

Knowledge Creation in Online Communities

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INTRODUCTION

The emergence of online communities has brought a profound impact on human interaction and methods of information exchange in society. More than one-third of all U.S. Internet users have turned to mass, large-scale communication systems such as e-mail, mailing lists, instant messaging, chat rooms, Web stores, customer service sites, and threaded discussion systems such as USENET (Preece, 2002). Reflecting this prominent phenomenon, there have been a considerable number of studies focused on online communities and communications. This article focuses on the factors and dynamics of the knowledge creation process in online communities, relying on Nonaka's Socialization-Externalization-Combination-Internalization (SECI) Model (1994). Based on that framework, this article discusses the factors that affect knowledge creation and sharing in online communities.

The rest of this article is organized as follows. The characteristics of online communities are discussed in the "Background" section. The section titled "Dynamics of Knowledge Creation and Sharing in Online Communities" reviews the existing concepts and the SECI model of knowledge creation, and extends that model to include the online community context. We further discuss the effects of important factors on knowledge creation and sharing in online communities. The section "Future Trends" suggests further research opportunities in the area. The final section summarizes and concludes the article.

BACKGROUND

Definition and Components

The online community—otherwise known as the "virtual community" or the "cyber community"—has provided efficient and comprehensive ways of communication (Andrews, 2002). It has been proposed that this new form

of community is not subject to the same constraints as traditional social structures (Butler, 2001) due to its unique characteristics.

Online communities can be defined as "groups of people who communicate and interact with each other via electronic media" (Romn, Pliskin, & Clarke, 1997). Online communities possess several unique characteristics that offer opportunities for knowledge creation and sharing activities. An online community provides participants with an opportunity to engage in *many-to-many communication*. This allows access to an unlimited number of counterparts, avoiding limitations embedded in face-to-face community contexts (Butler, 2001). In addition, online communities offer *asynchronous communication opportunities* to those who want to reflect, compose, and review correspondence at their own convenience. Asynchronous communication refers to the timing of interaction engagement (e.g., response), without regard to physical constraints such as geographical distance and physical time to deliver information. This kind of asynchronous communication is not an opportunity in a conventional face-to-face community setting (Bieber et al., 2002; Preece, 2002).

An online community creates a unique environment where some of the common interaction methods in the face-to-face communication are eliminated, or replaced with substitutes. In online communities, social presence cues represented by verbal and visual recognition might be eliminated, and *anonymity* takes the place of such cues (Sia, Tan, & Wei, 2002). Anonymity may encourage people to be more open to sharing their feelings and opinions and freeing them from social pressure to follow group norms. In a similar context, Siegel, Dubrovsky, and Kiesler (1986) found that a computer-mediated communication (CMC) lacking communication cues leads to a more equalized participation level among participants than a CMC with high social presence (Siegel, Dubrovsky, & Kiesler, 1986). The anonymity of online communities, hence, results in an increase of membership size. Anonymity leads to increased benefits for community members and positive

effects on members' willingness to participate in knowledge creation and sharing with more novel and valid arguments.

DYNAMICS OF KNOWLEDGE CREATION AND SHARING IN ONLINE COMMUNITIES

Knowledge Creation in Online Communities

In order to understand the phenomenon of knowledge creation and sharing in online communities, we rely on Nonaka's pioneering framework of knowledge creation (Nonaka, 1994). Nonaka suggests two dimensions of knowledge; explicit and tacit. *Tacit knowledge* is highly personal and hard to formalize, making it difficult to communicate or share with others, whereas *explicit knowledge* can be expressed in words and numbers, and shared in the form of data, formulae, specifications, and other "explicit" forms of information such that can be readily transmitted between individuals formally and systematically (Nonaka & Konno, 1998). From the combination of these two dimensions, Nonaka proposed four modes of knowledge conversion, *socialization*, *externalization*, *internalization*, and *combination*, and formulated the process of knowledge creation as shifts among these four modes in light of the interactions among organizational members with regard to their levels of knowledge created through such processes (Bieber et al., 2002; Nonaka, 1994; Nonaka & Konno, 1998).

Socialization (from Tacit to Tacit Knowledge)

Socialization involves the sharing of tacit knowledge between individuals. Due to the nature of tacit knowledge, socialization is carried out through "joint activities" among members of an organization, such as working or living in the same environment, rather than through the media of verbal or written expression of knowledge (Nonaka & Konno, 1998). Socialization is an initial stage of knowledge creation in the conventional, offline context, in which tacit knowledge is shared among members. In the online community, however, socialization hardly takes place due to: (1) the anonymity of members and (2) a verbal or written medium as the fundamental communication tool. Both verbal and written media are suitable for explicit knowledge but not for tacit knowledge. In online communities, the advantages of socialization can be substituted by an immediate online accessibility that would be facili-

tated by anonymity and many-to-many communication characteristics of an online community.

Externalization (from Tacit to Explicit Knowledge)

Externalization is the transformation of tacit knowledge into a form that is comprehensible by others, and at the same time exchangeable with them. (Nonaka & Konno, 1998) Externalization, therefore, involves the process of articulation of shared tacit knowledge in socialization mode, wherein a piece of "shared" tacit knowledge is converted into a piece of "shared" explicit knowledge. This "shared" explicit knowledge is then used as a building block for synthesizing more complex knowledge through the next mode in sequence (i.e., "combination mode").

Externalization is the most prominent mode of knowledge creation and sharing in an online community context. It is the initiating phase in an online context. This is because most knowledge creation and sharing initially take place by either articulating a need for certain specific knowledge, or by converting personal tacit knowledge into communicable explicit knowledge as responses to those needs.

Combination (from Explicit to Explicit Knowledge)

Combination involves creating "newer" explicit knowledge from "new" explicit knowledge generated in externalization mode by reconfiguring existing information through sorting, adding, re-categorizing, and re-contextualizing knowledge (Nonaka, 1994). In other words, combination mode is the stage where explicit knowledge created in the previous externalization mode is systemized, and thus, generates more complex sets of explicit knowledge.

Combination takes place in an online community in the same way as in a conventional physical community. Exchanged explicit knowledge from the previous externalization mode is sorted, added, re-categorized, and re-contextualized through the process of arguing and counter-arguing along the threads of knowledge creation in an online community context.

Internalization (from Explicit to Tacit Knowledge)

Internalization is the process of converting newly created explicit knowledge into tacit knowledge. It requires an individual to identify which organizational knowledge is

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