus influences their behavioral intentions toward others. Furthermore, an environment with a high level of trust may promote KSBs, as it encourages individuals to freely interact with one another without hesitation for the purposes of sharing ideas (Chiu et al., 2006; Wang & Haggerty, 2009; Chang & Chuang, 2011). Finally, from the perspective of knowledge contributors, trust reduces their concerns regarding knowledge appropriateness and misuse, and thus enables them to be more willing to share sensitive and proprietary knowledge (Argote, McEvily,

& Reagans, 2003). In a similar vein, Tsai and Cheng (2012) indicate that trust is considered a major environmental factor that helps in connecting knowledge contributors and receivers in that it makes individuals become more willing to share their resources with trusted others without worrying that they will be taken advantage of by the other party. The following hypothesis is thus presented:

H1a Trust positively influences individuals' KSBs.

Several studies indicate that trust may positively influence individuals' KSBs through other factors, including self-efficacy and outcome expectations (Hall & Graham, 2004; Hsu et al., 2007; Lin et al., 2009; Tsai & Cheng, 2012). Kim and Lee (2006) argue that trust among employees may enable them to freely share knowledge with one another by eliminating their concerns regarding deception, cheating, and blame, and it thus has a positive influence on employee perceptions of their own capabilities to share knowledge. In a similar vein, Chen and Lin (2013) imply that the ability of individuals on a team to understand, anticipate, and monitor the thoughts of other team members as a result of interpersonal interactions based on interpersonal trust can help individuals build and maintain a sense of perceived efficacy of their own team to address the challenges faced in the operational environment. Additionally, in the context of online virtual communities, Lin et al. (2009) argue that interpersonal trust can be built as the community members engage in more community interaction/communication activities over time. In this process of trust building, the increasing degree of mutual trust will encourage community members to participate in more activities that can help them learn how to be competent community members. This, in turn, enables the members to have more confidence in their own abilities to share knowledge with each other. Wang and Haggerty (2009) also indicate that the development of mutual trust can improve the efficiency of interpersonal communications, and thus lead to an increase in the individuals' confidence in knowledge sharing (i.e., knowledge sharing self-efficacy). Finally, Tseng and Kuo (2010) argue that trust among individuals in a group, as an environmental factor, has a positive influence on individuals' self-efficacy, because it enables them to believe in others' ability and goodwill and therefore have more confidence in their own capabilities to share knowledge with the others without being concerned about possible vulnerability. Based on these earlier works, the following hypothesis is proposed:

H1b Trust positively influences knowledge sharing self-efficacy.

Relationship orientation

To create an environment that promotes knowledge sharing, it is vital to strengthen individuals' perceived obligations to others in the same environment by building and maintaining favorable relationships among these individuals (Hall, 2001). People in a relationship-oriented environment tend to consider collaboration with their fellow members to be the best way to achieve success, and are thus more likely to share knowledge and information with others to develop close interpersonal relationships. Additionally, from the perspectives of social exchange and social capital, prior studies indicate that employees who are relationship-driven and operate based on their desire for fairness and reciprocity are likely to share their knowledge with

others in their organizations to strengthening the bonds of friendship with others (Bock et al., 2005; Lin et al., 2009; Chang & Chuang, 2011). For example, Wasko and Faraj (2005) argue that relationships within a collective (e.g., a community or an organization) represent valuable capital that is developed when members of the collective perceive a strong identification with and an obligation to the collective and can facilitate the members' contributing behaviors, such as knowledge sharing, for the overall good of the collective. Finally, Huang, Davison, & Gu (2011) indicate that individuals with close interpersonal relationships are bound by a mutual obligation, and are thus more likely to exchange various resources, such as knowledge. Based on these earlier works, the following hypothesis is developed:

H2a Relationship orientation positively influences individuals' KSBs.

Prior studies argue that close interpersonal relationships promote positive feedback and recognition among individuals, and thus lead to the increase in the individuals' competence/self-efficacy (Gagne, 2009). For example, Deci et al. (2001) find that favorable peer relationships in an organization, as one of the forms of autonomous support of a social environment, can increase the level of satisfaction regarding employees' psychological needs for competence (i.e., self-efficacy). Gagne and Deci (2005) also imply that motivating through facilitating identification with the organization, such as strengthening relationships with other employees, can link the individuals' personal values with organizational values, and increase the individuals' self-efficacy regarding performing actions that add to these organizational values. Vansteenkiste et al. (2007) argue that employees who are keen to build meaningful and satisfactory relationships with colleagues tend to be intrinsically motivated to learn new skills that can create values for their colleagues, and thus satisfy their needs for competence. Foss et al. (2009) argue that relationship-oriented employees tend to desire positive feedback and recognition from their colleagues, which can enhance their feelings of self-efficacy regarding knowledge sharing. Based on these earlier works, the following hypothesis is developed:

H2b Relationship orientation positively influences knowledge sharing self-efficacy.

Prior research indicates that people who experience more positive and satisfying interpersonal relationships are likely to feel being more autonomous regarding their interactions with others, because positive interpersonal relationships tend to facilitate honest and naturally occurring interpersonal interactions (Deci & Ryan, 2000). Additionally, SDT proposes that if individuals' needs to relate to others in the same group are satisfied, they are more likely to internalize the values that the group promotes, and thus feel more autonomously motivated regarding performing a specific behavior in the group, such as knowledge sharing (Deci et al., 1999; Gagne & Deci, 2005; Gagne, 2009; Foss et al., 2009). Vansteenkiste et al. (2007) indicate that because intrinsically oriented employees are concerned with developing their talents and potential that can help them to build and maintain close relationships with their colleagues, they are more likely to actively participate in job decisions, and thus feel a relatively high level of autonomy regarding carrying out their job-related activities (e.g., knowledge sharing with others). Based on this discussion, the following hypothesis is presented:

H2c Relationship orientation positively influences the autonomous motivation regarding knowledge sharing.

