THE EFFECT OF ORGANIZATIONAL CULTURE ON KNOWLEDGE SHARING INTENTIONS AMONG INFORMATION SYSTEM PROFESSIONALS

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Abstract: On knowledge management discipline, little empirical research has been carried out to verify the differences of knowledge sharing among individuals within different organizational settings. In the current study, theory of Competing Value Approach (CVA) and knowledge classification structures from existing literature are applied to conduct a conceptual framework to explore knowledge sharing intentions of different knowledge categories for information system professionals from firms that exhibit various strengths on distinct cultural dimensions. The hypothesized model is tested by Pearson correlation analysis and canonical analysis with data from 172 full time workers of various job titles engaged in system development and maintenance projects of different firms in Taiwan. Findings support the notion that knowledge sharing intentions of information system professionals under distinct cultural types are quite different. Evidences also show that, given the same organizational culture, the observed sharing intentions of various knowledge categories are of equal level.

1 INTRODUCTION

With the highly dependence on information technology for organizations, information systems (IS) professionals responsible to perform activities within system development life cycles are expected to pursue project success by effective acquirement and dissemination of knowledge among team members composed of technical specialists and user representatives (Nambisan and Wilemon, 2000). Even if an organization determined to outsource the whole system development activities, the firm should assign experienced IS employees to communicate both formally and informally with its contractors for the purpose of enhancing system usability and relationship maintenance (Lee, 2001). Therefore, if knowledge sharing practices among IS professionals were not seriously addressed, no matter what system implementation strategy used, the overall quality of the acquired system might questionable. As the consequences, organizations of the current century must exert all its strength to initiate and promote effective knowledge sharing environment for IS professionals and project members in order to gain system success.

Many preliminary researches have explored factors that may influence the knowledge sharing intentions among colleagues from various theoretical perspectives such as economic exchange, social exchange and social cognition (Bock and Kim, 2002). However, it is our assertion that knowledge sharing behaviors can not be made clear until cultural effects are taken into account. The widely accepted perspectives of theory of reasoned action (TRA) and succeeding improvement from theory of planned behavior (TPB) all emphasized that the behavioral intention of a person was not influenced only by her personal attitude toward the action, but also by cultural level of concerns such as norms, values and expectations (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980). In specific, TRA and TPB were able to be adopted to examine the knowledge sharing behaviors among organizational members, and from these theories, researchers inferred that factors that facilitate knowledge sharing behaviors were included in both individual and cultural levels of an organization (Bock and Kim, 2002).

Organizational culture is the shared values in a firm accumulated over time with the effort of its founders and succeeding colleagues, and these values are not able be changed in a short period of

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time once established (Pettigrew, 1979). Therefore, for organizations of specific cultural types, knowledge sharing would become a common way to deal with organizational affairs. On the contrary, if negative appraisals toward knowledge dissemination are prevailed in a firm, the knowledge sharing practices would never be accepted by its organizational members (Janz and Prasarnphanich, 2003). Base on the above inferences, the main purpose of this study is to understand the influence of organizational culture on knowledge sharing intentions among IS professionals. The rest of this study is organized as follows. First, the potential differences of knowledge sharing among various cultural types are explored by extending current understandings from literature review, followed by the formulation of research hypotheses. A filed survey will succeeded to examine and test the proposed hypotheses, and the discussions and conclusions derived from these findings will be made.

2 ORGANIZATIONAL CULTURE: THE COMPETINT VALUE PERSPECTIVE

The definitions of organizational culture are relatively complex. In order to lower the degree of abstraction and to fit the requirement of distinct needs, researchers were apt to apply unique ways to observe and classify organizational culture. Among many candidates, we consider CVA is a suitable perspective to understand the effects of organizational culture on knowledge sharing since CVA has its theoretical backgrounds in human information processing, a behavioral observation that focus on the various needs of information immediacy and certainty (Deal and Kennedy, 1984), and knowledge sharing is also an action of human information processing that may take these needs into account.

