

BEHAVIORAL INTENTION FORMATION IN KNOWLEDGE SHARING: EXAMINING THE ROLES OF EXTRINSIC MOTIVATORS, SOCIAL-PSYCHOLOGICAL FORCES, AND ORGANIZATIONAL CLIMATE¹

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Abstract

Individuals' knowledge does not transform easily into organizational knowledge even with the implementation of knowledge repositories. Rather, individuals tend to hoard knowledge for various reasons. The aim of this study is to develop an integrative understanding of the factors supporting or inhibiting individuals' knowledge-sharing intentions. We employ as our theoretical framework the theory of reasoned action (TRA), and augment it with extrinsic motivators, social-psychological forces and organizational climate factors that are believed to influence individuals' knowledge-sharing intentions.

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Through a field survey of 154 managers from 27 Korean organizations, we confirm our hypothesis that attitudes toward and subjective norms with regard to knowledge sharing as well as organizational climate affect individuals' intentions to share knowledge. Additionally, we find that anticipated reciprocal relationships affect individuals' attitudes toward knowledge sharing while both sense of self-worth and organizational climate affect subjective norms. Contrary to common belief, we find anticipated extrinsic rewards exert a negative effect on individuals' knowledge-sharing attitudes.

Keywords: Knowledge sharing, theory of reasoned action, extrinsic motivators, social-psychological forces, organizational climate

Introduction

In the knowledge-based view of the firm (Grant 1991, 1996; Spender 1996; Teece 2000), knowledge is the foundation of a firm's competitive advantage and, ultimately, the primary driver of a firm's value. Inherently, however, knowledge resides within individuals (Nonaka and Konno 1998) and, more specifically, in the employees who create, recognize, archive, access, and apply knowledge in carrying out their tasks. Consequently, the movement of knowledge across individual and organizational boundaries, into and from repositories, and into organizational routines and practices is ultimately dependent on employees' knowledge-sharing behaviors. When knowledge sharing is limited across an organization, the likelihood increases that knowledge gaps will arise, and these gaps are likely to produce less-than-desirable work outcomes (Baird and Henderson 2001).

Extensive knowledge sharing within organizations still appears to be the exception rather than the rule. Hoarding knowledge and looking guardedly at the knowledge offered by others are natural human tendencies (Davenport and Prusak 1998). Moreover, many, if not most, firms actively limit knowledge sharing because of the threats associated with industrial espionage as well as concerns about diverting or overloading em-

ployees' work-related attention (Constant et al. 1994). Also, organizational incentive structures, such as pay-for-performance compensation schemes, can serve to discourage knowledge sharing if employees believe that knowledge sharing will hinder their personal efforts to distinguish themselves relative to their coworkers (Huber 2001). Once established, work climates unfavorable to knowledge sharing are difficult to change (Ruggles 1998).

The objective of this study is to deepen our understanding of the factors that increase or lessen employees' tendencies to engage in knowledge-sharing behaviors. Since knowledge sharing behaviors are likely to be influenced not only by personal motivations but also by contextual forces (Yoo and Torrey 2002), we apply a theoretical frame in which extrinsic motivators, social-psychological forces and organizational climate are integrated with the theory of reasoned action (TRA) (Ajzen and Fishbein 1980).

This paper is organized into six sections including this introduction. The next section surveys the salient literature to identify antecedents to employees' attitudes regarding knowledge sharing, and describes our data gathering activities to complement the existing literature. The third section presents the research model and develops the research hypotheses characterizing the relationships depicted in the model. The fourth section describes our research methods, while the fifth discusses the results and their implications for research and practice. The last section summarizes the study's contributions.

Theoretical Framing

Knowledge management has been defined as the process of capturing, storing, sharing, and using knowledge (Davenport and Prusak 1998). More specific to this study, knowledge sharing concerns the willingness of individuals in an organization to share with others the knowledge they have acquired or created (Gibbert and Krause 2002). The sharing could be done directly via communication or indirectly via some knowledge archive.

The operative phrase here is “the willingness of individuals.” As mentioned above, organizational knowledge largely resides within individuals. Even with the codification of knowledge, knowledge objects remain unexposed to (and hence unrecognizable by) others until the knowledge owner makes the objects available. In a practical sense, knowledge sharing cannot be forced but can only be encouraged and facilitated (Gibbert and Krause 2002). It comes as no surprise that changing people’s behaviors is generally considered to be the most severe challenge facing firms desiring to increase their members’ knowledge-sharing behaviors. But what, exactly, are the levers or factors likely to motivate or otherwise induce such behaviors?

Insights from the Existing Literature

Szulanski (1996) suggests that motivational forces derive from one of two bases: (1) employees’ personal belief structures and (2) institutional structures, i.e., values, norms and accepted practices which are instrumental in shaping individuals’ belief structures (DeLong and Fahey 2000). Each of these is now discussed.

Personal Belief Structures

As knowledge sharing does not come without participant costs, personal beliefs that expected benefits will outweigh these costs are likely to be an important determinant of knowledge sharing behaviors. Not only does sharing knowledge take both time and effort (Gibbert and Krause 2002), but doing so in an organizational setting results in the classic public good dilemma (Barry and Hardin 1982; Marwell and Oliver 1993): a knowledge asset contributed for the good of the organization can be used by others regardless of whether or not they make a contribution in return (Dawes 1980; Thorn and Connolly 1987). This dilemma is intensified when expertise (i.e., personal reputation) is highly valued in an organization but mentoring or assisting others is not (Leonard and Sensiper 1998). Not only does an individual choosing to share knowledge stand to lose his/her unique

value within the organization, but any knowledge shared that is subsequently judged to be unsound or irrelevant can damage his/her reputation. Consequently, the lack of sufficient extrinsic and/or intrinsic rewards to compensate individuals for the costs of sharing knowledge becomes a common barrier to knowledge sharing (Constant et al. 1994, 1996; Huber 2001).

In their recent review of knowledge sharing literature, Kalling and Styhre (2003) comment on the relative lack of attention paid to the role of motivational factors that influence knowledge sharing behaviors. Our synthesis of the literature suggests that the salient motivational factors surfaced by other researchers reflect three levels of motivational forces.

- Individual benefit, i.e., self-interest, personal gain, etc. (Constant et al. 1994, 1996; Tampoe 1996; Wasko and Faraj 2000)
- Group benefit, i.e., reciprocal behaviors, relationships with others, community interest, etc. (Constant et al. 1994, 1996; Kalman 1999; Wasko and Faraj 2000)
- Organizational benefit, i.e., organizational gain, organizational commitment, etc. (Kalman 1999)

Institutional Structures

Institutional structures are typically referred to as an organization’s culture or climate. An interesting debate has evolved in the organizational sciences about the distinction between organizational culture and organizational climate. Dennison (1996) argues that the difference between organizational culture and organizational climate is one of perspectives rather than substance. The literature on organizational culture and the literature on organizational climate address a common phenomenon: the creation and influence of social contexts in organizations. Climate refers to a contextual situation at a point in time and its link to the thoughts, feelings, and behaviors of organizational members. Thus, it is temporal, subjective, and often subject to direct manipulation by people with power

and influence. Culture, in contrast, refers to an evolved context within which specific situations are embedded. Thus, it is rooted in history, collectively held, and sufficiently complex to resist attempts at direct manipulation. Generally, quantitative survey-based research taps into the features of an organization's climate whereas qualitative and interpretive research delves into the nature of an organization's culture. Given that the focus of our study lies with quantitatively assessing individuals' perceptions of their organizational context, we follow Dennison's (1996) ideas and refer to salient institutional structures as organizational climate.