Knowledge sharing self-efficacy, relative autonomous motivation, and KSBs

Self-efficacy is a form of self-evaluation that affects an individual's decisions about behaviors to be performed, the amount of effort and persistence to devote to the tasks at hand when obstacles are encountered, and the mastery of those behaviors (Hsu et al., 2007). In knowledge sharing research, this construct is termed as knowledge sharing self-efficacy, and it is defined as individuals' beliefs in their own abilities to organize and execute the actions that are required for sharing valuable knowledge with others (Hsu et al., 2007; Lin et al., 2009; Tsai & Cheng, 2010).

Based on SCT, individuals who have relatively higher confidence in their own ability to perform a specific behavior tend to be persistent when they are faced with obstacles to the performance of the behavior, and thus they are more likely to perform the behavior than those who lack such confidence (Hsu et al., 2007). This argument indicates the direct influence of knowledge sharing self-efficacy on individuals' KSBs, as examined in several previous studies (Kankanhalli et al., 2005; Lin, 2007; Lin & Huang, 2008; Tsai & Cheng, 2010; Nevo, Benbasat, & Wand, 2012). For example, Bock, Kankanhalli, and Sharma (2006) indicate that self-efficacy may help novice knowledge contributors and receivers overcome their fears in the undertaking of knowledge sharing activities. Therefore, the following hypothesis is developed:

H3a Knowledge sharing self-efficacy positively influences individuals' KSBs.

SCT asserts that outcome expectations are closely related to self-efficacy, as it is found that individuals who have higher self-efficacy are likely to develop more positive outcome expectations than those who do not (Bandura, 1986). SCT also asserts that individuals develop outcome expectations regarding a given behavior with reference to the anticipated consequences or motivations that are associated with the behavior. From a cognitive evaluation perspective, individuals may be motivated from within if their psychological needs for autonomy and competence are satisfied. Therefore, events or forces that satisfy these needs tend to enhance autonomous motivations (Deci, Koestner, & Ryan, 1999; Cruz et al., 2009). For example, Gagne and Deci (2005) argue that managers can support the autonomous motivations of their subordinates by increasing the self-efficacy of the subordinates. These arguments imply that individuals' outcome expectations regarding a particular behavior are dependent on the degree of autonomy of the motivations that are related to the behavior, and that the individuals' self-efficacy is positively related to the outcome expectations that are derived from autonomous motivations.

In the area of knowledge sharing, Lin and Huang (2008, 2010) argue that individuals' expectations of the positive outcomes that are derived from autonomous-oriented motivations, such as personal pleasure and group performance, are meaningless if they feel incapable of performing KSBs successfully. Wasko and Faraj (2005) argue that positive self-evaluation that is based on competence may sustain internal/autonomous motivations. Based on the discussion

above, we conclude that if individuals are confident in their own capability to perform KSBs successfully, they are likely to perceive a high degree of autonomous motivations regarding the behaviors. Therefore, the following hypotheses is developed:

H3b Knowledge sharing self-efficacy positively influences the autonomous motivation regarding knowledge sharing.

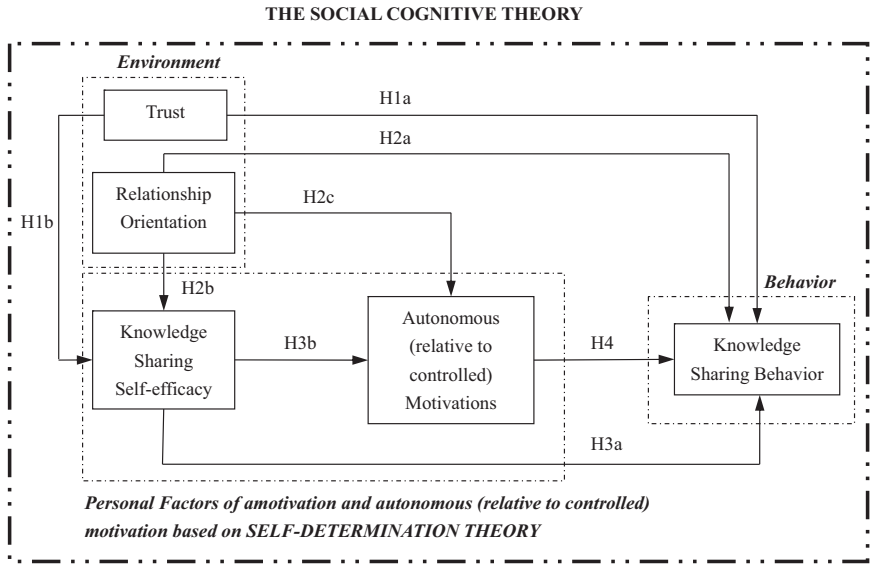
SDT asserts that autonomous motivations involve individuals who engage in a particular behavior with volition, eagerness, or a sense of self-choice, and thus they are likely to encourage the individuals to continue to put efforts into performing the behavior. These arguments indicate the importance of fulfilling individuals' psychological needs of autonomy regarding decisions of taking certain actions (Ryan et al., 2011).