According to CVA, organizational culture can be classified by considering the relative importance of procedural flexibility as the vertical axis, and the degree of external orientation within organizational information processing as the horizontal axis (Quinn and McGrath, 1985). Four typical organizational cultural types were identified according to this classification framework as shown below. The ideological culture was characterized by pursuing innovation, taking adventures and requesting of growth for organization members who utilize their intuitions, insights, and values to make decisions to catch up with the migration of external environments. The consensual culture addressed the importance of internal cohesion and harmonious atmosphere toward reaching consensus by informal and flexible forms of participations for all organizational members. In the typical hierarchical culture, however, obedience was the only virtue. Each person was required to apply internal rules, codes or orders from upper levels to deal with organizational problems. The rational culture regarded goal achievements and competitiveness as the most essential elements for organizational success. Under the rational culture, members were asked to make effort in raising their operational efficiency and productivity to maximize organizational profits and their personal welfare.

3 KNOWLEDGE FRAMEWORK FOR IS PROFESSIONALS

Knowledge is a multi-facet concept in its nature (Nonaka, 1994). Elements such as facts, skills, cognitions and procedures may all contribute to some parts of organizational knowledge (Snyder, 1996). Therefore, to better understand the knowledge sharing behaviors of organizational members, a knowledge classification framework is required to distinct the sharing intention of a specific knowledge category from that of others. Numerous works categorised organizational knowledge using either the content attribute of know-that / know-how (Ryle, 1975), or the presentation format of explicit / tacit (Polanyi, 1966). In specific, know-that is the knowledge about beliefs, intuition and cognition of a person, while know-how represents the knowledge of physical or mental execution; implicit knowledge can not be stated or organized by words obviously, while explicit knowledge can be edited or explained by written language. Taking the above content attributes and presentation formats into account simultaneously, four typical types of organizational knowledge can be identified, namely, explicit know-that, tacit know-that, explicit know-how, and tacit know-how.

4 RESEARCH HYPOTHESES

Organizational culture is believed to have significant impacts on the behavior of employees since a firm's common value and attitude would ultimately dominate the formation of individual value, attitude and behavior (Steers and Porter, 1991). Therefore, if a common value of an organization is to share opinions with each other, the members will get used

to share their personal ideas in the long run (De Long and Fahey, 2000). The above concept was also supported by the results of a literature survey which revealed that the successful knowledge management practices and the advances of knowledge sharing activities were highly associated with their organizational culture (Alavi and Leidner, 2001).

Under ideological culture, employees pursue organizational success through innovations derived from insights and intuitions. Since ideologies, values and insights are highly individualized and can hardly be manipulated or explained, these personal belongings were often categorized as "tacit" rather than "explicit" (Snyder, 1996). Therefore, we infer that organizations of ideological culture are willing to encourage their employees to share all their personal tacit knowledge mutually.

[H1] The strength of a firm's ideological culture will positively influence the sharing intention of tacit know-that and tacit know-how knowledge for its IS professionals.

Consensual culture addresses the importance of group cohesion and harmonious atmosphere. Firms of consensual culture always make the final decisions by sharing and discussing all information and knowledge available from each participant for the purpose of achieving consensus (Storck and Hill, 2000). Thus, we hypothesize that the consensual culture will sustain an environment for members to exchange their personal ideas or feelings no matter what category the knowledge is belonging to.

[H2] The strength of a firm's consensual culture will positively influence the sharing intention of all four knowledge categories for its IS professionals.

Hierarchical culture implies a top-down management style in which only the persons on top of the pyramid have the authority to create and share knowledge, and followers should obey formal orders from their superiors without reservation. Since the hierarchical control mode is apt to ignore the existence of tacit knowledge and skills from basic levels, hierarchical firms request their employees to exchange explicit rather than tacit knowledge according to formalized rules (Nonaka and Takeuchi, 1995). Base on the above inference, we propose the following hypothesis:

[H3] The strength of a firm's hierarchical culture will positively influence the sharing intention of explicit know-that and explicit know-how knowledge for its IS professionals.

Rational culture regards goal-achieving as the only objective for firms. Since it address the value of competition and individualization, organization members tend to complete their tasks all by themselves without seeking support from others. Therefore, individuals under rational culture are not willing to share whatever they know to each other for the sake of sustaining their personal competitiveness, which may limit the diffusion and application of knowledge dramatically (Probst et al., 2000). The following hypothesis is derived.

[H4] The strength of a firm's rational culture will negatively influence the sharing intention of all four knowledge categories for its IS professionals.

