

## Organizational Knowledge Network through Community of Practice

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**Abstract**—As the amount of critical information in companies continues to burgeon and employees' knowledge is heralded as an organization's key competitive advantage, knowledge management has become a compelling workplace topic of discussion. Communities of practice have recently been recognized as effective means for organizations to manage their knowledge. In order to determine how virtual communities of practice serve as knowledge management vehicles, the authors of this paper conducted a study on virtual communities of practice within twelve large, international companies by interviewing virtual community of practice builders and leaders within these organizations. This paper reveals the study's findings. It outlines specific ways that organizations can benefit from sponsoring virtual communities of practice. It also identifies factors that community builders and leaders can influence to ensure a VCoP's success as a knowledge management vehicle

**Keywords**—communities of practice, organizational, knowledge networks

### 1 Introduction

In our current age where information and knowledge are recognized as key ingredients for success and competitive advantage (Goldwassar, 2001), employees' knowledge, skills, and ideas are often considered to be companies' most valuable assets (Schwen, Kalman, Hara, & Kisling, 1998; Stewart, 1997). As the pressure to manage knowledge has become more and more pronounced, companies are undertaking major initiatives to protect and preserve it (Wenger, 1998). Accordingly, much literature has been dedicated to knowledge management (Blunt, 2001; Davenport & Prusak, 1998; Hamel & Prahalad, 1994; Kelly, 1998; Schwen et al., 1998; Sharp, 1997; Pfeffer & Sutton, 2000; Wenger & Snyder, 2000).

Proponents of knowledge management primarily recommend two ways of capturing and managing an organization's knowledge (Hansen, Nohria, & Tierney, 2001; Schwen et al., 1998). One recommended way to manage knowledge is to codify, index, and warehouse the information (Davenport & Prusak, 1997; Davenport & Prusak, 1998; Nonaka & Takeuchi, 1995; Schwen et al., 1998). This method is known as the codification means of managing knowledge (Hansen et al., 2001). Another recommended way to manage knowledge is to have the people who generate, refine, share, distribute, and use the knowledge actively manage it (Brown & Gray, 1995; Davenport & Prusak, 1998; Pfeffer & Sutton, 2000; Wenger, 2000). This method is known as the personalization means of managing knowledge (Hansen et al., 2001). A number of individuals who promote actively managing knowledge via people recommend using informal workplace learning networks, like communities of practice as knowledge management vehicles (Masterson, 2002; Pfeffer & Sutton, 2000).

This paper describes and discusses the findings of a study that reveals specific ways that virtual communities of practice can benefit individuals and organizations by helping them manage their knowledge more efficiently. To place the research in context, communities of practice are first introduced and discussed as knowledge management vehicles. An account of the research methodology follows, along with a general description of the study findings. The findings are then discussed in detail in terms of gains that individuals and organizations realize from participating in

and sponsoring VCoPs. The paper concludes with suggestions of how this research contributes to the field.

Communities of practice (CoPs) are comprised of members who communicate one with another to generate and share knowledge and expertise. They function as an interdependent network over an extended period of time, with the shared goal of furthering their ‘practice’ or doing their work better (Wenger, 1998). Many CoPs operate virtually because community members live and work around the globe, relying on various technological means to communicate with one another. These CoPs are often called virtual communities of practice (VCoPs). Existing research on communities of practice indicates that they have been found to help employees acculturate themselves into an organization (Chao, 2001; Gregory, 1993) develop a work-associated identity (Hara, 2000; Yi, 1999), teach them skills to get their work done more efficiently (Brown & Gray, 1995; Sharp, 1997), motivate them to do their work (Barab & Duffy, 2000; Bradsher & Hagan, 1995), and improve their individual job performance (Allen, 2003).

However, literature relating the individual and organizational impact of CoPs to knowledge management is limited. Wenger and Snyder (2000) reported that CoPs have helped several organizations improve their overall performance, enhance their communication structure, and support their goals. However, beyond a few individual case studies and Wenger and Snyder’s case study synthesis, little research focuses on the ways that CoPs facilitate knowledge management within organizations. In order to learn more about the ways that CoPs, and particularly VCoPs, help organizations and individual VCoP members manage their knowledge, a study was conducted on VCoPs within large corporations, government organizations, and educational institutions.

