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## TACIT KNOWLEDGE, NONAKA AND TAKEUCHI SECI MODEL AND INFORMAL KNOWLEDGE PROCESSES

Siu Loon Hoe\*

**ABSTRACT.** The organizational behavior and knowledge management literature has devoted a lot attention on how structural knowledge processes enhance learning. There has been little emphasis on the informal knowledge processes and the construct remains undefined. The purpose of this paper is to highlight the importance of informal knowledge processes, propose a definition for these processes and link them to the socialization and internalization processes suggested by Nonaka and Takeuchi in the SECI model. The paper offers a fresh perspective on how informal knowledge processes in organizations help to enhance the organization's learning capability. It will enable scholars and managers to have a better understanding of how informal knowledge processes promote tacit knowledge.

### INTRODUCTION

The idea of knowledge as a competitive resource and that knowledge makes a difference in business is a widely accepted idea (Earl & Scott, 1999; Osterloh & Frey, 2000; Stata, 1989; Stewart, 1997). Goh (2002) mentioned that competitive advantage is achieved when market knowledge is applied in support of business objectives. Knowledge in this paper refers to the know-how, experience and insight that contribute to individuals and groups in taking action to improve an organization's products and services (Gorelick & Tantawy-Monsou, 2005).

Traditionally, the focus on capabilities development involved tangible assets. These tangible assets include physical facilities,

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plants and machinery. More recently, knowledge assets became widely recognized as the single most important source for competitive advantage. Knowledge assets are defined as intangible features that contribute to the delivery of products and services. These features are able to generate future economic benefits for organizations or individuals that control and use them (Blair & Wallman, 2001; Rodgers, 2003). According to Friz-enz (1997), knowledge assets can be classified into three different groups, namely, human, organizational and relational. Human knowledge assets include attitudes and abilities of employees, and their motivation and commitment to the organization. Organizational knowledge assets are the brands, copyrights and patents owned by an organization while relational knowledge assets consist of the knowledge of and acquaintance with customers, communities and competitors. Also, the tangible assets in an organization only represent a fraction of this knowledge base (Leonard-Barton, 1995; Nonaka & Takeuchi, 1995; Stewart, 2002). Many companies are fast becoming knowledge intensive rather than capital intensive (DeGeus, 1997).

While the Nonaka & Takeuchi (1995) SECI model on knowledge management presents a set of four core processes, namely, socialization, externalization, combination and internalization, it may be more appropriate to further delineate these processes in terms of structural and informal knowledge processes. The socialization and internalization processes, in particular, exhibit strong characteristics found in informal knowledge processes. The purpose of this paper is to highlight the importance of informal knowledge processes and provide a definition to this construct. As an illustration, these informal knowledge processes are linked to two of the core processes in the Nonaka and Takeuchi SECI model in order to better understand their characteristics.

The paper is organized into two parts. First, there is a review of the basic definition of knowledge and the fundamental concept of tacit knowledge. With this foundation, the idea of informal knowledge processes is discussed and illustrated through the socialization and internalization processes of the SECI model.

### DEFINITION OF KNOWLEDGE

The study of the theory of knowledge or epistemology has received a lot of interest since ancient times (Plato, 1996). In spite of

this, there is an on-going debate on the definition and meaning of 'knowledge'. There are many definitions of knowledge and the related view of data, information and wisdom. This section will first provide a review of these related terms.

Clarke and Rollo (2001) summarized some of the definitions of data, information, knowledge and wisdom from previous studies (Davenport & Prusak, 1998; Nonaka & Takeuchi, 1995). At the simplest level, data are collections of discrete facts that are presented in an objective way. Data are the actual characters and bits residing in a medium. By themselves, data do not provide any insight to the user since the data is without context or meaning. When data are processed, they become information. This involves the arrangement, categorization and analysis of data in putting them in context. Thus, information is data endowed with relevance and purpose to the user (Clarke & Rollo, 2001).

