

ORGANIZATIONAL KNOWLEDGE CREATION IN THE PERSPECTIVE OF SUSTAINABLE DEVELOPMENT

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Abstract:

In the context of a sustainable economy, knowledge has gained more and more ground, becoming an invaluable resource, the competence to generate and apply new knowledge giving the company a source of competitive advantage. Thus, the understanding and managing of knowledge dynamics become vital for the company. The main purpose of this article is to critically analyze the state-of-the-art in the field of knowledge creation, and to present the main characteristics of the most significant models designed to reflect organizational knowledge creation processes. The paper presents the impressive work done by Nonaka and his co-workers and the complementary contributions brought by the Spanish team coordinated by Gregorio Martin de Castro.

Keywords: knowledge creation, knowledge dynamics, SECI, sustainable development

JEL Classification: D₈₃, Q₀₁

1. Introduction

Classical economic theories and models contain variables derived from the tangible environment, focusing on labour, capital, and materials. Knowledge has been considered only as an external factor able to influence the production functions. Whereas, now, knowledge must be incorporated in these functions as a key factor, this being a difficult task due to its intangibility nature. The competence to generate and apply new organizational knowledge is considered as one of the main sources of the competitive advantage of a company (Leonard- Barton, D., 1990, pp. 111-125; Nonaka, T., 1994, pp. 14-37; Zollo, M., Winter, S.G., 2002, pp. 339-351). If knowledge is a source of competitive advantage, then, understanding and managing knowledge dynamics become vital for the firm in the context of a sustainable development economy (Candea, D., Sunhilde, M., 2008, pp. 1-126). Investments in knowledge will lead to higher

productivities and efficiencies but the correlations are not any more linear, since knowledge processing is by its own nature highly nonlinear. Thus, one of the main barriers in understanding the intellectual capital is exactly this nonlinearity of its intangible components, i.e. knowledge, intelligence and values (Andriesen, D., 2006, pp. 93-110; Bratianu, C., 2008, pp. 103-107, 2009a, pp. 52-56).

Furthermore, in the perspective of a sustainable economy (Candea, R., Candea, D., 2008, pp. 237-263) we can no longer regard humans as replaceable parts of a machine, but as beings who differ from each other due to their different visions of life and work. In this view humans are purposeful beings who will act to realize their visions and ideals (Nonaka, I., Toyama, R., Konno, N., 2000, pp. 5-34; Nonaka, I., Toyama, R., 2007, pp. 13-32). In the organizational knowledge-creating process, individuals interact with each other going beyond their own boundaries and, as a result, change themselves, others, the organization, and the environment.

In Western epistemology, knowledge has been defined as “*justified true belief*” (Nonaka, I., Takeuchi, H., 1995). This formulation gives the impression that knowledge is something objective, absolute, context-free. However, this may not be necessary true since it is humans who hold and justify beliefs and knowledge cannot exist without human subjectivity. “Truth” differs if we are to take into consideration the values of the person that holds that truth and the context in which we look at it. On the other hand, the Eastern epistemology regards knowledge as “*a meaningful set of information that constitutes a justified true belief and/or an embodied technical skill.*” Thus, the knowledge creation is defined as “*a dynamic human process of justifying a personal belief toward the truth and/or embodying a technical skill through practice*” (Nonaka, I., Takeuchi, H., 1995). The Japanese thinkers tend to consider knowledge as primarily “tacit,” personal, context-specific, and not so easy to communicate to others. Westerners, on the other hand, tend to view knowledge as “explicit,” formal, objective, and not so difficult to process with computers. But these two types of knowledge are not totally separate, they are mutually complementary entities. They interact one with each other and even may transform one into the other, in given specific conditions.

The knowledge-creating theory developed especially by the Japanese thinkers is based on the assumption that knowledge inherently includes human values and ideals. The knowledge creation process cannot be described only as a normative causal model because human values and ideals are subjective and the concept of truth depends on values, ideals, and contexts. Unlike traditional views of knowledge, the knowledge-creating theory does not treat knowledge as

something absolute and infallible. In such a case, it is hard to create new knowledge or achieve the universality of knowledge (Nonaka, I., Toyama, R., 2007, pp. 13-32).