## 2 Method

The research team utilized interviews as the primary research data source because they are a key means of gathering qualitative case study data (Stake, 1995; Yin, 1994). They used a survey as a secondary research data source. The researchers collected the study data in two phases. They interviewed VCoP builders and leaders in phase one. During phase two, the researchers collected data from VCoP participants via a web-based survey. Prior to starting each phase, the researchers pilot tested and validated the data collection instruments with a small group of selected potential participants to ensure that the collected data would be reliable and valid.

The research participants involved in phase one consisted of twenty-five builders and leaders of virtual communities of practice from thirteen organizations. These organizations were primarily large, global companies who provide a wide range of products and services, such as financial services, microprocessor chips, technology services, training, health care services, consumer products, and insurance. The interviewees were carefully screened before they were interviewed to ensure that the virtual communities of practice they lead or built adhered to the theory and practices of community of practices. Once the VCoPs’ legitimacy was established, formal interviews were conducted via 60-90 minute telephone conversations. These interviews were recorded and later transcribed. The interviews addressed all aspects of VCoPs in order to gain a holistic understanding of their utilization. Some interview questions focused around discovering why VCoPs exist within organizations, what kind of “work” they do, and how they get started. Other questions attempted to ascertain how VCoPs impact the flow of data, information, and knowledge throughout their organizations. For example, interviewees were asked to identify and explain how the communities of practice served as forums to create and disseminate knowledge throughout their organizations.

During the second phase, the research team used the data gathered in phase one to create a web-based survey that was distributed via e-mail to participants of VCoPs in forty organizations. Approximately 150 virtual community of practice members responded to the web-based survey. The survey respondents worked for financial institutions, microprocessor chip manufacturers, technology services companies, training providers, health care providers, consumer product developers and distributors, insurance providers, and various other corporations. The survey questions focused around discovering why participants join and participate in VCoPs, what factors contribute to a VCoP’s success or failure, what learning medium participants prefer for various types of learning and information exchange, and how learning in VCoPs compares to learning via more formal training methods. The web-based survey software automatically captured the participants’ responses.

### 3 Findings

In general, the findings indicate that individuals and organizations can receive substantial knowledge management-related benefits from participating in and sponsoring VCoPs. The interviews with VCoP builders and leaders and survey responses uncovered a wide range of explicit and tacit knowledge about virtual communities of practice. The interviewees articulated how the VCoPs actually perform in applied contexts and explained the benefits they provide to their members and to the organizations that sponsor them. The survey data revealed ways that members believe VCoPs can significantly help individuals learn, manage their knowledge, and perform their jobs better.

#### 3.1 Ways that VCoPs Benefit Individual Members

During the course of the study, the data provided both by VCoP builders and participants suggest that VCoPs benefit members by helping them do their jobs better, support their learning process, and extend or share their knowledge with one another. In their interview responses, builders of various virtual communities explained how VCoPs support their members' learning processes. For example, one VCoP builder stated:

*[VCoPs] form because that's how people actually learn. That's how they share information, share resources... ask questions, get answers to those questions, and so forth. This is how people really do work and we in the training world, since that is where I'm coming from, we often look from an educational training perspective that most learning goes on in the classroom, but the reality is obviously that it doesn't. Most of it goes on in the workplace... most of the real critical learning goes on in the workplace.*

In general, the study data suggest that VCoPs help employees learn by situating learning in the workplace, providing just-in-time and context-specific solutions to problems, and increasing employee interaction.

#### VCoPs Situate Learning in the Workplace

Recent research shows that employees often learn more in the workplace than they do in formal training environments because they fail to transfer and implement formal training into their jobs (Gilbert, 1978; Mager, 1992; Sorohan, 1993; Stolovitch & Keeps, 1999). VCoPs are valuable on-the-job learning environments because they are situated in employees' immediate work setting. One VCoP builder stated that "a community of practice is a better vessel even to do training [than formal training environments] because it's done within the situation of the work [they're] doing."