Salient aspects of organizational climate which have been surfaced by scholars interested in understanding individuals' tendencies toward knowledge sharing are a climate in which individuals are highly trusting of others and of the organization (Hinds and Pfeffer 2003), an open climate with free-flowing information (Dixon 2000; Gibbert and Krause 2002; Hinds and Pfeffer 2003; Jarvenpaa and Staples 2000; Leonard and Sensiper 1998), a climate that is tolerant of well-reasoned failure (Leonard and Sensiper 1998), and a climate infused with pro-social norms (Constant et al. 1994, 1996; Hinds and Pfeffer 2003; Wasko and Faraj 2000).

Validating and Supplementing Prior Literature with Context-Specific Interviews

To develop an integrative view of the forces influencing individuals' willingness to share knowledge, we adopted TRA (Fishbein and Ajzen 1975) as an initial theoretical frame. Here, an individual's decision to engage in a specified behavior is determined by their intention to perform the behavior, which in turn is determined jointly by their attitude toward (reflecting their salient behavioral beliefs) and the subjective norm regarding (reflecting their normative beliefs and motivation to comply with these beliefs) the behavior.

Since TRA can be applied to virtually any behavior, the nature of the beliefs operative for a

particular behavior are left unspecified. In a mature field of study where the beliefs that underlie a focal behavior are well specified, prior literature is usually a sufficient source for identifying the relevant beliefs (as well as their motivational drivers). However, in our study, the existing understanding of the factors that shape individuals' intentions to engage in knowledge sharing is anything but mature. Consequently, we interviewed executives leading knowledge-management initiatives within their organizations to validate—and supplement, if needed—the motivational drivers identified from the existing literature.

The interviews were conducted with either the chief knowledge officers or chief information officers in five Korean organizations: Samsung Economic Research Institute, Samsung Advanced Institute of Technology, Samsung Display Devices, IBM-Korea, and Accenture-Korea. As prescribed techniques preclude prompting interviewees (Fishbein 1971; Ryan and Bonfield 1975), these interviews began with asking what each organization had done regarding knowledge management. This was followed by a few very general questions: What led the organization to implement its knowledge management initiatives? What were the critical success factors or drivers of the initiatives? What difficulties did the organization face in inducing its employees to contribute knowledge within the initiatives? In essence, the interviews were very open-ended.

Through thematic analysis of the interview scripts (Miles and Huberman 1994), we codified notes and clustered issues into factors, and organized the results into general conceptual themes. The themes capture a set of factors that the interviewees had consistently emphasized as an influence on their employees' knowledge-sharing behaviors. In summary, the motivational forces surfaced via these interviews are the provision of incentives for knowledge sharing, the knowledge sharer's relationship with the knowledge recipient, feedback on shared knowledge from others, the management's commitment to knowledge-management initiatives, and the three organizational climate dimensions of fairness, innovativeness, and affiliation.

Resultant Set of Motivational Drivers

Our synthesis of the motivational drivers (identified from both prior literature and our interviews) that influence employees' willingness to share knowledge results in three broad categories that resonate with the intellectual streams most often used to explain social action: economics, social psychology, and sociology (Coleman 1988).

- **Economic: Anticipated Extrinsic Rewards.** Every organization that we interviewed had implemented monetary incentives, points toward promotion, or both as extrinsic motivators for knowledge sharing. Much of the utilitarian tradition including classical and neo-classical economics, assumes rational, self-interested behavior in explaining social actions (Granovetter 1985).
- **Social-Psychological: Anticipated Reciprocal Relationships and Sense of Self-Worth.** Anticipated reciprocal relationships capture employees' desires to maintain ongoing relationships with others, specifically with regard to knowledge provision and reception. Sense of self-worth, on the other hand, captures the extent to which employees see themselves as providing value to their organizations through their knowledge sharing. Here, the concept of self-worth refers to individuals' degree of liking themselves, based largely on competence, power, or efficacy regarding conduct (Gecas 1971). These constructs match well with the social-psychological forces identified by Huber (2001) as influencing individuals' knowledge sharing propensity.
- **Sociological: Fairness, Innovativeness, and Affiliation.** Sociologists see social action as largely governed by institutional structures, e.g., social norms, rules, and obligations (Coleman 1988). Related to these institutional structures are three organizational climate factors for knowledge sharing, which we have derived from our interviews and which align well with the contextual factors in prior literature: fairness (a trusting climate),

innovativeness (a climate that is tolerant of failure and within which information freely flows), and affiliation (a climate characterized by pro-social norms).

The Research Model and Hypotheses

Figure 1 depicts our research model. Note that the model deviates in two major ways from standard TRA formulation in recognizing that knowledge sharing inherently involves collective action at its core: the subjective norm of an individual is posited to directly and indirectly (through attitude) influence intention to share knowledge, and organizational climate is posited to directly and indirectly (through subjective norm) influence intention to share knowledge. We will next develop the posited relationships.

Limiting the domain of the behavioral intention model to the rational actor, intention to engage in a behavior is determined by an individual's attitude toward that behavior (Ajzen and Fishbein 1980). Here, attitude toward knowledge sharing is defined as the degree of one's positive feelings about sharing one's knowledge. This leads to the first hypothesis.

Hypothesis 1: The more favorable the attitude toward knowledge sharing is, the greater the intention to share knowledge will be.

From a socio-economic perspective, an individual actor is assumed to choose the course of action that maximizes utility in a given and stable set of preferences (Smelser and Swedberg 1994). Knowledge sharing is most likely to occur when employees perceive that incentives exceed costs (Kelly and Thibaut 1978). For example, in Siemens' ShareNet project, explicit rewards were effective in motivating employees to share their knowledge (Ewing and Keenan 2001). Similarly, the use of redemption points in Samsung Life Insurance's Knowledge Mileage Program led to an explosive growth in knowledge registration by its employees (Hyoung and Moon 2002). Thus, anti-