In a similar vein with SDT, academics argue that individuals may be willing to share their knowledge because of the factors that are related to autonomous motivations (Hall, 2001; Hall & Graham, 2004; Lin, 2007; Kankanhalli, Lee, & Lim, 2011; Nevo et al., 2012). For example, Bock et al. (2005) argue that employees who are able to obtain feedback on previous instances of KSBs are more likely to understand how such behaviors may positively influence the works of others or the overall organizational performance, and they tend to develop a sense of self-worth. This understanding may then encourage them to continue to share their knowledge with others in the future. Chang and Chuang (2011) argue that when individuals develop a sense of belonging to a virtual community, they are likely to have shared visions or goals with other community members. Therefore, they tend to increase their altruistic KSBs because they feel pleased simply by helping other members (i.e., autonomous motivation) and/or by seeing the achievement of their shared vision or goals (i.e., moderately autonomous motivation). Cockrell and Stone (2010) argue that the autonomous motivation that arises within the self may induce altruistic KSBs. Lin (2007) finds that employees who are intrinsically motivated will develop a greater willingness to both contribute and receive knowledge. Finally, according to SDT, the level of the internalization of motivations, namely, autonomous (relative to controlled) motivation, regarding a particular behavior will encourage individuals' to develop a positive attitude toward the behavior (Gagne, 2009). Therefore, the following hypotheses are developed:

H4 The autonomous motivation regarding knowledge sharing positively influences individuals' KSBs.

The proposed research model is presented in Figure 2. Additionally, we included our survey respondents' companies as a control variable for the latent constructs of KSBs to capture the potential effects of the differences in the individual companies' culture/policies regarding employees' performance of interpersonal knowledge sharing.

Figure 2: The research model.



RESEARCH METHOD

Development of Instruments

A survey of professionals in various organizations was conducted to test the proposed model. To develop an effective survey, measurement items that were found in the related studies were refined and then used. All of the items were measured using a seven-point Likert scale ranging from (1) strongly disagree to (7) strongly agree.

The preliminary questionnaire had 44 items and was pilot-tested with 36 full-time employees of a financial services company. The questionnaire was further refined based on the results and feedback from the pilot test. A total of seven items were discarded (see Table A1), because they significantly contributed to the low Cronbach's alpha coefficients (i.e., lower than 0.7) of their individual constructs, which indicate the unsatisfactory reliability of the constructs (Hair, Black, Babin, & Anderson, 2010). The final questionnaire consisted of 37 items. All of the constructs of interest were modeled as first-order reflective constructs, except for trust. Trust is widely considered to be a multidimensional social factor that is developed within a specific social context/environment and is associated with the environmental uncertainty regarding a specific type of social behavior (e.g., Butler, 1991; Hosmer, 1995; Hart & Saunders, 1997; Dirks & Ferrin, 2001). Additionally, trust is frequently discussed and measured based on its characteristics (Gefen & Straub, 2004). For example, Doney and Cannon (1997) argue that trust is composed of two dimensions: credibility and benevolence. Additionally, a number of academics argue that the trustor's beliefs about competence/ability (the trustee has the ability to do what the trustor needs done), integrity (the trustee is honest

and faithful, acts ethically, and fulfills promises), and benevolence (the trustee acts by considering the trustor's best interests apart from any egocentric stimuli) are the most important characteristics that can explain a trustee's trustworthiness (e.g., Mayer, Davis, & Schoorman, 1995; Gefen, 2002; McKnight & Chervany, 2002). In addition to these three characteristics, McKnight and Chervany (2002) propose an additional characteristic of predictability (the trustor can faithfully expect the trustee to behave reliably in a consistent manner). With reference to these previous works, trust was modeled as a second-order formative construct, and it was measured by four first-order reflective constructs: integrity; benevolence; ability; and predictability (Bhattacherjee, 2002; Gefen & Straub, 2004). The survey items were considered to be highly reliable because the Cronbach's alpha coefficients of all of the first-order constructs (ranging from 0.73 to 0.88) reached the recommended level of 0.7. Refer to Table A2 for the final questionnaire and references.

Data Collection

The data for this study were collected using a survey that was administered in Taiwan in 2013. The representatives of two nonprofit professional organizations in Taiwan, the National Association of Small and Medium Enterprises (NASME) and the Institute of Internal Auditors (IIA), were contacted to explain the purpose of the research and to ask them to distribute the information of the survey to their members by sending them both the electronic version and the link of the online version of the survey by e-mail. The IIA had approximately 3,600 members, while the NASME had approximately 100,000 members. A total of 336 responses were received. Among the responses that were received, 42 were later removed due to the respondents' failure to complete all of the survey questions or to pass the examination of the reverse questions that were included in the survey. Ultimately, we had 294 valid responses for further analysis (136 responses from NASME and 158 responses from IIA), yielding a valid return rate of 87.5%. These 294 respondents were working for 81 different companies in nine industrial categories in Taiwan.

The potential nonresponse bias was assessed by comparing the early respondents with the later ones based on demographic variables, including gender, age, level of education, and monthly income using independent sample t tests. The results indicated no statistically significant differences between these two data sets in terms of gender ($p = .12$), age ($p = .89$), or level of education ($p = .11$); and therefore, nonresponse bias was not determined to be a serious concern. In addition, because a nonrandom sampling method was used, tests of homogeneity were performed. Because the respondents were recruited from the two nonprofit associations, the overall homogeneity of the sample was assessed by comparing the respondents from the two different associations using independent sample t tests. The results indicated that the mean score of all of the survey items were indifferent ($p > .05$) among the respondents across different data sources (p values ranged from .09 to .94). Consequently, the 294 valid survey responses were used as a single data set in the subsequent analysis.