5 MEASURES

Organizational culture was measured using questions from Cameron (1985). Rooted in CVA, the questionnaire determined the strength of each culture type for a firm by evaluating six cultural dimensions which include dominant characteristics, organizational leader, organizational glue, organizational climate, criteria of success and management style. Typical scenarios for all cultural type in each dimension were offered to determine the cultural similarity among an observed firm and four exemplary firms of distinct culture types.

Knowledge items required by IS professionals for each knowledge category were adopted from Zmud (1983). In its original form, thirty IS related knowledge items were classified into six categories: knowledge of organizational overview, organizational skills, target organizational unit, general IS concepts, technical skills and IS products. In order to fit know-that / know-how and explicit / tacit knowledge framework used in this study, the author and three independent coders separately classified these thirty items into four knowledge categories according to their contents and major presentation formats. For the purpose of objectivity, only knowledge items categorized into the same knowledge category by all coders (shown in Table 1) were retained for further use. The sharing intention of each retained knowledge item was measured by a 5-point Likert scale question which ranked the sharing willingness of respondents from strongly disagree to strongly agree.

Table 1: Knowledge items retained in this study

Knowledge categories	Items retained
Explicit know-that	Primary organizational functions
	Work unit objectives
	IS policies and plans
Tacit know-that	IS/IT for competitive advantage
	Fit between IS and organization
	IS/IT potential
	Critical success factors
	Work unit problems
	Environmental constraints
Explicit know-how	Use of office automation products
	Use/understand documentation
	IS evaluation and maintenance
	Use of operating systems
	Use of specific application systems
	Preparation of documentation
Tacit know-how	Model application
	Interpersonal communication
	Group dynamics
	Project management

6 DATA COLLECTION

Questionnaires were sent to project members of major IS providing companies in Taiwan whose contact information were available on companies' websites. A total of 1031 e-mail surveys were sent out in 2004 and with 172 returned for a response rate of 16.7%. Table 2 portraits the respondents' demographic dispersions. The distributions of these attributes were roughly consistent with the official statistics of IT related workers released by Institute for Information Industry in Taiwan.

Respondents also reported the strength of each culture type for their organizations. If counted on the base of the strongest culture type, 58 reported their organizational culture as the consensus culture, 20 reported as ideological culture, 68 as hierarchical culture, and 26 as rational culture. The dispersions reveal that our sampling firms are mainly equipped with consensus or hierarchical characters.

7 RESULTS

The Pearson correlation coefficients shown in Table 3 offered some preliminary evidences toward understanding the potential relationship between the strength of organizational cultures and the sharing intentions of each knowledge category. The correlation results revealed that the stronger the consensual culture, the higher level of sharing intention is for all four knowledge categories, therefore supporting H2. A rational culture was also found to be negatively correlated with the sharing intentions for all knowledge categories, supporting H4 as expected. However, the proposed relationship between ideological culture and sharing intentions of tacit knowledge was not supported. The relationship between hierarchical culture and sharing intentions of explicit knowledge was also untenable. Both H1 and H3 should be rejected accordingly.

A further analysis was conducted by applying canonical analysis to determine the potential causal effects between the linear combination of four cultures and the similar combination of four knowledge categories. The results shown in Figure 1 delineated that only one set of canonical correlation (with eigenvalue > 0.1) was found between organization cultures and knowledge categories. The explanation of this finding was that as the intensity of consensual culture strengthened or the intensity of rational culture weakened, the knowledge sharing intentions of all knowledge categories for IS professionals shall be enhanced accordingly, which is similar to the Pearson correlation results.

Table 2: Demographic dispersions of respondents

Attributes	Classifications	Number	Percentage (%)
Sex	Male	101	58.7
	Female	71	41.3
Education	Junior college	37	21.5
	University	119	69.2
	Graduate Study	16	9.3
Job title	Programmer	65	37.8
	Technical specialist	42	24.4
	System analyst	28	16.3
	End user consultant	15	8.7
	Others	22	12.8

Table 3 Results of Pearson correlation analysis

	Consen. Intensity	Ideolog. intensity	Hierarc. intensity	Ration. intensity
Explicit know-how	0.257**	0.015	0.089	-0.222**
Tacit know-how	0.280**	0.063	0.024	-0.196*
Explicit know-that	0.282**	0.020	0.017	-0.188*
Tacit know-that	0.264**	0.045	0.031	-0.202*