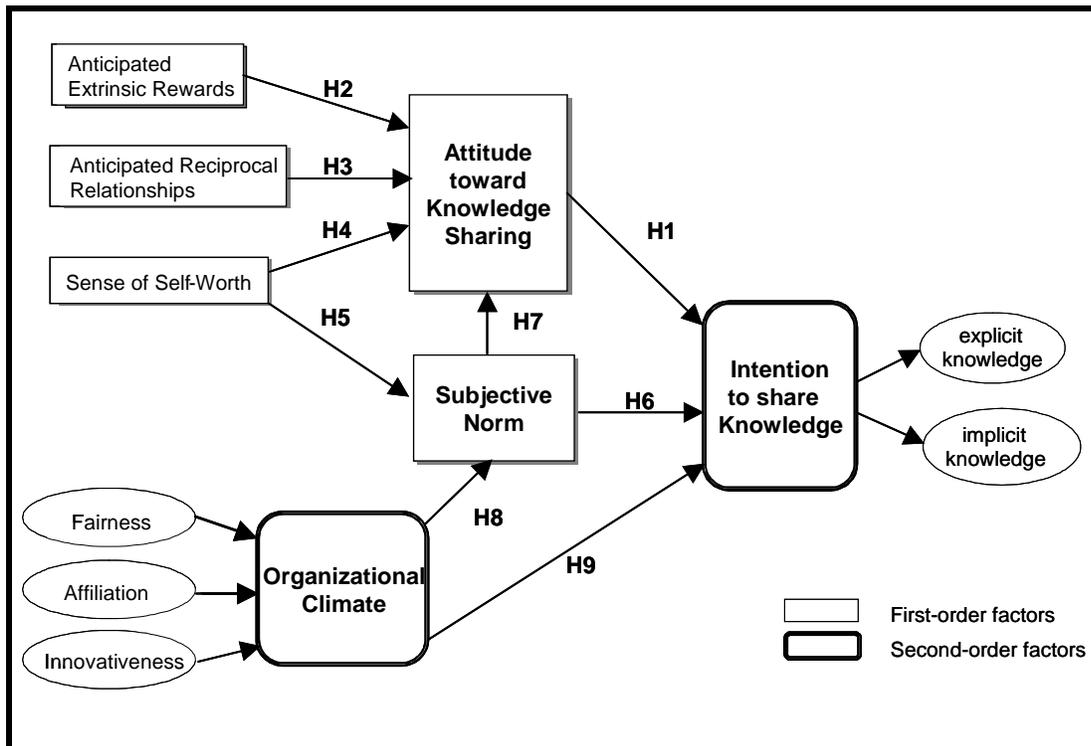


Figure 1. Research Model

Anticipated extrinsic rewards are posited to encourage more positive attitudes toward knowledge sharing, leading to the second hypothesis.

Hypothesis 2: The greater the anticipated extrinsic rewards are, the more favorable the attitude toward knowledge sharing will be.

Constant et al. (1994) and others (Blau 1967; Organ and Konovsky 1989) argue that when two individuals are influenced by their social and organizational contexts, especially where unspecified cooperative outputs such as knowledge are exchanged, the social exchange relationship is a major determinant of their attitudes. Social exchange, distinct from economic exchange, establishes bonds of friendship with and/or superordination over others, and engenders diffuse, unspecified obligations (Organ and Konovsky 1989). The concern is primarily with the relationship itself, and not necessarily any extrinsic benefit that might directly follow (Blau 1967). Thus,

employees who believe their mutual relationships with others can improve through their knowledge sharing, and who are operating on the basis of their desire for fairness and reciprocity (Huber 2001), are likely to have positive attitudes toward knowledge sharing. This results in the third hypothesis.

Hypothesis 3: The greater the anticipated reciprocal relationships are, the more favorable the attitude toward knowledge sharing will be.

In an ongoing interaction setting such as knowledge sharing in an organization, appropriate feedback is very critical. When others respond in the way that we have anticipated, we conclude that our line of thinking and behavior are correct; at the same time, role taking improves as the exchange continues (Kinch 1973, pp. 55, 77) according to role theory, which is the cornerstone of the symbolic interactionist perspective on self-concept formation (Gecas 1982; Kinch 1963). This pro-

cess of reflected appraisal contributes to the formation of self-worth (Gecas 1971), which is strongly affected by sense of competence (Covington and Beery 1976) and closely tied to effective performance (Bandura 1978). Therefore, employees who are able to get feedback on past instances of knowledge sharing are more likely to understand how such actions have contributed to the work of others and/or to improvements in organizational performance. The understanding would allow them to increase their sense of self-worth accordingly. That, in turn, would render these employees more likely to develop favorable attitudes toward knowledge sharing than employees who are unable to see such linkages. Defining this cognition as an individual's sense of self-worth from their knowledge-sharing behavior leads to the fourth hypothesis.

Hypothesis 4: The greater the sense of self-worth through knowledge sharing behavior is, the more favorable the attitude toward knowledge sharing will be.

It is believed that sense of self-worth influences individuals' behaviors in directions congruent with the prevailing group and organizational norms (Huber 2001). The reference group's norms become the internalized standard against which individuals judge themselves (Gecas 1982; Kelman 1961). Thus, in addition to the direct effect of sense of self-worth on attitude, we posit that individuals characterized by a high sense of self-worth through their knowledge sharing are more likely to both be aware of the expectations of significant others regarding knowledge sharing behaviors and comply with these expectations. This reasoning leads to the fifth hypothesis.

Hypothesis 5: The greater the sense of self-worth through knowledge sharing behavior is, the greater the subjective norm to share knowledge will be.

The subjective norm construct, defined as perceived social pressure to perform or not perform a behavior (Ajzen 1991), has received considerable empirical support as an important antecedent to behavioral intention (Mathieson 1991; Taylor and Todd 1995; Thompson et al. 1991). This leads to the study's sixth hypothesis.

Hypothesis 6: The greater the subjective norm to share knowledge is, the greater the intention to share knowledge will be.

Fishbein and Ajzen (1975, 1981) consistently maintain that there is utility in separating attitudinal and normative variables despite the possibility that they may be highly correlated (Ryan 1982). Recently, similar arguments have been made (Lewis et al. 2003; Venkatesh and Davis 2000) that subjective norms, through social influence processes (Fulk 1993; Schmitz and Fulk 1991), can have an important influence on attitudes. Lewis et al. (2003, p. 662) neatly summarize these arguments:

This effect is manifest via the psychological pathways of internalization and identification. Via internalization, the individual incorporates the opinion of an important referent as part of her own belief structure: in essence, the referent's beliefs become one's own. Via identification, the individual seeks to believe and act in a manner similar to those possessing referent power. Therefore, compelling messages received from important others are likely to influence one's cognition about the expected outcomes of technology use.

While this issue may be controversial (Lee and Green 1991), scholars have begun to examine and confirm the relationship (Bijker 1995; Chang 1998; Shepherd and O'Keefe 1984; Shimp and Kavas 1984; Vallerand et al. 1992; Venkatesh and Davis 2000). In particular, Lee (1990) argues that the more individuals are motivated to conform to group norms, the more their attitudes tend to be group-determined than individual-determined. Thus, it seems reasonable to posit that subjective norms regarding knowledge sharing will influence organizational members' attitudes toward knowledge sharing. This leads to the seventh hypothesis.

Hypothesis 7: The greater the subjective norm to share knowledge is, the more favorable the attitude toward knowledge sharing will be.

That organizational climate is a critical driver of knowledge sharing is generally understood (Con-

stant et al. 1996; Huber 2001; Orlikowski 1993), and is especially well-expressed by Robert Buckman (1998, pp. 14-15):

To move from a culture that calls for the hoarding of knowledge in order to gain power toward one that rewards the sharing of knowledge with an increase in power, we need to create a climate that fosters long-lived, trusting relationships. We must be able to trust that we receive the best information that can be sent to us, and those who send it must be able to trust that it will be used in an appropriate manner.