To eliminate the concern of common method bias in the survey design, questionnaire items were arranged to counterbalance the order of the measurement of the dependent and independent variables (Lin & Huang, 2010). Specifically, the items for the dependent variables were arranged following rather than preceding the items for the independent ones, and the order of the items was arranged randomly in the questionnaire. Additionally, we assessed the presence of common method variance (CMV) using statistical measures. The methods that are depicted in the works of Podsakoff, MacKenzie, Lee, and Podsakoff (2003) and Williams, Edwards, and Vandenberg (2003) have been found to be the most widely used ones among information management researchers. Therefore, one of the approaches that was suggested by Podsakoff et al. (2003), which tests for CMV using a single unmeasured latent method factor (LMF), is adopted in this study. This method suggests adding a first-order factor to the theoretical model with all of the measures as indicators, which may be referred to as a LMF. By following the procedures of Liang, Saraf, Hu, and Xue (2007), the modeling of the LMF was conducted using the component-based structured equation modeling technique, namely, the partial least squares (PLSs) approach. In this approach, each indicator is converted into a single-indicator construct, which makes all of the major constructs of interest second-order constructs. An LMF is added to the theoretical model as a second-order construct by linking it to all of the first-order single-indicator constructs. Although we treated the construct of trust as a formative construct when we examined the research hypotheses of this study, we modeled it as a reflective construct when we assessed the CMV to ensure the interpretability of the results, as have been done in previous studies (Herath & Rao, 2009). Next, each indicator's variance substantively explained by the constructs of interest and by the method was calculated. The results presented in Table A3 show that the average substantively explained variance of all of the indicators is 0.593, whereas the average method-based variance is 0.017. The ratio of substantive variance to method variance was approximately 35:1. Additionally, most of the method factor loadings were not significant. Because the method variance that was identified was found to be insignificant and small in magnitude, we concluded that the common method bias was unlikely to be a serious concern for this study.

Data Analysis Method

The technique of PLS was used for the data analysis due to its disregard for the constraint of the multivariate normality of data distribution and its ability to appropriately estimate the error variances of higher order formative constructs (Petter, Straub, & Rai, 2007; Wetzels, Odekerken-Schroder, & van Oppen, 2009; Hair et al., 2010), namely, trust in this study. SmartPLS 2.0 was used for measurement validation and testing the structural model based on the data that were collected from the 294 valid survey respondents. A confirmatory factor analysis was performed to examine the validity and reliability of the first-order reflective constructs, whereas those of the second-order formative construct (i.e., trust) was examined through a principle component analysis (Herath & Rao, 2009). Additionally, a bootstrapping procedure was conducted for the significant tests of the research hypotheses.

DATA ANALYSIS AND RESULTS

Measurement Validation

The reliability of the measures for the first-order reflective constructs was tested first. After deleting items EXM3, EXM4, IDR1, and KSB2, all of the Cronbach's alpha coefficients for the first-order reflective constructs were greater than the recommended level of 0.7 or higher (ranging from 0.71 to 0.89). The psychometric properties of the measures for the first-order reflective constructs were then further assessed in terms of convergent and discriminant validity. Three primary measures were used to evaluate the convergent validity (Hair et al., 2010): (i) the factor loadings of the indicators, which must be statistically significant with values that are greater than 0.6; (ii) composite reliability (CR), with values that are greater than 0.7; and (iii) average variance extracted (AVE) estimates, with values that are greater than 0.5. As shown in Table 1, all of the factor loadings were statistically significant, and all were larger than 0.6. In addition, all CR values were higher than 0.7, and all of the AVE values were higher than 0.5. Overall, all of the measures exhibited an adequate convergent validity.

Finally, the discriminant validity of the measures was determined. As shown in Table 2, the squared correlations between the factors were smaller than the corresponding AVE estimates. This finding indicates that the constructs were more strongly related to their respective indicators than to the other constructs in the model.

The construct of trust was modeled as a second-order formative construct that was formed as the weighted sum of its four first-order reflective constructs. Therefore, the examination of weights in the principal component analysis is suggested rather than the evaluation of factor loadings in common factor analysis (Petter et al., 2007). The results of the analysis show that the weights were all significant (see Table 3). Additionally, the correlations among all of the first-order reflective constructs of trust (ranging from 0.39 to 0.62) were smaller than the cutoff value of 0.9, which indicated that substantial collinearity was not present (Hair et al., 2010). Furthermore, because the excessive multicollinearity in the formative constructs may destabilize the model, we performed the variance inflation factor (VIF) tests to examine whether the indicators for the construct of trust exhibit significant multicollinearity (Petter et al., 2007; Hair et al., 2010). The results that are presented in Table 3 indicate that the VIFs for the first-order indicators of trust were all smaller than the cutoff value of 3.3 (Diamantopoulos & Siguaw, 2006; Petter et al., 2007). It is thus determined that a high multicollinearity was not present. Furthermore, we assessed the content validity of the construct of trust. As shown in Table 3, the magnitude of the error terms of the first-order indicators of the formative construct of trust were small, and all of the indicator coefficients were significant. These results indicated that the construct of trust was well described by its first-order indicators and no further actions would be required (Petter et al., 2007). Table 4 presents the descriptive statistics of the constructs that were examined.

Table 1: Convergent validity for the measurement model.

First-Order Construct	Indicator	Factor Loading[a]	Composite Reliability (CR)	Average Variance Extracted (AVE)
Integrity (INTE)	INTE1	0.86	0.89	0.80
	INTE2	0.92		
Benevolence (BENE)	BENE1	0.84	0.88	0.79
	BENE2	0.93		
Ability (ABI)	ABI1	0.86	0.87	0.78
	ABI2	0.90		
Predictability (PRED)	PRED1	0.92	0.87	0.77
	PRED2	0.83		
Relationship Orientation (RO)	RO1	0.86	0.88	0.72
	RO2	0.87		
	RO3	0.81		
Knowledge sharing self-efficacy (KSSE)	KSSE1	0.79	0.91	0.64
	KSSE2	0.76		
	KSSE3	0.76		
	KSSE4	0.82		
	KSSE5	0.88		
	KSSE6	0.79		
External motivation (EXM)	EXM1	0.70	0.84	0.72
	EXM2	0.98		
Introjected regulation (INR)	INR1	0.72	0.82	0.54
	INR2	0.77		
	INR3	0.77		
	INR4	0.67		
Identified regulation (IDR)	IDR2	0.77	0.85	0.66
	IDR3	0.88		
	IDR4	0.77		
Intrinsic motivation (INM)	INM1	0.84	0.88	0.65
	INM2	0.82		
	INM3	0.89		
	INM4	0.65		
Knowledge sharing behavior (KSB)	KSB1	0.88	0.90	0.76
	KSB3	0.85		
	KSB4	0.88		

[a]All factor loadings of the individual items are statistically significant ($p < .01$).