* Correlation is significant at the 0.05 level

** Correlation is significant at the 0.01 level

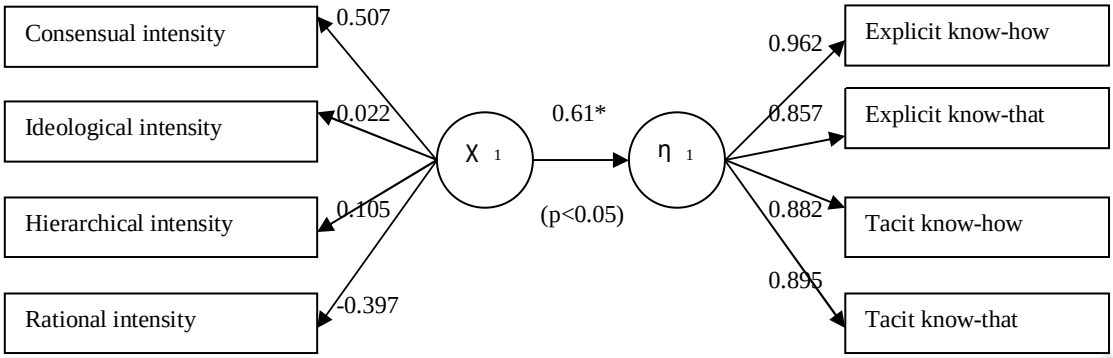

Figure 1: The results of canonical analysis

8 DISCUSSIONS AND CONCLUSIONS

Our findings confirmed that the strength of consensual culture would positively influence the knowledge sharing intention of all knowledge categories for IS professionals. This aspect is consistent with the notion that the knowledge oriented behaviors shall take place when there is full of common values among organizational members (De Long and Fahey, 2000). Therefore, it is suggested that good personal relationship is ought to be established and maintained within the organization for the sake of enhancing knowledge sharing intentions for IS professionals.

The strength of rational culture that addresses the value of individualization was found to be negatively influence the sharing intention of all knowledge categories for IS professionals. Researches suggested that in order to transfer knowledge to other individuals, organizations should inaugurate regular group discussions or community oriented exchange platforms to ensure the effectiveness of knowledge sharing activities (Devenport and Prusak, 1998). Organizations are also advised to adopt team-based rather than individual-based motivation systems to avoid the reservation of personal knowledge (Gupta and Govindarajan, 2000). Thus, for organizations that aimed at pursuing extensive knowledge sharing among IS professionals, effective ways must be carried out in advance to reduce the strength of rational culture within their firms.

The hypothesized effect of the strength of hierarchical culture on sharing intention of explicit knowledge was not supported. A possible explanation for the phenomenon was that the behavioral intention of subordinates in hierarchical culture depended heavily on the attitude of their leaders (Quinn, 1988), which implied that, under hierarchical culture, the knowledge sharing intention of IS professionals may also depended heavily on the opinions of chief executives. If organizational leaders did not recognized the sharing behaviors of explicit knowledge, although available in its natural settings, IS professionals should behaved comply with their superiors. Further studies are needed to examine the potential moderating effect from high-level in hierarchical culture.

Hypothesis related with ideological culture also gained little empirical support in this study. Since ideological firms innovated themselves merely through individual insights and intuitions, the main focus for their knowledge management activities might be allocated to knowledge creation rather than knowledge sharing. A recent survey found that the major missions of knowledge management for many technology oriented firms were enriching their knowledge seeking and knowledge constructing capabilities, which may often be completed by independent employees (Murray, 2001). To demonstrate the inferential rationality, the soundness of this interpretation should be carefully examined by further discussions.

Our findings showed that the knowledge sharing intention of IS professionals under various cultural types were quite different. With the above idea in mind, knowledge management practitioners should bring up unique ways to facilitate knowledge sharing activities for each distinct organizational culture type. However, since this study examined the organizational culture dimension merely using CVA, researches based on other cultural perspectives are necessary to broaden the current understanding of the overall effects of organization culture on knowledge sharing behavior for IS professionals.

The attempt toward understanding the relationship between knowledge sharing intentions and cultural elements is at its very beginning.