Most scholars agree that knowledge is a higher level of understanding than information (Davenport et al., 2001). Thus, information is often viewed as a kind of preliminary stage to knowledge where knowledge is often seen as information with specific properties (Lueg, 2001). When information is integrated with experience, intuition and judgment, information becomes knowledge. This is because the piece of information is now endowed with a context. Nonaka and Konno (1998) adapted the concept of 'ba' or shared space and applied it to the understanding of knowledge. 'Ba' is thought of as a context that harbors meaning. The context may be physical, virtual, mental or any combination of these. They proposed that all knowledge is embedded in 'ba' and knowledge that is separated from 'ba' turns into information. Christensen, Bierly and Kessler (2000) mentioned that the definition of knowledge is not neat or simple but noted that knowledge is closer to action than information.

Relating to the differences between knowledge and information, Nonaka and Takeuchi (1995) highlighted that, firstly, knowledge is about beliefs and commitment as it is a function of a particular perspective. Secondly, knowledge is about action, that is, knowledge achieves some end. Consequently, a distinction is made that knowledge is a more complex form of information.

Generally, data, information, knowledge and wisdom are seen as intermediate levels of understanding (Nonaka & Takeuchi, 1995; Standards Australia, 2001, p. 18). These intermediate levels progress at the simplest level from data to the more complex level of wisdom. Davenport and Prusak (1998) suggested that just as information is derived from data, knowledge is derived from information. At the highest level of understanding is wisdom. Wisdom is described as the ability to best use knowledge for achieving desired goals. It relates to the ability to effectively choose and apply the appropriate knowledge in a given situation (Bierly, Kessler & Christensen, 2000).

While there are many definitions of knowledge and types of knowledge within an organization, the focus of this paper is on common knowledge that employees learn from doing organizational work (Dixon, 2000). In this context, knowledge is defined as the know-how, experience and insight that contribute to individuals and groups in taking action to improve an organization's products and services (Gorelick & Tantawy-Monsou, 2005). This form of knowledge which tends to be context-specific is generally referred to as tacit knowledge.

Knowledge management experts have identified many different ways that knowledge can be classified. Chua (2002) discussed three dimensions for classifying knowledge. They are private-public, component-architectural and individual-collective knowledge. Firstly, private knowledge refers to the knowledge uniquely possessed by the organization and includes the organization's unique practices, processes, documentation or business strategies. On the other hand, public knowledge consists of knowledge not proprietary to any particular organization and includes industry and occupational best practices. Secondly, component knowledge relates to a sub-routine or discrete aspect of an organization's operation such as its resources, skills and technical systems. On the other end, architectural knowledge refers to organization-wide routines and schema for coordinating the various parts of the organization. Lastly, individual knowledge is concerned with knowledge harbored by an individual in an organization while collective knowledge is held commonly by a group of organization members that includes routines, practices and relative organizational consensus on past experiences, goals and missions.

Lundvall and Johnson (1994) proposed distinctions between four different kinds of knowledge, namely, know-what, know-why, know-how and know-who. They referred know-what as the knowledge about 'facts' which is close to what is normally called information since it can be broken down into parts. Know-why is referred to the scientific knowledge of principles and laws in the human mind. Know-how refers to the capability to do something. It can be generalized as skills. Lastly, know-who refers to a mix of different kinds of skills, particularly social skills. It involves information about who knows what, and who knows how to do what. How these different kinds of knowledge can be learnt will depend on whether it is explicit or tacit.

### TACIT KNOWLEDGE AND SECI MODEL

A widely accepted classification of knowledge is the taxonomy proposed by Polanyi (1966) (Hedlund, 1994; Nonaka & Konno, 1998). He viewed knowledge as either tacit or explicit. Tacit knowledge is knowledge that guides one's behavior but is not readily available for introspection by oneself or others (Von Krogh, Ichijo & Nonaka, 2000). This could include gut feeling, intuition and rule-of-thumb. Tacit knowledge is personal knowledge embedded in individual experience and involves intangible factors such as person belief, perspective and values (Nonaka & Takeuchi, 1995). Buckman (1998) mentioned that tacit knowledge is tucked away in employees' heads and is the greatest knowledge base in any organization. Becerra-Fernandez and Sabherwal (2001) explained that tacit knowledge includes insights, intuitions and hunches that are difficult to express and formalize. Tacit knowledge tends to be contextual. Therefore, very little can really be codified, stored or transmitted through information technology. Most tacit knowledge would reside with people rather than other physical media (Cross et al., 2001).