Structural Model and Hypotheses Testing

By adopting the PLS technique using a bootstrapping procedure, the structural model was evaluated for hypotheses testing. The fit of the structural model was assessed by the explained variances (R^2) for the endogenous constructs and a global fit measures, namely, the goodness-of-fit index (GoF), specifically for PLS path modeling (Tenenhaus, Vinzi, Chatelin, & Lauro, 2005; Wetzels et al., 2009). The proposed model explained a considerable proportion of the variance of the endogenous latent constructs, as depicted in Figure 3. In addition, the geometric

Table 2: Discriminant validity of the first-order reflective constructs.

Construct	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. INTE	**0.80**										
2. BENE	0.15	**0.79**									
3. ABI	0.38	0.15	**0.78**								
4. PRED	0.17	0.27	0.15	**0.77**							
5. RO	0.13	0.05	0.16	0.30	**0.72**						
6. KSSE	0.10	0.20	0.15	0.27	0.25	**0.64**					
7. EXM	0.04	0.04	0.15	0.13	0.17	0.14	**0.72**				
8. INR	0.07	0.01	0.12	0.17	0.49	0.03	0.26	**0.54**			
9. IDR	0.10	0.07	0.18	0.16	0.26	0.34	0.45	0.21	**0.66**		
10. INM	0.09	0.15	0.25	0.16	0.28	0.48	0.36	0.15	0.54	**0.65**	
11. KSB	0.07	0.11	0.19	0.18	0.30	0.60	0.13	0.08	0.27	0.51	**0.76**

Note: Diagonals represent the AVE estimates, and the other matrix entries represent the squared correlations of first-order latent constructs.

Table 3: Weight and VIF of the formative indicators.

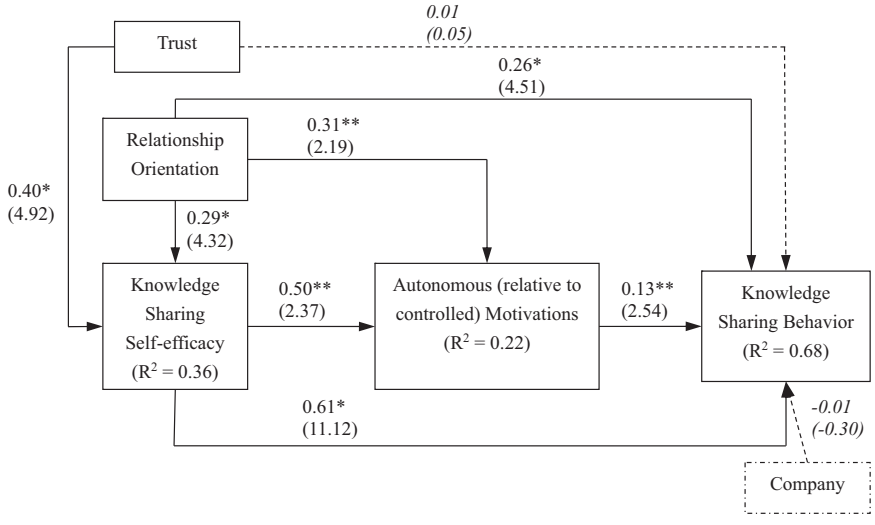
Second-Order Construct	First-Order First-Construct	VIF	Standard Error	Weight (t-value)
Trust	Integrity	1.67	<0.01	0.34 (38.70)
	Benevolence	1.37	<0.01	0.32 (39.75)
	Ability	1.65	<0.01	0.39 (44.86)
	Predictability	1.46	<0.01	0.26 (31.67)

Table 4: Descriptive statistics of the investigated constructs.

Construct	Mean	Standard Deviation
Trust	5.28	0.72
Relationship orientation	5.16	0.96
Knowledge sharing self-efficacy	5.49	0.78
External motivation	4.53	1.30
Introjected regulation	4.45	1.08
Identified regulation	5.34	0.98
Intrinsic motivation	5.40	0.93
Knowledge sharing behavior	5.35	0.98
∗**Totally 33 remaining items**		

mean of the average communality (for exogenous constructs) and average R^2 (for endogenous constructs) were calculated, which were 0.59 and 0.42, respectively. A GoF value (as the square root of the product of the average communality and average R^2) of 0.50 was then obtained, which is larger than the cutoff value of 0.36 for the large effect sizes of R^2 (Wetzels et al., 2009). These results indicate support for the fit of the structural model.

Figure 3: Hypotheses testing results.



Given an adequate structural model, bootstrapping of the 294 cases (the same as the original sample size) was conducted with 5,000 samples to evaluate the significance of the proposed research hypotheses. Figure 3 presents the standardized path coefficients (β) and t values, the significance of the paths, and the R^2 for each endogenous construct that was included in the proposed research model. The companies of our respondents (i.e., the control variable) do not have a significant influence on the construct of KSBs ($\beta = -.01$; $t = -.30$). This finding indicates that there do not exist significant differences in the influence of individual companies' characteristics on employees' KSBs. Hypothesis H1a is rejected, while hypothesis H1b is supported. These results indicate that trust has a direct positive effect on employees' perceived knowledge sharing self-efficacy, but does not have a direct effect on individuals' KSBs. Hypotheses H2a, H2b, and H2c are all supported, indicating that relationship orientation is positively associated with knowledge sharing self-efficacy, the RAI, and KSB, as we expected. Overall, these results indicate that trust and relationship orientation account for 36% of the variance in knowledge sharing self-efficacy.