The main purpose of this article is to critically analyze the state-of-the-art in the field of knowledge creation and to present the main characteristics of the most significant models designed to reflect organizational knowledge dynamics.

2. Knowledge dynamics models

The best known knowledge dynamics model has been developed by the Japanese author Nonaka (1991, pp. 96-104; 1994, pp. 14-37; 1995, 2001, pp. 487-497; 2007, pp. 13-32). According to Nonaka (1994, pp. 14-37), knowledge embraces a continual dialogue between explicit and tacit knowledge which drives the creation of new concepts and ideas that are formed in the minds of individuals (Yang, C.W., Fang, S.C., Lin, J.L., 2010, pp. 231-238). From philosophical point of view, the model focuses on the epistemological and ontological dimensions of knowledge. The epistemological dimension describes the transformation of the tacit knowledge into explicit knowledge, and the reverse action, the transformation of the explicit knowledge into tacit knowledge. The ontological dimension, on the other hand, describes the transformation of individual knowledge into group knowledge, and then, the transformation of the group knowledge into organizational knowledge, with possible reverse actions from the organization toward group and individual. The driving force of this knowledge dynamics model is the knowledge vision which gives a direction to knowledge creation. *“It also gives the firm direction with respect to the knowledge to be created beyond the firms’ existing capabilities, and therefore determines how the firm evolves in the long run”* (Nonaka, I., Toyama, R., 2007, p.18). The knowledge vision is intrinsically related to the value system of the firm, which defines what truth, goodness and beauty are for the whole organization.

The epistemological dimension is exploited in a four stage process known as SECI: Socialization – Externalization – Combination – Internalization (Figure no. 1). *Socialization* is considered by Nonaka and his co-workers the most important knowledge transfer of this cycle since it involves the hidden and most difficult to articulate part of all knowledge created at individual level, tacit knowledge (Polanyi, M., 1983). Tacit knowledge is generated by direct experience of each individual and it goes to the non-rational mind. As Nonaka I. and Takeuchi H. (1995, p. 8) emphasize, *“Tacit knowledge is highly personal and hard to formalize, making it difficult to communicate or to share with others. Subjective insights, intuitions, and hunches fall*

into this category of knowledge. Furthermore, tacit knowledge is deeply rooted in an individual's action and experience, as well as in the ideals, values, or emotions he or she embraces". Tacit knowledge contains basically two components: a technical component which reflects the know-how of professional activities, and a cognitive component which reflects mental models, beliefs and perceptions as a result of many performed similar actions. Tacit knowledge embraces also highly subjective insights, intuitions and hunches. Socialization is regarded as an opportunity for participating individuals to share their experiences and to learn through direct exchange of tacit knowledge.