As discussed earlier, we have identified three aspects of organizational climate as being particularly conducive to knowledge sharing: fairness, innovativeness, and affiliation. Fairness, which reflects the perception that organizational practices are equitable and neither arbitrary nor capricious, both builds trust between members and serves to overcome the public good dilemma associated with knowledge sharing. Fairness, thus, can be expected to lead employees to go beyond the call of duty to share their knowledge and become more knowledgeable about their work in the process (Kim and Mauborgne 1997). Innovativeness, which reflects the perception that change and creativity are actively encouraged and rewarded, emphasizes learning, open information flows, and reasoned risk-taking. Consequently, individuals in innovative work contexts are more likely to share new and creative ideas with each other than are individuals in non-innovative work contexts (Kim and Lee 1995). Finally, affiliation, defined as the perception of a sense of *togetherness* among an organization's members, reflects the caring and pro-social behavior critical to inducing an organization's members to help one another.

Bringing together these ideas with the arguments raised earlier, we posit that organizational climate affects individuals' intention to share knowledge in two ways. First, in the perspective developed by Ajzen and Fishbein (1980), external factors such as institutional structures influence the salience of subjective norms. Such a view is supported by

prior studies examining behavioral intentions in specific cultures (Bearden and Etzel 1982; Lee and Green 1991; Triandis 1972; Tse et al. 1988). This leads to the eighth hypothesis.

Hypothesis 8: The greater the extent to which the organizational climate is perceived to be characterized by fairness, innovativeness and affiliation, the greater the subjective norm to share knowledge will be.

Second, organizational climate is also expected to directly influence individuals' intentions to share knowledge. Scholars in cross-cultural research argue that cultural factors such as group conformity and face saving in a Confucian society can directly affect intention (Bang et al. 2000; Tuten and Urban 1999). As our data collection is limited to a sample of Korean firms, the unique character of Korean culture must be taken into consideration. Korea is considered to be among the most collectivist countries. For example, Bae and Lawler (2000) characterize traditional Korean business culture as being concerned with group harmony, as reflected in social contracts, company loyalty and commitment, authoritarian and paternalistic leadership, hierarchical structures, and bureaucratic management styles. Thus, given our particular research context (i.e., Korean businesses), we expect organizational climate to directly influence employees' behavioral intentions to share knowledge. This leads to our final hypothesis.

Hypothesis 9: The greater the extent to which the organizational climate is perceived to be characterized by fairness, innovativeness and affiliation, the greater the intention to share knowledge will be.

Research Methodology and Analysis

To test the proposed research model, we adopted the survey method for data collection, and examined our hypotheses by applying the partial least

squares (PLS) method to the collected data. Our unit of analysis was the individual.

Measurement and Data Collection

We developed the items in the questionnaire either by adapting measures that had been validated by other researchers or by converting the definitions of constructs into a questionnaire format. Specifically, the items for the three antecedent beliefs—anticipated extrinsic rewards, anticipated reciprocal relationships, and sense of self-worth—were developed based on relevant theories and prior studies. The items measuring attitude and subjective norm were adapted from Fishbein and Ajzen's (1975) research, and the items for measuring organizational climate were adapted from previous organizational climate studies, with the items altered to fit the knowledge-sharing context. The three organizational climate dimensions were then used as indicators (Chin and Gopal 1995) to create the superordinate organizational climate construct. To eliminate any possible scaling issues, the subjective norm scores were normalized according to the procedure of Bailey and Pearson (1983).

Finally, the items for the dependent variable—intention to share knowledge—were also adapted from Fishbein and Ajzen's (1975) research. We created one construct for intention to share knowledge by forming a second-order construct from a scale measuring intention to share explicit knowledge and a scale measuring intention to share implicit knowledge. Appendix A lists the definitions of the variables in this study while Appendix B gives the wording of each measurement item along with the scale means, standard deviations, and alpha values (i.e., internal consistency).

Backward translation (with the material translated from English into Korean, and back into English; versions compared; discrepancies resolved) was used to ensure consistency between the Korean and the original English version of the instrument (Mullen 1995; Singh 1995). The initial version of the survey instrument was then refined through an

extensive pre-test with 61 responses from 13 organizations in 7 industries in Korea. Next, the internal consistency and discriminant validity of the instrument were assessed. Cronbach's alpha values ranged from 0.71 (for anticipated extrinsic rewards) to 0.95 (for sense of self-worth). Due to low item-to-total correlation (less than 0.50), one item from anticipated extrinsic rewards and one item from intention to share knowledge were dropped.

The refined instrument, in the form of a self-administered questionnaire, was then used to collect the study's data from organizations in Korea. Thirty organizations were asked to participate in the survey. They were among some 300 organizations whose executives were enrolled in the "Chief Knowledge Officer Program" offered by the university where one of the authors was in service. Ten survey packets were sent to each of these 30 organizations, with 259 responses returned (86 percent response rate). Out of the 259 responses, 105 responses with incomplete data were eliminated from further analysis. As a result, 154 responses from 27 organizations (51 percent of the distributed survey packets) across 16 industries were used in the data analysis. Table 1 shows the respondents' characteristics according to industry type and demographics.

Analysis Methods

PLS (Chin 1998) was used as it allows latent constructs to be modeled either as formative or reflective indicators as was the case with our data, and it makes minimal demands in terms of sample size to validate a model compared to alternative structural equation modeling techniques. We used PLS-Graph Version 3.00 in our analysis.

Measurement Model

Following recommended two-stage analytical procedures (Anderson and Gerbing 1988; Hair et al. 1998), confirmatory factor analysis was first conducted to assess the measurement model; then, the structural relationships were examined.

Table 1. Profile of Companies and Respondents

(a) Industry Type							
Industry	# of Company	# of Response	Percent	Industry	# of Company	# of Response	Percent
Food	4	31	20.1	Construction	4	15	9.7
Chemical	2	12	7.8	Wholesale	1	3	1.9
Pharmaceutical	1	8	5.2	Retail	1	4	2.6
Metal	1	3	1.9	Transportation and Telecom.	1	5	3.2
Electric Machinery and Electronics	2	12	7.7	Financial Industry	3	14	9.0
Automotive	1	4	2.6	Entertainment and Others	5	37	24.0
Electricity and Gas	1	6	3.9	Total	27	154	100.0
(b) Demographic Information of Respondents							
Measure	Items	Freq.	Percent	Measure	Items	Freq.	Percent
Gender	Male	136	88.3	Gender	Female	18	11.7
Age	21-29	28	18.5	Work Experience (in years)	0-3	15	10.1
	30-34	55	36.5		3-6	36	24.4
	35-39	50	33.1		6-9	33	22.3
	40~	18	11.9		9-12	38	25.6
	Missing	3	-		12~	26	17.6
Position	Employee	18	11.7	Education	High school	8	5.2
	Chief employee	69	44.8		College (2 years)	11	7.1
	Manager	55	35.7		University (4 years)	98	63.6
	Director	11	7.1		Graduate school	37	24.0
	Others	1	0.6				

Since the model contains two second-order variables (organizational climate and knowledge sharing intention), we created superordinate second-order constructs using factor scores for the first-order constructs (Chin et al. 2003; Wold 1989). According to causal priority (Diamantopoulos and Winklhofer 2001) and the direction of change of one item compared with the rest (Chin 1998), we treated the indicators of organizational climate as formative and those of intention as reflective.