Hypotheses H3a and H3b are both supported. These findings indicate that an increased level of employee knowledge sharing self-efficacy resulted in increases in the perceived level of autonomous motivation with regard to their KSBs. Additionally, these results confirm the positive influence of knowledge sharing self-efficacy on actual KSBs. Overall, trust, relationship orientation, and knowledge sharing self-efficacy account for 22% of the variance of the construct of the RAI. Hypothesis H4 is also supported, which indicates that increased levels of employee-perceived autonomy of motivation regarding their KSBs have significant positive effects on employees' actual KSBs. All of the constructs that directly or indirectly influence KSBs account for 68% of its variance.

IMPLICATIONS AND CONCLUSION

Implications for Research

One primary theoretical implication is that this study integrates the concept of the relative autonomous motivations into the personal dimension of SCT. Although prior studies find that knowledge sharing self-efficacy is a key antecedent of individuals' KSBs, it covers only the concept of amotivation of the controlled-to-autonomous motivational continuum that the SDT proposes. We find a lack of systematic approach for comprehending outcome-expectation-related personal factors in the existing knowledge sharing studies. Consequently, the effects of the personal factors on individuals' KSBs are likely to be contingent on the research contexts, and they are thus inconclusive. Additionally, although prior SDT studies indicate that relative autonomous motivations are more likely to result in positive behavioral outcomes than controlled motivations (Gagne & Deci, 2005; Gagne, 2009; Cockrell & Stone, 2010), knowledge sharing studies have mostly concentrated on extrinsic, controlled motivations, such as tangible rewards, reciprocity, reputation, and relationships with the others. Adding the construct of autonomous (relative to controlled) motivation to our research model enables us to encompass the controlled-to-autonomous continuum of individuals' motivations, and thus allows us to account for overall motivation quality that tends to enhance the prediction of KSBs (Gagne, 2009). Our integrated model explains 68% of the variance of employees' KSBs, showing support for the significance of integrating SCT and SDT to investigate the key determinants of individuals' KSBs.

The second theoretical implication is that we confirm the importance of trust and relationship orientation in terms of promoting a high degree of the relative autonomous motivation of employees regarding KSBs. The confirmation of the causal paths among trust, knowledge sharing self-efficacy, and relative autonomous motivation implies that trust is an essential ingredient for knowledge sharing because it satisfies an individual's need for security, cohesion, and feeling related to others. Such trust will lead the individual to commit to the common causes and raise the individual's degree of autonomous motivation (i.e., the RAI) to share knowledge with others to achieve those common causes/goals (Gagne, 2009; Linderman, Schroeder, & Sanders, 2010). Additionally, the confirmation of the causal paths among relationship orientation, knowledge sharing self-efficacy, and relative autonomous motivation indicates that a high degree of relationship orientation among employees encourages them to actively interact with their colleagues to share knowledge for the purpose of relationship building and maintenance, which may help satisfy the employees' basic psychological needs for autonomy (i.e., being motivated from within), competence (e.g., self-efficacy), and relatedness (e.g., socially connected) specified by SDT (Gagne, 2009). The satisfaction of these psychological needs will lead to highly intrinsically motivated employees who are more likely to perform KSBs, regardless of the concerns of possible negative consequences, such as a loss of power and selfish behaviors or the blame of significant others (Foss et al., 2009; Huang et al., 2011; Davison et al., 2013). Overall, these research findings may enable future researchers to develop a programmed body of research for the further investigation of the relationships between trust

and relationship orientation and various levels of autonomous motivations in the controlled-to-autonomous continuum proposed by SDT in various social contexts.

Finally, although there have been studies that adopt SCT to investigate individuals' KSBs, they mostly focus on virtual community participants rather than professional workers, with a few notable exceptions (Lin & Huang, 2010; Tsai & Cheng, 2010). In this study, the confirmation of the significant impacts of trust, relationship orientation, knowledge sharing self-efficacy, and relative autonomous motivation (as a proxy of outcome expectations) on individuals' KSBs is consistent with the fundamental proposition of SCT and the results of existing studies (Chiu et al., 2006; Hsu et al., 2007; Lin & Huang, 2008; Lin & Huang, 2010; Tsai & Cheng, 2010; Chang & Chuang, 2011). Overall, the results of our hypotheses testing have extended the application of SCT to studies that are related to KSBs in the workplace.

Implications for Practice

The research findings indicate that trust and knowledge sharing self-efficacy have significant effects on KSBs. Given the fact that employees in the same organization more or less compete with one another professionally in their own careers, a sense of security and comfort is necessary when the employees determine to take any actions in the organization. Therefore, the establishment of the belief of an employee that others would not do any harm to him or her, either deliberately or inadvertently, by taking advantage of his or her KSBs is crucial in terms of facilitating interpersonal KSBs in the workplace. Interpersonal trust may increase employees' faith in their own capabilities and judgment with regard to performing both knowledge contributing and receiving behaviors without having negative impacts on either themselves or others. This self-confidence may also facilitate the development of high autonomous motivations, and thus further increase employees' willingness to perform KSBs. Consequently, managers should build a work environment that promotes greater and more trusting ties among employees by offering support and encouragement for collaborative learning via both formal and informal interactions (Brockman & Morgan, 2003; Hsu & Sabherwal, 2012).