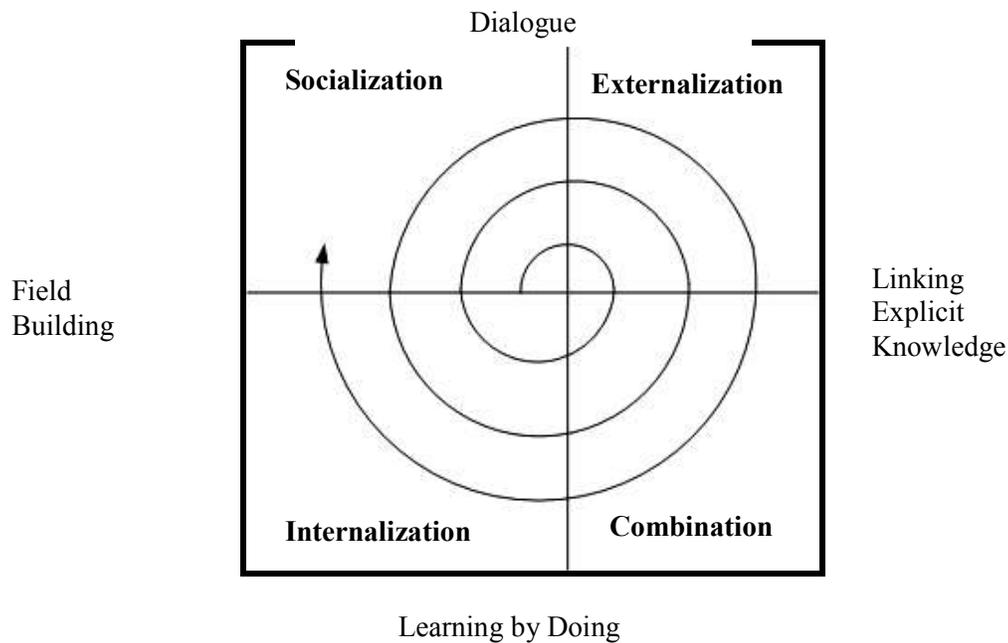


Figure no. 1. SECI model and the knowledge spiral

Source: Nonaka I., Takeuchi, H., 1995

In order to prove efficient, socialization must go beyond the everyday dialogues and exchange of neutral phrases. It must stimulate deeper layers of experiences and stored knowledge. Actually, only individuals with higher levels of understanding and knowledge richness can transfer tacit knowledge to the others. At the organizational level this idea is used by promoting the best practice. The identification and the transfer of best practices is one of the

methods used in operational management for accelerating the adaptation process of the firm. However, this method is not fully efficient due to the difficulty of exchanging tacit knowledge characterized by the internal stickiness (Szulansky, G., 1996, pp. 27-43; Szulansky, G., Jensen, R.J., 2004, pp. 347-363), and, also, because of a series of individual and organizational factors that slow down or inhibit the knowledge transfer during socialization (Bratianu, C., 2008, pp. 103-107; Bratianu, C., 2009a, pp. 52-56; Bratianu, C., Orzea, I., 2010, pp. 107-114).

Externalization is an individual process through which the tacit knowledge is transformed into explicit knowledge. Once the knowledge becomes explicit it can be shared, disseminated and transferred to others through verbal and nonverbal languages. “*Of the four modes of knowledge conversion, externalization is the key to knowledge creation because it creates new, explicit concepts from tacit knowledge*” (Nonaka, I., Toyama, R., Byosiere, Ph., 2001, p. 495). However, externalization is a highly motivational process and the success of knowledge conversion depends on the capacity of using efficiently metaphors, analogies and cognitive models. Metaphors play an important role in developing new concepts and theories by making use of known ones (Andriessen, D., 2006, pp. 93-110; Bratianu, C., Andriessen, D., 2008, pp. 75-82). The efficiency of the externalization process can be increased by education and a solid motivation. Motivation is important in fuelling the necessary efforts to be done. Individuals frequently ask themselves why to make the effort of transforming tacit knowledge into explicit knowledge, loosing this way a good deal of ownership over their knowledge. Finally, we should emphasize the fact that while tacit knowledge is very fuzzy and very hard to evaluate, explicit knowledge is well defined and can be evaluated. Thus, externalization is a process of reducing the entropy of the total knowledge, by structuring and integrated new created knowledge into the existing explicit knowledge structures.

Combination is a process of creating new network structures of explicit knowledge by integrating pieces of explicit knowledge into new integral structures. Unlike externalization that is a purely individual process, combination is basically a social process based on the communicable property of explicit knowledge. Combination takes place in a specific organizational context, and thus it is intrinsically related to the concept of *Ba*. However, we would like to emphasize the fact that knowledge transfer can be done only from a higher level of knowing toward a lower level of knowing. For example, if an individual would like to disseminate news which is already known by the audience, there is no knowledge transfer.