To validate our measurement model, three types of validity were assessed: content validity, convergent validity, and discriminant validity. Content validity was established by ensuring consistency between the measurement items and the extant literature. This was done by interviewing senior

practitioners and pilot-testing the instrument. We assessed convergent validity by examining composite reliability and average variance extracted from the measures (Hair et al. 1998). Although many studies employing PLS have used 0.5 as the threshold reliability of the measures, 0.7 is a recommended value for a reliable construct (Chin 1998). As shown in Table 2, our composite reliability values range from 0.823 to 0.930. For the average variance extracted by a measure, a score of 0.5 indicates acceptability (Fornell and Larcker 1981). Table 2 shows that the average variances extracted by our measures range from 0.609 to 0.866, which are above the acceptability value. In addition, Appendix C exhibits the weights and loadings of the measures in our research model. As expected, all measures are significant on their path loadings at the level of 0.01. Finally,

Table 2. Results of Confirmatory Factor Analysis

Measures	Items	Composite Reliability	Average Variance Extracted
Anticipated extrinsic rewards (AER)	2	0.928	0.866
Anticipated reciprocal relationships (ARR)	5	0.919	0.695
Sense of self-worth (SSW)	5	0.911	0.676
Affiliation (AFF)	4	0.898	0.688
Innovativeness (INN)	3	0.874	0.699
Fairness (FAI)	3	0.870	0.691
Attitude toward knowledge sharing (ATK)	5	0.918	0.693
Subjective norm (SUN)	3	0.823	0.609
Organizational climate (OC)	3	0.841	0.639
Intention to share knowledge (ISK)	5	0.930	0.728

Table 3. Correlation between Constructs

	AER	ARR	SSW	AFF	INN	FAI	ATK	SUN	ISK
AER	0.931								
ARR	0.251	0.834							
SSW	0.194	0.532	0.821						
AFF	0.046	0.287	0.155	0.829					
INN	0.307	0.362	0.301	0.417	0.836				
FAI	0.151	0.364	0.224	0.460	0.492	0.831			
ATK	-0.038	0.474	0.346	0.299	0.276	0.284	0.832		
SUN	0.048	0.410	0.415	0.393	0.387	0.453	0.450	0.780	
ISK	0.036	0.469	0.454	0.296	0.261	0.353	0.457	0.472	0.853

Note: AER: Anticipated extrinsic rewards; ARR: Anticipated reciprocal relationships; SSW: Sense of self-worth; AFF: Affiliation; INN: Innovativeness; FAI: Fairness; ATK: Attitude toward knowledge sharing; SUN: Subjective norm; ISK: Intention to share knowledge

*The shaded numbers in the diagonal row are square roots of the average variance extracted.

we verified the discriminant validity of our instrument by looking at the square root of the average variance extracted as recommended by Fornell and Larcker (1981). The result in Table 3 confirms the discriminant validity: the square root of the average variance extracted for each construct is

greater than the levels of correlations involving the construct. The results of the inter-construct correlations also show that each construct shares larger variance with its own measures than with other measures. Since we included new measures in our study (i.e., AER, ARR, and SSW), we con-

sidered both loadings and cross-loadings to establish discriminant validity; these are shown in Appendix D.

In addition to validity assessment, we also checked for multicollinearity due to the relatively high correlations among some variables (e.g., a correlation of 0.53 between SSW and ARR). The resultant variance inflation factor (VIF) values for all of the constructs are acceptable (i.e., between 1.213 and 1.801).

Structural Model

With an adequate measurement model and an acceptable level of multicollinearity, the proposed hypotheses were tested with PLS. The results of the analysis are depicted in Figure 2 and summarized in Table 4. We discuss the results in the following sequence: standard TRA constructs (Hypotheses 1, 6, and 7), psychological antecedents to these TRA constructs (Hypotheses 2, 3, 4, and 5), and organizational climate (Hypotheses 8 and 9).

Hypotheses 1 and 6 are supported as they have been in many previous studies applying TRA to explain behavioral intentions. Hypothesis 7 is also supported, adding credence to the argument that subjective norms can influence intentions both directly and indirectly (through attitudes), especially within cultural contexts characterized by strong group orientation, such as is the case with Korean organizations.

Mixed results were obtained for the antecedents to the standard TRA constructs. Significant relationships in the posited direction were found only for Hypotheses 3 and 5. These results suggest that, at least in the Korean context, favorable individual attitudes toward knowledge sharing are influenced by relational motivators rather than by expectations of extrinsic rewards. If anything, the negative significant coefficient observed with Hypothesis 2 suggests that extrinsic rewards hinder rather than facilitate the formation of positive attitudes toward knowledge sharing. It should also be noted that sense of self-worth seems to influence attitudes

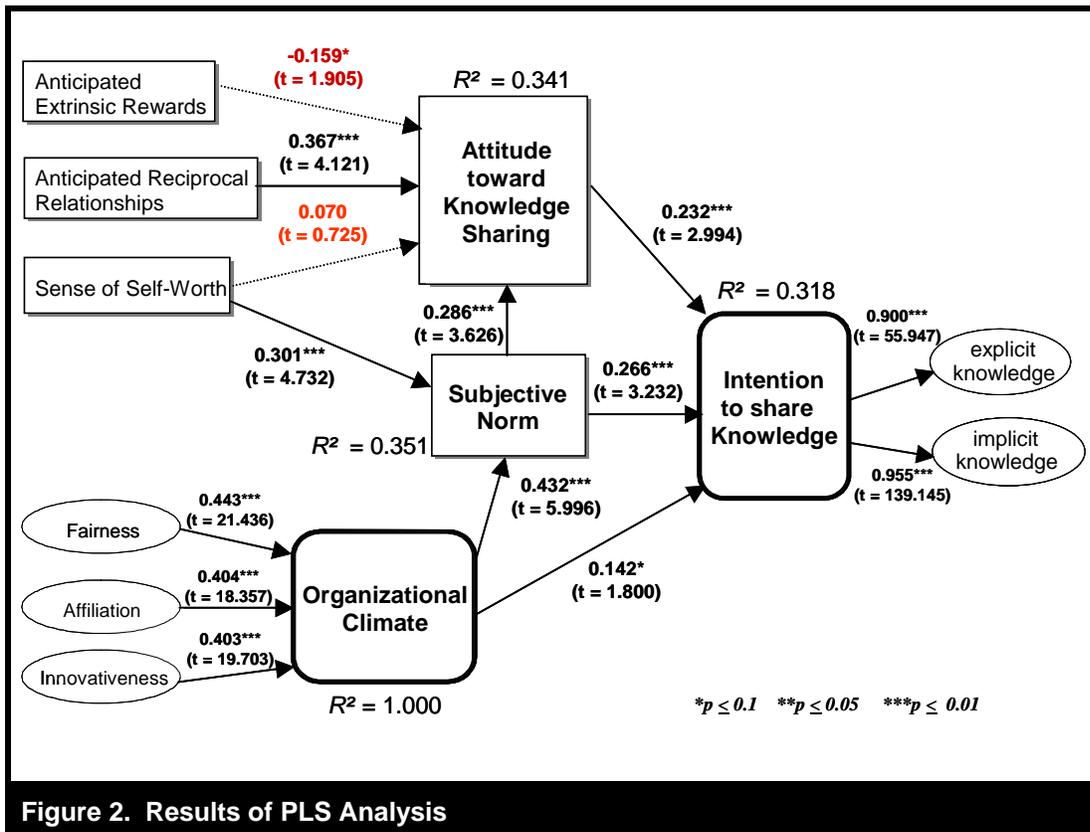
toward knowledge sharing indirectly through subjective norms (Hypothesis 5 being significant and positively related) rather than directly (Hypothesis 3 being nonsignificant); however, this finding may very well be a reflection of the strong collectivist orientation of Korean organizations.