Additionally, we found that the relationship orientation of employees has a significant effect on KSBs. Highly relationship-orientated employees tend to reconcile their values with those of the others with whom they want to establish or maintain good relationships, and thus tend to perform behaviors (e.g., KSBs) that can contribute to the achievement of collective goals (Chen et al., 2001). Managers of organizations should thus endeavor to promote the traits of organizational culture that favor and recognize employees' tendency and efforts to build and maintain harmonious relations with others by creating relevant policies and/or reward mechanisms. Furthermore, it is important that managers increase employees' confidence in their own abilities to appropriately share knowledge with one another using various mechanisms, such as intraorganizational virtual communities, mentoring systems, and cross-functional teams for problem solving, which may promote altruistic and autonomous KSBs (Hoegl, Parboteeah, & Munson, 2003; Linderman et al., 2010).

Finally, we found that the performance of employees' KSBs is associated with the level of the employees' perceived autonomous motivation regarding these behaviors. This finding implies the importance of creating an autonomy-supportive work environment. Organizations' support of autonomy in the workplace can help fulfill the psychological needs of employees for having choices, rationale for corporate-valued norms or actions, and the organizations' acknowledgement of personal feelings regarding sharing knowledge to others (Deci, Eghrarl, Patrick, & Leone, 1994). These workplace-related characteristics may help encourage the employees to internalize the motivations (i.e., autonomous motivations) for carrying out KSBs, and thus lead to an increase in these behaviors. One way to create an autonomy-supportive work environment is that organizations explicitly promote a corporate culture that is based on managers taking employees' perspectives when they make decisions, to provide greater choices for employees at work, and to more actively appreciate the achievements of the employees that are derived from their self-initiated actions (Gagne & Deci, 2005), such as autonomous KSBs.

Conclusion

By adopting the triadic reciprocal causal relationships among behavior, personal/cognitive factors, and environmental factors that SCT proposes and the concept of relative autonomous motivation depicted in SDT, we develop and empirically examine a theoretical model that explains employees' KSBs. The research results provide managers with significant insights into encouraging voluntary KSBs among employees by building an organizational environment that promotes interpersonal trust among the employees and enhances the relationship orientation of them, and by developing mechanisms that facilitates the employees' autonomous motivations regarding sharing knowledge with one another.

This work has several limitations. One such limitation is the generalizability of the research findings. Because a nonrandom sampling procedure was used to recruit our respondents, who worked for 81 different companies, there is still room for improvement regarding the generalizability of the research findings. Nevertheless, this study is believed to have contributed to the understanding of the influence of critical environmental and personal motivational factors on employees' KSBs using research results that are generated using rigorous statistical procedures. However, to further strengthen the reliability of the research findings and to eventually achieve better statistical generalization, further research should be conducted to address related issues and to validate the proposed theoretical model outlined above using more random sampling procedures for data collection. Additionally, we adopt trust and relationship orientation as the key environmental factors that affect KSBs, other environmental variables can play an important role in influencing such behaviors, including organizational culture, guanxi, face-gaining/face-saving, and leadership style (Brockman & Morgan, 2003; Huang et al., 2008; Gagne, 2009; Linderman et al., 2010; Huang et al., 2011; Hsu & Sabherwal, 2012; Davison et al., 2013). For example, research indicates that the way managers communicate the compensation systems for KSBs may influence the impact of such systems

on employee motivation (Gagne & Forest, 2008). Future research can thus take into considerations the influence of other environmental factors on employees' KSBs. Furthermore, to examine the overall influence of the degree of autonomy of employees' motivations on their KSBs, we weight and aggregate the scores of the four primary levels of the controlled-to-autonomous continuum of motivation proposed by SDT to form a solitary numerical index (i.e., the RAI) representing the extent to which an employee's KSB is more or less self-determined in order to examine the overall influence of the relative autonomous motivations on such behaviors, have been done in previous studies (Gagne, 2009; Cockrell & Stone, 2010). Consequently, the consideration of the individual effects of different levels of employees' motivations on their KSBs is encouraged to be addressed more intensively in subsequent research that adopts the approaches including in-depth case study and actions research. Finally, many knowledge-sharing studies have demonstrated the merits of considering the distinction between knowledge contribution/donating behaviors and knowledge seeking/collecting behaviors (Lin, 2007; He & Wei, 2009). Therefore, further studies may be conducted by considering this distinction.

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APPENDIX

Table A.1: List of survey items discarded in the pilot test by construct.

Construct (and Item)	Discarded Item	Cronbach's α Coefficient before Item Deletion	Cronbach's α Coefficient after Item Deletion
Knowledge sharing self-efficacy		*0.65*	0.82
Discarded KSSE1	I am confident in authoring an article or posting a message to the company's discussion forum. (Combination)		
External motivation		*0.69*	0.75
Discarded EXM1	I share my professional knowledge with others because I could lose my job if I did not.		
Discarded EXM2	I share my professional knowledge with others because I feel that I must or I will be punished.		
Introjected regulation		*0.66*	0.77
Discarded INR1	I share my professional knowledge with others because it makes me feel more intelligent.		
Identified regulation		*0.67*	0.81
Discarded IDR1	I share my professional knowledge with others because it is satisfying to help others.		
Intrinsic motivation			
Discarded INM1	I share my professional knowledge with others because it is interesting to see how my ideas affect the people I share them with.		
Knowledge sharing behavior		*0.65*	0.83
Discarded KSB1	I usually spend a lot of time conducting knowledge sharing activities in my company.		

Table A.2: List of final survey items by construct.