Further investigations might be carried out to re-examine our findings by enlarging sample sizes, improving response rate, or observing longitudinally. Future research opportunities also exist to explore and compare the knowledge sharing intentions of IS professionals under numerous countries or regions that withhold various value systems.

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REFERENCES

Alavi, M., and Leidner, D. (2001). Review: Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues. *MIS Quarterly*, (25)1, 107-137.

Ajzen, I. and Fishbein, M. (1980). *Understanding Attitudes and Predicting Social Behavior*, Prentice-Hall. Englewood Cliffs, N.J.

Bock, G..W. and Kim, Y. (2002). Breaking the Myths of Rewards: An Exploratory Study of Attitudes about Knowledge Sharing. *Information Resources Management Journal*, 15(2), 14-21.

Cameron, K.S. (1985). Cultural Congruence Strength and Type: Relationship to Effective, In E. Robert and Quinn. (eds.), *Beyond Rational Management*, 142-143.

Deal, T.E., and Kennedy, A. (1984). *Corporate Cultures*. Commonwealth.

De Long, D.W., and Fahey, L. (2000). Diagnosing Cultural Barriers to Knowledge Management, *Academy of Management Executive*, 14(4), 113-127.

Davenport, T. H., and Prusak, L. (1998). *Working Knowledge*, Harvard Business School Press. Boston.

Fishbein, M. and Ajzen, I. (1975). *Beliefs, Attitude, Intention and Behavior: An Introduction to Theory and Research.* Addison-Wesley.

Gupta, A. K, and Govindarajan, V. (2000). Knowledge Management's Social Dimension: Lessons from Nucor Steel, *Sloan Management Review*, 42(1), 71-80.

Janz, B.D., and Prasarnphanich, P. (2003). Understanding the Antecedent of Effective Knowledge Management: The Importance of a Knowledge-Centered Culture, *Decision Sciences*, 34(2), 351-384.

Lee, J. (2001). The Impact of Knowledge Sharing, Organizational Capability and Partnership Quality on IS Outsourcing Success, *Information and Management*, 38(5), 323-335.

Murray, J.Y. (2001). Strategic alliance-based global sourcing strategy for competitive advantage: A conceptual framework and research propositions, *Journal of International Marketing*, 9(4), 30-58.

Nambisan, S. and Wilemon, D. (2000). Software Development and New Product Development: Potentials for Cross-Domain Knowledge Sharing, *IEEE Transactions on Engineering Management*, 47(2), 211-220.

Nonaka, I. (1994). A Dynamic Theory of Organizational Knowledge Creation, *Organization Science*, 5(1), 14-37.

Nonaka, I. and Takeuchi, H., (1995). *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation.* Oxford University Press, New York.

Pettigrew, A.M. (1979). On Studying Organizational Cultures, *Administrative Science Quarterly*, 23(2), 570-581.

Polanyi, M. (1966). *The Tacit Dimension*. Anchor Doubleday Books, New York.

Probst, G., Raub, S., and Romhardt, K. (2000). *Managing Knowledge*. Wiley, New York.

Quinn, R.E. (1988). *Beyond Rational Management: Mastering the Paradoxes and Competing Demands of High Performance*. Jossey-Bass, San Francisco.

Quinn, R.E. and McGrath, M.R. (1985). The Transformation of Organizational Cultures: A Competing Value Perspective. In P.J. Forst, L.F. Morre, M.R. Louis, C.C. Lundberg, J. Martin (eds.), *Organizational Culture*. SAGE, Beverly Hills, CA.

Ryle, G. (1975). *The Concept of Mind*. Hutchinson & Co, London.

Storck, J., and Hill, P. A. (2000). Knowledge Diffusion through Strategic Communities, *Sloan Management Review*, 42(2), 63-74.

Snyder, W. M. (1996). *Organization Learning and Performance: An Exploration of the Linkages between Organization Learning, Knowledge and Performance*. Unpublished doctoral dissertation, University of Southern California.

Steers, R.M., and Porter, L.W., (1991). Motivation and Work Behavior, McGraw-Hill. New York, 5th edition.

Zmud, R.W. (1983). *Information Systems in Organizations*, Scott, Foresman and Company. Tucker, GA.