Tacit knowledge is acquired implicitly without intention to learn or awareness of having learned. Tacit knowledge can only be acquired through individual processes such as direct experience, reflection and internalization shared through highly interactive conversation and storytelling (Tua, 2000). A unique characteristic of this type of knowledge is that it is difficult to articulate and replicate from one person to another. Even the person who possesses the tacit knowledge may have difficulties in describing it to others. Thus, tacit

knowledge could only be understood and applied by those possessing it.

According to Nonaka and Takeuchi (1995), knowledge creation is a spiraling process of interactions between tacit and explicit knowledge. The interactions between the tacit and explicit knowledge lead to the creation of new knowledge. Nonaka and Takeuchi acknowledged Polanyi's work as their source for the concept of tacit knowledge and have developed its more practical side. In this context, Nonaka and Takeuchi proposed that tacit knowledge also includes cognitive skills such as beliefs, intuition and mental models as well as technical skills such as know-how. It is important to relate tacit knowledge to Nonaka and Takeuchi's SECI model of knowledge creation because the model places tacit knowledge at its heart and suggests that organizations have to find ways of communicating and capturing tacit knowledge. The SECI model is the interplay of four knowledge processes, namely, socialization, externalization, combination and internalization in converting tacit knowledge to explicit knowledge and vice versa.

To further understand tacit knowledge, Nonaka and Takeuchi (1995) identified two dimensions of tacit knowledge. The dimensions are technical and cognitive. They mentioned the former encompasses mainly skills and craft. The latter consists of beliefs and mental models that shape the way one sees the environment (Gore & Gore, 1999). Both form of tacit knowledge are stored in people's heads.

Explicit knowledge, on the other hand, is mostly stored in a mechanical or technological way in different media. It is also shared formally in the form of manuals and specifications. Explicit knowledge can be expressed in numbers or words. For example, explicit knowledge can be found in databases, videos and manuals for dissemination (Zack, 1999). In general, explicit knowledge is more precisely and formally articulated than tacit knowledge. Anderson (1985) has described several types of knowledge that can be made explicit. They are declarative, procedural and casual knowledge. Declarative knowledge is about describing and understanding concepts and descriptors that lay the foundation for effective communication in organizations. Procedural knowledge is about how something is performed that lays the foundation for efficiently coordinated action in organizations. This type of knowledge is a result of the employees' direct experience (Orlikowski, 2002). Lastly, causal

knowledge is about why something occurs that enables organizations to coordinate strategy for achieving goals.

It is important to note that prior to the development of the SECI model, the existing paradigm of knowledge creation was an efficient processing of information in an 'input-process-output cycle' in organizations. This view represented a rather passive and static view of the organization. The SECI model is important because Nonaka and Takeuchi introduced the concept of tacit knowledge into knowledge creation. The SECI contributes to the understanding of knowledge creation by highlighting the interplay of both tacit and explicit knowledge. The SECI model challenged the old paradigm by offering a dynamic view of knowledge creation and the duality of tacit and explicit knowledge.

### INFORMAL KNOWLEDGE PROCESSES

Organizations have both structural and informal knowledge processes that exist alongside one another. Structural knowledge processes are the planned, organized and systematic way of collecting and sharing knowledge. On the other hand, informal knowledge processes are the spontaneous and voluntary way of collecting and sharing knowledge. For example, managers often obtain knowledge through both structural activities like formal meetings and reports. In addition, some managers obtain knowledge through informal activities like hallway talk with colleagues (Maltz & Kohli, 1996). These structural and informal processes generate the knowledge that facilitates organizational learning (Akgun, Lynn & Byrne, 2003; Argote, McEvily & Reagans, 2003; Holsapple & Jones, 2004; Huber, 1991; Young, 1998).