Item	Question
Trust **(Bhattacherjee,** 2002**; Gefen & Straub,** 2004**)**	
Integrity	
INTE1	I think my colleagues are honest people.
INTE2	I think my colleagues have high integrity.
Benevolence	
BENE1	I think my colleagues are open and receptive to my questions and needs.
BENE2	I think my colleagues will make good-faith efforts to address my questions and concerns.
Ability	
ABI1	I think my colleagues are competent in their professional areas.
ABI2	I think my colleagues have the ability to meet the needs of the other colleagues.
Predictability	
PRED1	I am quite certain that my colleagues will treat me in a consistent and predictable fashion.
PRED2	I am quite certain what my colleagues will do at work.
Relationship orientation (Hall, 2001; Bock et al., 2005)	
RO1	My knowledge sharing would strengthen the tie between the existing members in my company and myself.
RO2	My knowledge sharing would draw smooth cooperation from my colleagues in the future.
RO3	My knowledge sharing would enable me to make more friends in my company.
Knowledge sharing self-efficacy **(Compeau & Higgins, 1995b; Nonaka, Toyama, & Konno,** 2000**)**	
KSSE1	I am confident in providing my experience, insights, or expertise as an example with my colleagues. (Socialization)
KSSE2	I am confident in providing my experience, insights, or expertise by engaging in dialog with my colleagues. (Socialization)
KSSE3	I am confident in providing my ideas and perspectives to my colleagues through participating in discussions. (Externalization)
KSSE4	I am confident in articulating myself in written, verbal, or symbolic forms. (Externalization)
KSSE5	I am confident in responding to messages or articles posted by my colleagues. (Combination)
KSSE6	I am confident in answering questions, giving advice or providing examples to questions or inquiries from my colleagues. (Internalization)

Table A.2: continued

Item	Question
Autonomous motivation (RAI) **(Ryan & Connell,** 1989**; Cockrell & Stone,** 2010**)**	
	I share my professional knowledge with others
External motivation	
EXM1	because I will get in trouble if I do not.
EXM2	because it is what I am supposed to do.
EXM3	*because I know that I will get a reward for doing so. (discarded)*
EXM4	*because it would harm my relationships with others if I did not share my professional knowledge with others. (discarded)*
Introjected regulation	
INR1	because I want my supervisor to think I am a good employee.
INR2	because I feel bad about myself if I do not.
INR3	because I want people to like me.
INR4	because it bothers me when I do not.
Identified regulation	
IDR1	*because I want them to understand what I know. (discarded)*
IDR2	because it is important to me to share knowledge.
IDR3	because I think it is important to help others at work.
IDR4	because I believe it is an important personal attribute to share what I know with others.
Intrinsic motivation	
INM1	because it is fun.
INM2	because I enjoy doing it.
INM3	because of the happiness I feel when I do it.
INM4	because it is satisfying to share my professional knowledge.
Knowledge sharing behavior **(Hsu et al.,** 2007**)**	
KSB1	I frequently participate in the knowledge sharing activities in my company.
KSB2	*I usually actively share my knowledge with my colleagues. (discarded)*
KSB3	When discussing a complicated issue with my colleagues, I am usually involved in the subsequent interactions.
KSB4	I usually involve myself in discussion of various topics rather than specific ones in my company.

Table A.3: Assessment of common method bias.

Construct	Indicator	Substantive Factor Loading (R1)	$R1^2$	Method Factor Loading (R2)	$R2^2$
Trust	INTE1	0.750*	0.563	−.183	0.033
	INTE2	0.953*	0.908	−.214*	0.046
	BENE1	0.508*	0.258	−.022	0.000
	BENE2	0.776*	0.602	−.021	0.000
	ABI1	0.658*	0.433	−.001	0.000
	ABI2	0.568*	0.322	0.233*	0.054
	PRED1	0.672*	0.451	0.106	0.011
	PRED2	0.405*	0.164	0.142	0.020
Relationship orientation	RO1	0.933*	0.870	−.052	0.003
	RO2	0.683*	0.466	0.200*	0.040
	RO3	0.940*	0.884	−.135*	0.018
Knowledge sharing self-efficacy	KSSE1	0.905*	0.818	−.126**	0.016
	KSSE2	0.674*	0.454	0.103	0.001
	KSSE3	0.739*	0.546	0.034	0.001
	KSSE4	0.959*	0.920	−.174*	0.030
	KSSE5	0.799*	0.639	0.093	0.009
	KSSE6	0.726*	0.527	0.074	0.005
Autonomous motivation (RAI)	EXM1	0.779*	0.606	−.085	0.007
	EXM2	0.594*	0.352	0.318*	0.101
	EXM3	0.715*	0.511	−.087	0.007
	EXM4	0.745*	0.555	−.179*	0.032
	INR1	0.909*	0.826	−.084	0.007
	INR2	0.788*	0.621	0.037	0.001
	INR3	0.939*	0.881	−.061	0.004
	INR4	0.541*	0.293	0.144	0.021
	IDR1	0.655*	0.429	0.053	0.003
	IDR2	0.870*	0.757	−.068	0.005
	IDR3	0.527*	0.277	0.247	0.061
	IDR4	0.976*	0.953	−.175*	0.031
	INM 1	0.675*	0.456	−.037	0.001
	INM2	0.757*	0.573	0.068	0.005
	INM3	0.729*	0.531	0.015	0.000
	INM4	0.794*	0.631	−.052	0.003
Knowledge sharing behavior	KSB1	0.875*	0.765	−.003	0.000
	KSB2	0.760*	0.578	0.077	0.006
	KSB3	0.992*	0.985	−.177*	0.031
	KSB4	0.742*	0.551	0.107	0.011
Average (by absolute value)	0.757	0.593	0.108	0.017	

* $p < .01$;
** $p < .05$.

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