Chapter 1.29
Knowledge Management Software

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INTRODUCTION

Due to the vagueness of the concept of knowledge, the software market for knowledge management (KM) seems to be quite confusing. Technology vendors are developing different implementations of the KM concepts in their software products. Because of the variety and quantity of KM tools available on the market, a typology may be a valuable aid to organizations that are searching and evaluating KM software suitable to their needs.

The objective of this article is to present a typology that links software features to knowledge processes described in the SECI (socialization, externalization, combination, internalization) model developed by Nonaka and Takeuchi (1995). KM solutions such as intranet systems, content-management systems (CMSs), groupware, work flow, artificial intelligence- (AI) based systems, business intelligence (BI), knowledge-map systems, innovation support, competitive intelligence (CI) tools, and knowledge portals are discussed in terms of their potential contributions to the processes of socialization, externalization, internalization, and combination.

BACKGROUND

KM intends to be an area of research and practice that deepens the understanding of knowledge processes in organizations and develops procedures and instruments to support the transformation of knowledge into economic and social progress. In fact, different aspects of these issues have been studied for decades in many different disciplines as R&D (research and development) and innovation management, information systems management, information science, computer science, library studies, innovation economics, science and technology social studies, epistemology, and many others. Maybe one of the most important contributions of the KM concept is the creation

of a space (in academy and in the business world) where these many groups and points of view may discuss and work together.

KM studies analyze people, organizations, processes, and technology. Although technology is not the main component of KM, it would be naive to implement KM without considering any technological support. According to Stewart (1998), the intellectual capital of an organization has three dimensions: human capital, structural capital, and client capital. Structural capital is defined as the organizational systems and structures that store and transfer knowledge, and it includes the quality and extent of information systems, databases, patents, written procedures, and business documents. From this perspective, KM software should be considered as an important component of the structural capital of organizations.

This article assumes that IT has a supporting role, not the main role, in a KM program. According to Terra (2000), KM has seven dimensions: strategy, culture and organizational values, organizational structure, human resource skills, IT, measuring, and environmental learning. Therefore, IT is only one of the dimensions of KM, and technology alone does not transform information into knowledge. The KM ultimate challenge is to increase the chances of innovation through knowledge creation. The role of IT in this context is to extend the human capacity of knowledge creation through the speed, memory extension, and communication facilities of technology.

Nonaka and Takeuchi (1995) have analyzed the knowledge-creation process of Japanese organizations and developed a framework (SECI model). This model relates the knowledge creation of firms to four knowledge conversion processes.

- **Socialization (S):** the process of sharing tacit knowledge through shared experiences. As apprentices learn the craft of their masses through observation, imitation, and practice, so do employees of a firm learn new skills through on-the-job training.

- **Externalization (E):** where tacit knowledge is articulated into explicit knowledge with the help of metaphors and analogies. Externalization is triggered by dialog and collective reflection.

- **Combination (C):** the process of converting explicit knowledge into more systematic sets of explicit knowledge.

- **Internalization (I):** where explicit knowledge is converted into tacit knowledge. This usually occurs when explicit knowledge is put into practice. It is also related to shared mental models and work practices.

These interactions build a continuous spiral from the individual to organizational level. Ponzi (2004) used bibliometric techniques to analyze 2,240 source records obtained from scientific citation indexes. His research revealed that Nonaka and Takeuchi (1995) is the top most cited reference in the KM area and the most influential work. Due to this popularity, we have decided to use the SECI model to help individuals who already know this framework but need a better understanding of the KM software market.

There are some related works concerning KM software categorization: Barnes (2001), Bellaver and Lusa (2002), Davenport and Prusak (1998), Fernandez, Gonzalez, and Sabherwal (2004), Maier (2004), Malhotra (2000), Rollet (2003), Ruggles (1997), and Tiwana (2002). None of these academic works establish a direct relationship between the KM systems and the SECI model. The authors usually prefer to use their own KM framework to analyze the link between knowledge processes and KM systems. There is also another type of proposal for categorization, that is, Microsoft (2000), which has been developed by vendors and is very IT based. It is not the objective of this article to discuss the differences and the similarities among these proposals, but they have been considered in the development of the typology presented here.

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