Internalization, on the other hand, is an individual process. According to Nonaka, I., Toyama, R., Byosiere, Ph. (2001, p. 497), “*Internalization is the process of embodying explicit*

knowledge as tacit knowledge. It is closely related to learning-by-doing. Through internalization, knowledge that is created is shared throughout an organization. Internalized knowledge is used to broaden, extend, and reframe organizational members' tacit knowledge". Knowledge is internalized through an integration process in the already known knowledge. If necessary, this integration will re-structure the old knowledge. This new internalized knowledge increases the level of individual understanding and his absorptive capacity. Also, it increases the chances of individual participation in a socialization process, and in sharing the tacit knowledge contributing in this way to the upward development of the knowledge spiral. Internalization is closing the circle of knowledge creation, a process which is developing through continuous social interaction.

Organizational knowledge creation is a continuous process moving upward on the knowledge spiral, where the horizontal field of forces is generated by the epistemological nature of the individual learning process, and the vertical field of forces is generated by the ontological nature of the organization. Knowledge creation originates within the individual employee and is developing through social interaction from individuals to teams, and then from teams to the whole organization.

Although Nonaka's model of conversion has been described as one of the most influential model in the knowledge management literature, it has numerous drawbacks. Nahapiet and Ghoshal (1998, cited in Yang, C.W., Fang, S.C., Lin, J.L., 2010, pp. 231-238) argue that within Nonaka's model all knowledge processes have a tacit dimension rather than using different terms for those forms of knowledge conversion involving tacit or explicit knowledge. Moreover, while the model specifies four distinct knowledge creation modes, in reality they are reiterative and overlapping (Bratianu, C., 2010, pp. 115-120). Another drawback of the model comes from the fact that Eastern perspective on knowledge is different than the Western perspective on knowledge (Andriessen, D., Boom, M., 2007, pp. 641-652, Harsh, O.K., 2009, pp. 1-10, Nonaka, I., Takeuchi, H., 1995). While in the Western perspective the emphasis is put on explicit knowledge, in the Eastern perspective, the emphasis is put on tacit knowledge. The Japanese way of thinking is rather fuzzy in order to create an interaction liberty, and to stimulate the social contribution to the knowledge upgrading. In the Western managerial thinking, communications should be very precise in order to eliminate this liberty of different interpretations coming from social interaction. Being very strict on meanings, the Western management reduces systematically the knowledge spiral described by the SECI model. Also, the SECI model is making use of the old dyad: tacit knowledge – explicit knowledge. In economics and

management a new dyad is used more frequently: cognitive knowledge – emotional knowledge (Bratianu, C., 2009b, pp. 607-612; Hill, D., 2008).

In order to provide a complete description of every process of knowledge creation and transfer Martin de Castro, Saez, Novas Lopez, Galindo Dorado (2007) propose an improvement in the Nonaka's model of knowledge creation. The authors (Castro, G.M., Saez, P.L., Novas Lopez, J.E., Dorado, R.G., 2007) propose placing the epistemological and ontological dimensions of knowledge at every level within the organization, creating, thus, the EO-SECI model (E – epistemological, O – ontological, S – socialization, E – externalization, C – combination, I – internalization). The main characteristics of the model are the consideration of the SECI knowledge creation cycle at all ontological levels within the organization, the treatment of knowledge leaps from one level to another, consenting knowledge to pass from one level to another within crossing intermediate ontological levels and conceding a two-way path to processes which link different levels. Practically, this new perspective is considering that in each of these four ontological domains there is a SECI cycle, which is coupled then with the neighboring domains. This new perspective leads to the idea of an organization where each level becomes an entity with learning and knowledge creating capabilities (Castro, G.M., Saez, P.L., Novas Lopez, J.E., Dorado, R.G., 2007).

3. Conclusion

Knowledge is defined as an integration of subjectivity and objectivity able to reflect a part of the reality. Within the context of a knowledge based economy knowledge becomes one the most valuable resources in the business environment, and its' creation becomes the nucleus issue of a sustainable economy, being tacitly related to competitive advantage. The purpose of this paper was to critically present the knowledge dynamics model in order to try to explain the organizational knowledge creation, in a larger perspective of both tacit and explicit knowledge.

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