To better understand informal knowledge processes, there is a need to appreciate the relationship between explicit and tacit knowledge, and the processes leading to their conversion. The model by Nonaka and Takeuchi (1995) stressed the importance of repeated conversion of explicit knowledge to tacit knowledge and vice versa to generate new knowledge. The model highlights the mutual complementary nature of tacit and explicit knowledge in the four-component SECI model. The components consist of four core processes, namely, socialization, externalization, combination and internalization. The socialization and internalization processes, in particular, exhibit strong characteristics found in informal processes.



Firstly, socialization is the “process of sharing experiences and thereby creating tacit knowledge such as shared mental models and technical skills” (Nonaka & Takeuchi, 1995). Hall and Andriani (2003) suggested that socialization is the process of communicating and enhancing tacit knowledge. A key feature of socialization is that tacit knowledge is passed on between people and not between impersonal media (Argote & Ingram, 2000). Secondly, externalization is the “process of articulating tacit knowledge into explicit concepts and metaphors are frequently used to facilitate the process” (Nonaka & Takeuchi, 1995). Thirdly, combination consists of the activities of systemizing concepts and exploiting knowledge into a knowledge system through different media. Explicit knowledge is passed on during combination. Lastly, internalization is the “process of embodying explicit knowledge into tacit knowledge” (Nonaka & Takeuchi, 1995). It is closely related to “learning by doing”. It is the process of internalizing explicit knowledge relevant to oneself to become tacit knowledge. This involves the conversion of explicit knowledge to tacit knowledge. Therefore, tacit and explicit knowledge are not totally separate but mutually complementary entities. Both tacit and explicit knowledge interact continuously between the four processes of socialization, externalization, combination and internalization. This can be viewed as a form of knowledge spiral.

Therefore, the Nonaka and Takeuchi (1995) SECI model highlights organizational learning as a social process. It also shows the need to convert different types of knowledge in a cyclical way to create competitive advantage. Essentially, organizational learning involves a recurring set of activities to change one type of knowledge, for example, tacit knowledge to explicit knowledge and vice versa. However, some processes like externalization and combination favor explicit knowledge while others like socialization and internalization favor tacit knowledge. Those processes that favor tacit knowledge tend to share the characteristics of informal knowledge processes, that is, they are spontaneous and voluntary in nature.

The Nonaka and Takeuchi (1995) model suggests that certain organizational actions do not favor tacit knowledge and these are generally the structural knowledge processes of externalization and combination. Furthermore, many modern organizations, which rely extensively on the use information technology, run the risk of relegating tacit knowledge to the background. This is because

information technology is limited to the transfer of explicit knowledge (Johannessen, Olaisen & Olsen, 2001). On the other hand, informal knowledge processes better facilitate tacit knowledge. According to Swap et al. (2001), much organizational knowledge is transferred informally through socialization and internalization processes. This is particularly true for knowledge with rich tacit dimensions. Nonaka and Takeuchi (1995) suggested that internalization is closely related to organizational learning. This is because internalization is the process in which learning is achieved by doing. For example, when individuals read the explicit knowledge found in the policy manuals, they internalize and apply what they have read in their daily work (Sabherwal & Becerra-Fernandez, 2003). This would further enrich their tacit knowledge through the transfer of explicit knowledge.

Tacit knowledge is a significant aspect of the organizational learning. Also, the informal knowledge processes promote tacit knowledge. Consequently, this suggests that informal knowledge processes are at least as important as structural knowledge processes (Swap et al., 2001). Lahti, Darr and Krebs (2002) demonstrated that informal knowledge transfer influences an organization's performance. This provides an indication of the effectiveness of informal knowledge processes in organizational learning. Therefore, informal knowledge processes like socialization and internalization are important for effective organizational learning.

### CONCLUSION

This paper contributes to the existing knowledge management literature by introducing and defining the informal knowledge processes and linking them to two of the core processes proposed by Nonaka and Takeuchi in their SECI model. While Nonaka and Takeuchi (1995) have identified the socialization and internalization processes as two key patterns that convert tacit knowledge to explicit knowledge and vice versa, there is a need to further understand and define these informal knowledge processes. The paper offers a fresh view on informal knowledge processes in organizations in order to enhance the organization's knowledge management capability. Thus, while informal knowledge processes are not new to the organizational learning literature, this paper contributes to the body of knowledge by defining the characteristics of informal knowledge processes and linking them to tacit knowledge. Scholars and managers would be

able to have a better understanding of how such informal knowledge processes promote tacit knowledge.