Finally, regarding organizational climate, the results show, as posited, that organizational climate influences both subjective norms (H8) and intention to share knowledge (H9). However, indirect influence (through subjective norm) was found to be stronger than direct influence.

Discussion, Implications, and Limitations

The objective of this study has been to add to the collective understanding of factors likely to underlie knowledge workers' attitudes toward and intentions regarding knowledge sharing behaviors. Accordingly, we (1) surfaced a number of potentially salient motivational factors (anticipated extrinsic rewards, anticipated reciprocal relationships, sense of self-worth, and three facets of organizational climate: fairness, innovativeness and affiliation); (2) applied these as antecedents to the attitudinal and subjective norm constructs associated with TRA research models; (3) modified the standard TRA formulation to account for both the collective action aspects of organizational knowledge sharing and the collectivist orientation of the sampled (Korean) organizations; and (4) supported most of the relationships posited in our research model through a survey of knowledge workers in Korean organizations. We feel each of these points represents a significant contribution to our collective understanding of why knowledge workers choose to or not to engage in knowledge sharing behaviors. In particular, we believe the following findings are important insights.

- Contrary to commonly accepted practices associated with knowledge management initiatives, a felt need for extrinsic rewards may very well hinder—rather than promote—the development of favorable attitudes toward



knowledge sharing. While such a finding might simply be a reflection of the study's design or the specific extrinsic reward mechanisms applied by the sampled organizations, plausible explanations do exist for such an observation: Eisenberger and Cameron (1996) argue that task-contingent rewards may negatively impact intrinsic motivations (such as those associated with anticipated reciprocal relationships and sense of self-worth), Kelman (1958) argues that extrinsic rewards succeed only at securing temporary compliance, and Meyer (1975) acknowledges that mismatches may well exist between what employees and management perceive to be appropriate extrinsic rewards for the behaviors being encouraged.

- An individual's attitude toward knowledge sharing is driven primarily by anticipated reciprocal relationships regarding knowledge

sharing and the subjective norm regarding knowledge sharing.

- An individual's sense of self-worth through knowledge sharing intensifies the salience of the subjective norm regarding knowledge sharing.
- An organizational climate conducive to knowledge sharing (operationalized here as fairness, innovativeness, and affiliation) exerts a strong influence on the formation of subjective norms regarding knowledge sharing; it also directly affects (although less strongly) individuals' intentions to engage in knowledge sharing behaviors.

In addition to this study's contributions to our understanding of the motivational drivers that underlie individuals' knowledge-sharing behaviors, we also feel the study contributes in two ways to

Table 4. Results of Hypothesis Testing	
Hypotheses	Results
H1: The more favorable the attitude toward knowledge sharing is, the greater the intention to share knowledge will be.	Supported
H2: The greater the anticipated extrinsic rewards are, the more favorable the attitude toward knowledge sharing will be.	Not Supported (significant but in opposite direction)
H3: The greater the anticipated reciprocal relationships are, the more favorable the attitude toward knowledge sharing will be.	Supported
H4: The greater the sense of self-worth through knowledge sharing behavior is, the more favorable the attitude toward knowledge sharing will be.	Not Supported
H5: The greater the sense of self-worth through knowledge sharing behavior is, the greater the subjective norm to share knowledge will be.	Supported
H6: The greater the subjective norm to share knowledge is, the greater the intention to share knowledge will be.	Supported
H7: The greater the subjective norm to share knowledge is, the more favorable the attitude toward knowledge sharing will be.	Supported
H8: The greater the extent to which the organizational climate is perceived to be characterized by fairness, innovativeness and affiliation, the greater the subjective norm to share knowledge will be.	Supported
H9: The greater the extent to which the organizational climate is perceived to be characterized by fairness, innovativeness and affiliation, the greater the intention to share knowledge will be.	Supported

the broader set of literature applying TRA to model individual behaviors. First, we have provided additional evidence that, when the behavior being studied is strongly reflective of collective action, subjective norms are likely to affect behavioral intentions directly *and* indirectly through attitude. Second, our results indicate—to the best of our knowledge, for the first time within a TRA formulation—that the institutional structures within which a focal behavior is situated also influence behavioral intentions. As explained in the previous paragraph, this study shows that organizational climate influences behavior directly *and* indirectly through subjective norms. However, it is very possible that such an outcome is limited to behaviors largely constituted through collective action, as was the case with the behaviors we surveyed.

We note that our findings must be interpreted in light of the study's limitations. First, as the data are cross-sectional and not longitudinal, the posited causal relationships (although firmly based in generally accepted theories) could only be inferred rather than proven. Second, because data collection was limited to organizations in a highly collectivist national culture (Hofstede 1991), our findings should not be interpreted as necessarily applicable to firms in distinctly different national cultures. Third, our findings may well be vulnerable to the threat of single-source bias. Finally, our procedures for identifying candidate antecedent motivating factors might have overlooked barriers of knowledge sharing acknowledged by others: natural barriers such as time and space (Hinds and Pfeffer 2003; Leonard and

Sensiper 1998); cognitive barriers that make it difficult for individuals to communicate and otherwise transfer knowledge (Dixon 2000; Gibbert and Krause 2002; Hinds and Pfeffer 2003; von Krogh et al. 2000); and structural barriers, such as authority and status hierarchies as well as functional boundaries, that can inhibit open information flows and the development of interpersonal relationships (Dixon 2000; Hinds and Pfeffer 2003; Leonard and Sensiper 1998; von Krogh et al. 2000).

Given these limitations, we strongly encourage others to examine our findings through more rigorous research designs and across different national cultures. We also recognize the value, in future studies, of extending research models to (1) include individuals' actual knowledge-sharing behaviors; (2) examine the sharing of specific types of knowledge assets; (3) examine knowledge sharing beyond the boundaries of single organizations (reflecting the increasing necessity for organizational members to share knowledge with customers, suppliers, and other partners); and (4) recognize that individuals share knowledge directly with others or indirectly via technology agents.

Based on our findings, we propose the following suggestions to those leading knowledge-management initiatives or otherwise desiring to encourage knowledge sharing within their organizations. First, emphasize efforts to nurture the targeted social relationships and interpersonal interactions of employees before launching knowledge-sharing initiatives. In particular, fostering a work context characterized by high levels of organizational citizenship is likely to nurture the mutual social exchange relationships that are apparently important in driving knowledge-sharing intentions. Second, actively support the formation and maturation of robust referent communities within the workplace. In particular, be sure to provide appropriate feedback to employees engaged in (or not engaged in) knowledge sharing. Such actions follow the importance of exerted pressure from one's referent groups (e.g., peers, supervisors, senior managers, etc.) to engage in knowledge-sharing behaviors as well as the importance of enhancing the individual's sense of self-worth. Finally, do **not**

stress extrinsic rewards as a primary motivator within knowledge sharing initiatives.