#### VCoPs Provide Just-in-time Solutions to Problems

VCoPs also provide a context where individual members gain access to people and resources that can help them solve their problems by viewing their problem from multiple perspectives and generating numerous problem-solving ideas. In other words, VCoPs provide a way for members to discover solutions to problems when they are most needed – just in time and in their own unique context. This significantly increases employees' performance capabilities. As part of the web-based survey, VCoP members were asked to identify the benefits they personally gain from participating in virtual communities. In response to this question, 99% of participant responded that "job skills and knowledge" were the most important benefits. Approximately 84% of participants also indicated that VCoPs provide "excellent problem solving resources." The percentages of these responses clearly suggest that people join and participate in VCoPs to "gain knowledge and skills" and to "access resources" that will empower them to make better decisions.

#### VCoPs Increase Employee Interaction

VCoPs also benefit individual members because the group structure of VCoPs allows members to share information and engage in learning activities with peers. The increased peer interaction then leads to an increase in the members' knowledge retention and stronger relationships across the organization. This is particularly true when VCoPs involve people from across the organization, around the world, and different job descriptions and specializations. Because of these variations, the

input and connections made by VCoP members unite employees and help them gain a sense of purpose and awareness that their individual efforts contribute to organization-wide strategies. In this way, community participation and interaction reduces both hierarchical and geographical boundaries and increases employee unification. In a related survey question, VCoP participants selected their top three reasons for participating in virtual communities. Participants selected their reasons from a variety of responses related to relationship building, productivity, status, and motives. In response to this question, the participants indicated that developing “professional relationships with other community members” is their top reason for participating in VCoPs. This response specifically relates to knowledge management because developing professional relationships with other VCoP members is a key step in transferring knowledge among members. Also, when members exchange information and aid one another in solving problems, the overall productivity of the community increases. This increase in job-performance implies that employees are learning how to do their jobs better. The benefits of situating learning in the workplace, providing just-in-time and context-specific solutions to problems, and increasing employee interaction were reinforced by a final question from the webbased survey, which asked VCoP members to identify whether VCoPs, web-based/computer-based training, instructor-led training, or mentor/apprentice learning environments best help them accomplish certain aspects of their jobs. In response to this survey question, VCoP members indicated that participating in VCoPs helps them do the following six specified job aspects better:

- Providing for an efficient idea exchange
- Generating a broad perspective on solving problems
- Providing greater access to experts
- Increasing members’ knowledge
- Increasing members’ motivation to learn
- Effectively helping others learn

Additionally, VCoPs ranked second in conjunction with “providing a more direct solution to a problem” and “impacting people’s attitude about their jobs.” These responses suggest that VCoP members view VCoPs as a learning environment that helps them manage their knowledge and better perform on the job.

### **3.2 Ways that VCoPs Benefit Organizations**

Organizations also gain key knowledge management-related benefits from supporting virtual communities of practice. As previously indicated, knowledge management initiatives revolve around moving data, information, and knowledge effectively throughout an organization. The general goal is to decrease the communication barriers that exist in nearly every organization between individuals due to divisions, levels within the organization, and physical locations. In their interviews, all of the virtual community of practice builders and leaders stated that VCoPs improve their organization’s knowledge management initiatives via either direct or indirect means. They indicated that virtual communities of practice facilitate a greater flow of information across organizations by breaking down many of the existing barriers. They also indicated that VCoPs increase the networking and communication opportunities available to VCoP members across organizations by providing increased interaction between organizational units where communication was previously impossible, increasing exchanges between management and employees, extending discussions that occur in face-to-face meetings, and creating a written repository of best practices that VCoP members have ongoing access to. VCoPs also appear to increase the informal training that occurs within the organization, foster innovation, and instigate cost savings. Each of these benefits is elaborated upon below.

#### **VCoPs Increase Interaction Among the Best Minds**

Before VCoPs existed, employees that spanned geographic borders or time zones were limited in their ability to effectively share data, information, and knowledge with one another. Virtual communities of practice overcome time and physical boundary limitations. Thus, they grant community members access to the best and brightest human resources throughout an organization, no matter what business unit or country they reside in. One community builder explained this benefit

when he stated, “a virtual community of practice expands the quality of the skill base that we’re able to draw from... it helps us get the best quality people... by not being constrained by physical location.”