#### REFERENCES

- Akgun, A.E., Lynn, G.S. & Byrne, J.C. (2003). "Organizational Learning: A Socio-Cognitive Framework." *Human Relations*, 56 (7): 839-868.
- Anderson, J.R. (1985). *Cognitive Psychology and its Implications*. New York: Freeman.
- Argote, L. & Ingram, P. (2000). "Knowledge Transfer: A Basis for Competitive Advantage in Firms." *Organizational Behavior and Human Decision Processes*, 82 (1): 150-169.
- Argote, L., McEvily, B. & Reagans, R. (2003). "Managing Knowledge in Organizations: An Integrative Framework and Review of Emerging Themes." *Management Science*, 49 (4): 571-582.
- Becerra-Fernandez, I. & Sabherwal, R. (2001). "Organizational Knowledge Management: A Contingency Perspective." *Journal of Management Information Systems*, 18 (1): 23-55.
- Bierly, P.E. III, Kessler, E.H. & Christensen, E.W. (2000). "Organizational Learning, Knowledge, and Wisdom." *Journal of Organizational Change Management*, 13 (6): 595-618.
- Blair, M.M. & Wallman, S.M.H. (2001). *Unseen Wealth*. Washington DC: Brookings Institution Press.
- Buckman, R.H. (1998). "Knowledge Sharing at Buckman Labs." *The Journal of Business Strategy*, 19 (1): 11-15.
- Christensen, E.W., Bierly, P.E. & Kessler, E.H. (2000). "Organizational Wisdom as a Strategic Weapon." In J.S. Bronico (Ed.), *Strategies And Tactics In Business Management For The New Millennium* (pp. 13-37). Lewiston, NY: Mellen.
- Chua, A. (2002). "Taxonomy of Organizational Knowledge." *Singapore Management Review*, 24 (2): 69-76.
- Clarke, T. & Rollo, C. (2001). "Corporate Initiatives in Knowledge Management." *Education and Training*, 43 (4/5): 206-214.

- Cross, R., Parker, A., Prusak, L. & Borgatti, S.P. (2001). Knowing what we know: Supporting knowledge creation and sharing in social networks. *Organizational Dynamics*, 30 (2): 100-120.
- Davenport, T. & Prusak, L. (1998). *Working Knowledge: How Organizations Manage What They Know*. Boston, MA: Harvard Business School Press.
- Davenport, T. & Volpel, S.C. (2001). "The Rise of Knowledge toward Attention Management." *Journal of Knowledge Management*, 5 (3): 212-221.
- DeGeus, A. (1997). *The Living Company: Habits For Survival In A Turbulent Business Environment*. Boston, MA: Harvard Business School Press.
- Dixon, N. (2000). *Common Knowledge: How Companies Thrive by Sharing What They Know*. Boston, MA: Harvard Business School Press.
- Earl, M.J. & Scott, L.A. (1999). "What Is a Chief Knowledge Officer?" *Sloan Management Review*, 40 (2): 28-38.
- Frizenz, J. (1997). *The Eight Practices of Exceptional Companies*. NY: Anacom Books.
- Goh, S.C. (2002). "Managing Effective Knowledge Transfer: An Integrative Framework and Some Practice Implications." *Journal of Knowledge Management*, 6 (1): 22-30.
- Gore, C. & Gore, E. (1999). "Knowledge Management: The Way Forward." *Total Quality Management*, 10 (4/5): 554-60.
- Gorelick, C. & Tantawy-Monsou, B. (2005). "For Performance through Learning, Knowledge Management Is the Critical Practice." *The Learning Organization*, 12 (2): 125-139.
- Hall, R. & Andriani, P. (2003). "Managing Knowledge Associated With Innovation." *Journal of Business Research*, 56 (2): 145-152.
- Hedlund, G. (1994). "A Model of Knowledge Management and the N-Form Corporation." *Strategic Management Journal, Special Issue*, 15: 73-90.
- Holsapple, C.W. & Jones, K. (2004). « Exploring Primary Activities of the Knowledge Chain." *Knowledge and Process Management*, 11 (3): 155-174.