Conclusions

Effective knowledge sharing cannot be forced or mandated. Firms desiring to institutionalize knowledge-sharing behaviors must foster facilitative work contexts. By surfacing motivational drivers associated with individuals' intentions to share personal knowledge with others, and providing empirical evidence regarding the efficacy of these motivational drivers, we feel that we have contributed to the development of a richer understanding of what must occur in order to create such facilitative work contexts. Given the importance of knowledge sharing in today's world—and even more so in tomorrow's world—we hope that our findings will be useful to others engaged in scholarship aimed at enriching our collective understanding regarding knowledge sharing within and across organizational communities.

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Appendix A

Definitions of the Constructs

Constructs	Definitions	Key References	Items*
Anticipated Extrinsic Rewards	The degree to which one believes that one will receive extrinsic incentives for one's knowledge sharing	Gomez-Mejia and Balkin (1990); Jauch (1976); Konig (1993); Malhotra and Galletta (1999)	2 (3)
Anticipated Reciprocal Relationships	The degree to which one believes one can improve mutual relationships with others through one's knowledge sharing	Deluga (1998); Major et al. (1995); Parkhe (1993); Seers et al. (1995); Sparrowe and Linden (1997)	5 (5)
Sense of Self-Worth	The degree of one's positive cognition based on one's feeling of personal contribution to the organization (through one's knowledge-sharing behavior)	Brockner (1988); Gardner and Pierce (1998); Gecas (1989); Schaubroeck and Merritt (1997); Stajkovic and Luthans (1998)	5 (5)
Affiliation	The perception of togetherness	Kim and Lee (1995); Koys and Decotiis (1991)	4 (4)
Innovativeness	The perception that change and creativity are encouraged, including risk-taking in new areas where one has little or no prior experience	Kim and Lee (1995); Koys and Decotiis (1991)	3 (4)
Fairness	The perception that organizational practices are equitable and nonarbitrary or capricious	Kim and Lee (1995); Koys and Decotiis (1991)	3 (4)
Attitude toward Knowledge Sharing	The degree of one's positive feelings about sharing one's knowledge	Fishbein and Ajzen (1975, 1981); Price and Mueller (1986); Robinson and Shaver (1973)	5 (5)
Subjective Norm	The degree to which one believes that people who bear pressure on one's actions expect one to perform the behavior in question multiplied by the degree of one's compliance with each of one's referents	Fishbein and Ajzen (1975, 1981)	3 (4)
Intention to Share Knowledge	Explicit Knowledge: The degree to which one believes that one will engage in an explicit knowledge-sharing act	Constant et al. (1994); Dennis (1996); Feldman and March (1981); Fishbein and Ajzen (1981)	2(3)
	Implicit Knowledge: The degree to which one believes that one will engage in an implicit knowledge-sharing act	Constant et al. (1994); Dennis (1996); Feldman and March (1981); Fishbein and Ajzen (1981)	3 (3)

*Final item numbers (Initial item numbers)

Appendix B

Questionnaire Items

Definitions provided to survey respondents		
<p>Here, <i>knowledge</i> means the individual's know-how or something which is helpful in solving problems in the organization. <i>Knowledge sharing</i> means providing or transferring one's knowledge to others. Knowledge sharing is possible through various methods such as formal and/or informal meetings and information systems.</p>		
Construct	Item	Statistics
Anticipated Extrinsic Rewards	<ol style="list-style-type: none"> 1. I will receive monetary rewards in return for my knowledge sharing. 2. I will receive additional points for promotion in return for my knowledge sharing. 	Alpha = 0.9280 Mean = 2.4383 S.D. = 1.0592
Anticipated Reciprocal Relationships	<ol style="list-style-type: none"> 1. My knowledge sharing would strengthen the ties between existing members in the organization and myself. 2. My knowledge sharing would get me well-acquainted with new members in the organization. 3. My knowledge sharing would expand the scope of my association with other members in the organization. 4. My knowledge sharing would draw smooth cooperation from outstanding members in the future. 5. My knowledge sharing would create strong relationships with members who have common interests in the organization. 	Alpha = 0.9190 Mean = 3.8623 S.D. = 0.6180
Sense of Self-Worth	<ol style="list-style-type: none"> 1. My knowledge sharing would help other members in the organization solve problems. 2. My knowledge sharing would create new business opportunities for the organization. 3. My knowledge sharing would improve work processes in the organization. 4. My knowledge sharing would increase productivity in the organization. 5. My knowledge sharing would help the organization achieve its performance objectives. 	Alpha = 0.9114 Mean = 3.7740 S.D. = 0.5770
Affiliation	<ol style="list-style-type: none"> 1. Members in my department keep close ties with each other. 2. Members in my department consider other members' standpoint highly. 3. Members in my department have a strong feeling of 'one team'. 4. Members in my department cooperate well with each other. 	Alpha = 0.8983 Mean = 3.4545 S.D. = 0.6324
Innovativeness	<ol style="list-style-type: none"> 1. My department encourages suggesting ideas for new opportunities. 2. My department puts much value on taking risks even if that turns out to be a failure. 3. My department encourages finding new methods to perform a task. 	Alpha = 0.8743 Mean = 3.1753 S.D. = 0.7681
Fairness	<ol style="list-style-type: none"> 1. I can trust my boss's evaluation to be good. 2. Objectives which are given to me are reasonable. 3. My boss doesn't show favoritism to any one. 	Alpha = 0.8701 Mean = 3.3398 S.D. = 0.6970
Attitude toward Knowledge Sharing	<ol style="list-style-type: none"> 1. My knowledge sharing with other organizational members is good. 2. My knowledge sharing with other organizational members is harmful. 3. My knowledge sharing with other organizational members is an enjoyable experience. 4. My knowledge sharing with other organizational members is valuable to me. 5. My knowledge sharing with other organizational members is a wise move. 	Alpha = 0.9184 Mean = 4.0286 S.D. = 0.6289

Construct	Item	Statistics
Subjective Norm	<p>Normative beliefs on knowledge sharing (NOB)</p> <ol style="list-style-type: none"> 1. My CEO thinks that I should share my knowledge with other members in the organization. 2. My boss thinks that I should share my knowledge with other members in the organization. 3. My colleagues think I should share my knowledge with other members in the organization. 	<p>Alpha = 0.8230 Mean = 3.2338 S.D. = 0.6966</p>
	<p>Motivation to comply (MTC)</p> <ol style="list-style-type: none"> 1. Generally speaking, I try to follow the CEO's policy and intention. 2. Generally speaking, I accept and carry out my boss's decision even though it is different from mine. 3. Generally speaking, I respect and put in practice my colleague's decision. 	
Intention to Share Knowledge	<p>Intention to share explicit knowledge</p> <ol style="list-style-type: none"> 1. I will share my work reports and official documents with members of my organization more frequently in the future. 2. I will always provide my manuals, methodologies and models for members of my organization. 	<p>Alpha = 0.9237 Mean = 3.9346 S.D. = 0.7041</p>
	<p>Intention to share implicit knowledge</p> <ol style="list-style-type: none"> 1. I intend to share my experience or know-how from work with other organizational members more frequently in the future. 2. I will always provide my know-where or know-whom at the request of other organizational members. 3. I will try to share my expertise from my education or training with other organizational members in a more effective way. 	<p>Alpha = 0.9326 Mean = 3.9264 S.D. = 0.6265</p>

All measures employ a five-point Likert scale from "very frequently" to "very rarely" or "extremely likely" to "extremely unlikely."

