Knowledge Exchange in Networks of Practice

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INTRODUCTION

The concept of a community of practice is emerging as an essential building block of the knowledge economy. A community of practice consists of a relatively tightly knit group of members who know each other, work together face to face, and continually negotiate, communicate, and coordinate with each other directly. The demands of direct communication and coordination limit the size of the community, enhance the formation of strong interpersonal ties, and create strong norms of direct reciprocity between members (Brown & Duguid, 2000). These communities develop through the mutual engagement of individuals as they participate in shared work practices, supporting the exchange of ideas between people, which results in learning and innovation within the community (Brown & Duguid, 2000). However, typically not all of an organization's relevant knowledge resides within its formal boundaries or within its communities of practice. To remain competitive, organizations need to ensure that new knowledge found in the external environment is integrated with knowledge that is found within the firm (Cohen & Levinthal, 1990). Organizations must rely on linkages to outside organizations and individuals to acquire knowledge, especially in dynamic fields where innovation results from inter-organizational knowledge exchange and learning (Cohen & Levinthal, 1990).

BACKGROUND

Current research has focused on the role of communities of practice for encouraging knowledge exchange and innovation *within* organizations; however, we know much less about the role that members of communities of practice play in creating linkages to external knowledge sources. Previous research has found that organizational members may simultaneously be members of a community of practice as well as members of broader occupational communities (Van Maanen & Barley, 1984). These individuals perform the dual roles of generating local knowledge within an organizational community of practice while providing linkages to knowledge and innovations outside of the organization. These inter-organizational networks have been referred to as networks of practice. Networks of practice are social structures linking similar individuals across organizations who are engaged in a shared practice, but who do not necessarily know one another (Brown & Duguid, 2000). Although individuals connected through a network of practice may never meet one another face-to-face, they are capable of sharing a great deal of knowledge and may play a vital role in a firm's ability to acquire new knowledge.

While the participation of individuals in networks of practice is not a new phenomenon, the ability to access these networks has increased due to recent advances in information and communication technologies. Previous efforts to interact with others outside an organization's legal boundaries were often fruitless since they could be time-consuming or cumbersome, and individuals may not even have known whom to contact or how to find a relevant person. Furthermore, if management did not provide the resources to attend external conferences or other events, finding other like-minded individuals with whom to discuss work-related problems often proved difficult. However, communication technologies, such as cell phones, e-mail, IRC, chat rooms, bulletin boards, and so forth, have reduced the costs of informal inter-organizational communication. As a result, individuals may now easily

access and discuss their work tasks with others outside their organization. These informal interactions are valued and sustained over time because the sharing of knowledge is an important aspect of being a member of a technological community or network of practice (Bouty, 2000).

Sharing knowledge across external organizational boundaries poses significant challenges to organizations attempting to manage their knowledge resources (Pickering & King, 1995). Through external sources, individuals gain access to knowledge not available locally and can interact informally, free from the constraints of hierarchy and local rules. However, accessing knowledge from external sources usually involves a high degree of knowledge trading and reciprocity. In order to receive help, individuals must be willing to give advice and know-how as well, some of which company management may consider proprietary (von Hippel, 1987). Of special interest to management is that individuals generally participate in networks of practice based on their own personal biases and preferences for others as opposed to what the formal organization dictates, and as a result, they may be exchanging knowledge with others who are working for direct competitors (Schrader, 1991). This makes the study of networks of practice of prime interest for researchers and practitioners.

PREVIOUS RESEARCH RELATED TO NETWORKS OF PRACTICE

Networks of practice are not a new phenomenon. They have existed for hundreds of years and have played an important role in the diffusion of knowledge through society. For example, the well-known term, invisible colleges, dates back to the 1640s when a group of 10 men who were well-educated within one field would meet informally in the taverns of London. These meetings later developed in 1660 into the Royal Society, the oldest scientific society in Great Britain (Price, 1963; Tuire & Erno, 2001). While there is considerable previous research on inter-organizational informal networks under a variety of names—such as scientific communities (Knorr-Cetina, 1981; Polanyi, 1962), co-citation networks (Usdiken & Pasadeos, 1995), invisible colleges (Crane, 1972), epistemic communities (Haas, 1992; Holzner & Marx, 1979), thought-collectives (Fleck, 1935), paradigms (Kuhn, 1962), and occupational communities (Van Maanen & Barley, 1984)—a review of this literature reveals that research that explicitly focuses on knowledge sharing is quite limited. Below we present the relevant research and empirical studies that we found in our review. This research can be divided into two categories: (1) studies from the perspective of scientific communities and (2) studies from the perspective of high-technology firms.

Scientific Communities

Research on scientific communities suggests that knowledge sharing occurs between members as they engage in debate and discussion of each other's ideas and results, and through collaboration on joint research projects (Crane, 1972). Due to the universal nature of knowledge, shared language, and values within the scientific community, individuals can communicate relatively easily with one another (Tushman & Katz, 1980; Van Maanen & Barley, 1984). Thus, knowledge and innovations spread quickly across organizational, national, and cultural boundaries through these informal relationships. In many cases, these informal networks are more valuable for sharing knowledge than more formal channels, such as publications, since the results of failed experiments are rarely published, and learning about these can prevent their duplication.

In scientific communities, the central goals and values of the members are generally developed and spread throughout the network (Hagstrom, 1965). Strong norms that are well defined and socially imposed, such as reciprocity in knowledge sharing, respect for individuals' intellectual property rights, and honesty in research, facilitate knowledge exchange (Bouty, 2000; Liebeskind, Oliver, Zucker & Brewer, 1996). Trustworthy behavior and norms are enforced since the level of participation in the community is jointly determined by the community's members. Individuals who fail to follow the norms and implicit code of conduct can be excluded from participating in valuable exchanges with others (e.g., participation in research teams with leading researchers, access to the latest research findings,