- Huber, G.P. (1991). "Organizational Learning: The Contributing Processes and the Literature." *Organization Science*, 2 (1): 88-115.
- Johannessen, J., Olaisen, J. & Olsen, B. (2001). "Mismanagement of Tacit Knowledge: The Importance of Tacit Knowledge, the Danger of Information Technology, and What to Do about It." *International Journal of Information Management*, 21 (1): 3-20
- Lahti, R.K., Darr, E.D. & Krebs, V.E. (2002). "Developing the Productivity of a Dynamic Workforce: The Impact of Informal Knowledge Transfer." *Journal of Organizational Excellence*, 21 (2): 13-21.
- Leonard-Barton, D. (1995). *Wellsprings Of Knowledge: Building And Sustaining the Sources of Innovation*. Boston, MA: Harvard Business School Press.
- Lueg, C. (2001). "Information, Knowledge, and Networked Minds." *Journal of Knowledge Management*, 5 (2): 151-160.
- Lundvall, B.A. & Johnson, B. (1994). "The Learning Economy." *Journal of Industry Studies*, 1 (2): 23-42.
- Maltz, E. & Kohli, A.K. (1996). "Market Intelligence Dissemination across Functional Boundaries." *Journal of Marketing Research*, 33 (1): 47-56.
- Nonaka, I. & Konno, N. (1998). "The Concept of 'Ba': Building a Foundation for Knowledge Creation." *California Management Review*, 40 (3): 40-54.
- Nonaka, I. & Takeuchi, H. (1995). *The Knowledge-Creating Company*. New York: Oxford University Press.
- Orlikowski, W.J. (2002). "Knowing in Practice: Enacting a Collective Capability in Distributed Organizing." *Organization Science*, 13 (3): 249-273.
- Osterloh, M. & Frey, B.S. (2000). "Motivation, Knowledge Transfer, and Organizational Forms." *Organization Science*, 11 (5): 538-550.
- Plato. (1996). *The Collected Dialogues* (7<sup>th</sup> Printing). Princeton, NJ: Bollingen.
- Polanyi, M. (1966). *The Tacit Dimension*. London, UK: Routledge.

- Rodgers, W. (2003). "Measurement and Reporting of Knowledge-Based Assets." *Journal of Intellectual Capital*, 4 (2): 181-190.
- Sabherwal, R. & Becerra-Fernandez, I. (2003). "An Empirical Study of the Effect of Knowledge Management Processes at Individual, Group, and Organizational Levels." *Decision Sciences*, 34 (2): 225-260.
- Standards Australia. (2001). *Knowledge Management: A Framework for Succeeding in the Knowledge Economy*. Sydney, Australia: Author.
- Stata, R. (1989). "Organizational Learning: The Key to Management Innovation." *Sloan Management Review*, 30 (3): 63 -74.
- Stewart, T.A. (1997). *Intellectual Capital: The New Wealth of Organizations*. New York: Doubleday-Currency.
- Stewart, T.A. (2002). *From the Wealth of Knowledge: Intellectual Capital and the Twenty First Century Organization*. New York: Doubleday-Currency.
- Swap, W., Leonard, D., Shields, M. & Abrams, L. (2001). "Using Mentoring and Storytelling to Transfer Knowledge in the Workplace." *Journal of Management Information Systems*, 18 (1): 95-114.
- Tua, H.H. (2000). "Difficulties in Diffusion of Tacit Knowledge in Organizations." *Journal of Intellectual Capital*, 1 (4): 357-365.
- Von Krogh, G., Ichijo, K. & Nonaka, I. (2000). *Enabling Knowledge Creation: How to Unlock the Mystery of Tacit Knowledge and Release the Power of Innovation*. New York: Oxford University Press.
- Young, S.L. (1998). "Where Silenced Voices Speak Out: The Hidden Power of Informal Communication Networks." *Women and Language*, 21 (2): 21-30.
- Zack, M.H. (1999). "Managing Codified Knowledge." *Sloan Management Review*, 40 (4): 45-58.