Alpha indicates Composite Reliability

S.D. indicates Standard Deviation

Appendix C

Weights and Loadings of the Measures

Construct	Items	Weight	Loading	Standard Error	t-value
Anticipated Extrinsic Rewards	AER1	-0.489	-0.918	0.173	5.316
	AER2	-0.586	-0.943	0.111	8.512
Anticipated Reciprocal Relationships	ARR1	0.219	0.776	0.035	22.107
	ARR2	0.263	0.861	0.026	32.780
	ARR3	0.212	0.858	0.040	21.473
	ARR4	0.268	0.853	0.026	32.867
	ARR5	0.238	0.816	0.035	23.388
Sense of Self-Worth	SSW1	0.259	0.779	0.042	18.329
	SSW2	0.163	0.740	0.061	12.057
	SSW3	0.270	0.853	0.037	23.271
	SSW4	0.295	0.893	0.023	38.054
	SSW5	0.220	0.831	0.051	16.425
Affiliation	AFF1	0.286	0.797	0.030	26.264
	AFF2	0.299	0.802	0.033	24.522
	AFF3	0.312	0.852	0.024	34.797
	AFF4	0.307	0.865	0.023	37.757
Innovativeness	INN1	0.393	0.831	0.029	28.941
	INN2	0.389	0.817	0.032	25.279
	INN3	0.413	0.860	0.022	39.886
Fairness	FAI1	0.410	0.866	0.023	38.255
	FAI2	0.406	0.828	0.031	26.367
	FAI3	0.386	0.799	0.040	19.717
Attitude toward Knowledge Sharing	ATK1	0.248	0.787	0.035	22.232
	ATK2	0.184	0.776	0.042	18.427
	ATK3	0.272	0.835	0.030	28.214
	ATK4	0.249	0.907	0.015	58.412
	ATK5	0.245	0.851	0.028	30.806
Subjective Norm	SUN1	0.452	0.804	0.044	18.356
	SUN2	0.450	0.828	0.035	23.917
	SUN3	0.374	0.704	0.062	11.285
Organizational Climate	OC1	0.446	0.829	0.025	33.473
	OC2	0.407	0.781	0.038	20.2872
	OC3	0.398	0.786	0.040	19.375
Intention to Share Knowledge	IEK1	0.572	0.935	0.015	64.177
	IEK2	0.507	0.917	0.017	52.427
	IIK1	0.394	0.909	0.016	55.696
	IIK2	0.325	0.885	0.022	40.705
	IIK3	0.382	0.925	0.016	58.354

*Both standard errors and t-values are for loadings, not weights.

Appendix D

Results of Confirmatory Factor Analysis

Construct	Items	1	2	3	4	5	6	7	8	9	10
Anticipated Extrinsic Rewards	AER1	0.899	0.124	0.074	0.006	0.140	-0.016	-0.048	-0.016	0.026	-0.012
	AER2	0.869	0.129	0.120	0.004	0.156	0.113	-0.070	-0.06	-0.011	-0.007
Anticipated Reciprocal Relationships	ARR1	0.233	0.654	0.139	0.076	0.063	0.069	0.134	0.072	0.149	0.263
	ARR2	0.093	0.739	0.135	0.108	0.206	0.084	0.167	0.076	0.102	0.288
	ARR3	0.054	0.820	0.144	0.187	0.134	0.165	0.092	-0.001	0.098	0.103
	ARR4	0.037	0.749	0.266	-0.019	0.011	0.199	0.268	0.048	0.012	0.103
	ARR5	0.016	0.760	0.209	0.081	0.067	-0.043	0.217	0.066	-0.004	0.077
Sense of Self-Worth	SSW1	0.067	0.392	0.587	-0.011	-0.069	0.065	0.096	0.188	-0.045	0.281
	SSW2	0.153	0.111	0.767	-0.062	0.085	0.130	0.046	0.087	0.033	0.093
	SSW3	-0.019	0.075	0.817	0.113	-0.023	0.027	0.159	0.043	0.150	0.218
	SSW4	0.082	0.296	0.771	0.048	0.089	-0.020	0.174	0.163	0.042	0.108
	SSW5	-0.002	0.228	0.762	0.018	0.277	-0.017	0.043	0.168	0.068	0.156
Affiliation	AFF1	0.167	0.065	0.024	0.792	0.026	0.149	-0.031	0.094	0.063	0.096
	AFF2	0.100	0.125	-0.039	0.727	0.099	0.168	0.204	0.074	0.048	0.082
	AFF3	-0.102	0.131	-0.022	0.794	0.228	0.101	0.083	0.063	0.039	0.082
	AFF4	-0.173	0.014	0.121	0.802	0.157	0.127	0.118	-0.001	0.157	0.114
Innovativeness	INN1	0.075	0.177	0.090	0.165	0.751	0.124	0.107	0.050	0.160	0.070
	INN2	0.115	0.076	0.113	0.100	0.699	0.308	0.061	0.145	0.067	-0.011
	INN3	0.200	0.095	0.086	0.260	0.756	0.120	0.124	0.094	-0.052	0.134
Fairness	FAI1	0.084	0.095	0.039	0.196	0.158	0.770	0.121	0.056	0.148	0.155
	FAI2	-0.022	0.169	0.082	0.279	0.115	0.715	0.125	0.119	-0.008	0.166
	FAI3	0.052	0.101	0.034	0.137	0.267	0.706	0.003	-0.032	0.223	0.088
Attitude toward Knowledge Sharing	ATK1	0.106	0.212	0.019	0.173	0.004	0.129	0.707	0.108	0.062	0.199
	ATK2	0.026	0.095	0.105	0.138	0.080	0.013	0.809	-0.098	0.080	0.062
	ATK3	-0.102	0.250	0.113	0.051	0.048	0.093	0.695	0.116	0.190	0.205
	ATK4	-0.133	0.152	0.086	0.075	0.087	0.016	0.849	0.086	0.111	0.174
	ATK5	-0.049	0.118	0.154	0.013	0.106	0.062	0.784	0.171	0.044	0.191
Normative Belief	NOB1	0.009	0.283	0.163	0.082	0.052	-0.013	0.112	0.754	0.143	0.037
	NOB2	-0.064	-0.069	0.226	0.140	0.008	0.276	0.119	0.751	-0.028	0.210
	NOB3	0.020	0.010	0.114	0.045	0.225	-0.040	0.077	0.653	-0.030	0.266
Motivation to Comply	MTC1	0.057	0.121	0.261	0.202	0.280	0.098	0.125	-0.019	0.590	0.234
	MTC2	0.010	0.105	-0.074	-0.089	-0.039	0.260	0.242	0.139	0.778	0.038
	MTC3	-0.019	0.059	0.140	0.265	0.066	0.039	0.097	-0.057	0.674	0.148
Intention to Share Knowledge	IEK1	0.040	0.183	0.197	0.130	-0.032	0.203	0.204	0.125	-0.023	0.726
	IEK2	0.012	0.049	0.158	0.127	0.055	-0.015	0.204	0.050	0.032	0.803
	IIK1	-0.026	0.198	0.078	0.018	0.090	0.117	0.131	0.161	0.231	0.785
	IIK2	0.005	0.119	0.096	0.099	0.031	0.110	0.143	0.067	0.085	0.783
	IIK3	-0.047	0.217	0.221	0.072	0.107	0.078	0.129	0.143	0.092	0.804

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