By granting open access to the knowledge and expertise of a collective whole, VCoPs increase their members’ power and ability to function effectively and efficiently. For example, VCoP members often help individuals solve problems that they couldn’t solve on their own in a relatively short period of time. By posing a problem to VCoP members around the globe, these individuals can get a variety of contextualized solutions to their exact problem or recommendations based on similar problems that other VCoP participants have experienced very quickly. One VCoP builder emphasized the problem-solving benefit of VCoPs in the following statement:

*There is no time barrier, no geographic barrier, no culture barrier keeping you from solving your problem.... If you are in the middle of Kalimantan, or in the middle of the Borneo Islands, you have the company’s [virtual community members] and with that, you have the support of everywhere in the world helping you resolve your problem.*

### **VCoPs Increase Communication between Employees and Management**

Another way that VCoPs boost an organization’s data, information, and knowledge flow is increasing the communication between management and employees. VCoPs do this by providing a means for employees to safely voice opinions and concerns and introducing a channel through which management can solicit individual employee input and feedback. The exchange both directions helps to break down the hierarchies that separate management from front line employees. For example, many community builders indicated that individual VCoP members who hesitate to voice their opinion, share their ideas, and help create new processes on their own will engage in these activities within their virtual communities. The results of these exchanges can be shared directly with members of the company’s management if they are VCoP members. If not, the VCoP members are able to discuss the issue(s) raised among themselves, and then pass their collective, and usually improved opinions, ideas, and recommendations on to company management from the collective community membership instead of a single individual. In that situation, VCoP members’ feedback and recommendations often have more credence with management because it is collective, rather than feedback from a single individual. In the same manner that VCoPs provide members with a safe vehicle to communicate with management, VCoPs provide managers with a non-invasive mechanism to inform employees of new developments, influence policy and solicit feedback. In her interview, one VCoP builder indicated that her management actively uses VCoPs to gather input from employees in remote locations, especially when they are building new programs that will impact those employees. She said that the VCoPs provide an easy way to get feedback on new programs or policies from people across their organization instead of only receiving input from employees in the corporate office as they did in the past. In addition to facilitating the creation of better policies and programs, VCoPs inadvertently increase employee buy-because they have opportunities to voice their opinion about those policies and programs. Additionally, virtual communities of practice establish a forum for company management and employees to collectively establish standards across geographic and culture boundaries.

### **VCoPs Extend Communication Between Face-to-Face Meetings**

VCoPs also increase the information flow between employees by extending communication that occurs in face-to-face meetings. Members of VCoPs who meet physically on a regular basis often use the virtual component of their communities to interact with one another between these meetings. As an example, one VCoP leader said that the virtual communication channel between members of his virtual community allows them to follow up on issues and stay abreast of concerns facing their organization, divisions, or product lines when they are not physically present. It also gives community members the chance to jointly work on unresolved issues and action items assigned during face-to-face meetings before the next meeting takes place. For example, one VCoP builder commented that the addition of a virtual component to a co-located community of practice greatly increased communication between community members because they were able to discuss items and follow up on tasks that they had previously forgotten between face-to-face meetings. This made both the face-to-face meetings and the period of time between those meetings more productive.



### **VCoPs Codify Best Practices and Solutions to Problems**

Another positive VCoP outcome related to knowledge management is the manner in which the information is captured. Since most of the communication and information exchange originating in virtual communities of practice occurs electronically, the questions, solutions, and best practices exchanged can be captured, organized, and archived for reference at a later date, in addition to being shared among community members immediately. This practice positively impacts an organization's knowledge management initiative from both the codification and personalization knowledge management perspectives introduced at the beginning of this paper. Through VCoPs, information is shared between people in relation to a specific context; thus it is personalized. Additionally, because it is digitally captured, it is also codified so that others can benefit from the exchange in the future. One example of such a beneficial exchange occurred in a VCoP hosted by a multi-national insurance provider. In this instance when individuals in a Canadian office said, "Boy we've got a problem with..." members of the VCoP were able to say, "Oh, the Midwest office has already figured it out and they've already got the solution implemented. Talk to them and look at the information in the community archives to see what they did." In that single instance, the VCoP provided both the personal contacts and the repository of information that saved the Canadian office countless hours of duplicate effort and a large amount of money.

### **VCoPs Facilitate Informal and Formal Training**

Due to the nature of the communication that occurs in VCoPs, these communities regularly facilitate informal training. In many ways, the questions that VCoP participants pose to one another and their calls for problem solving assistance serve as informal training requests because one VCoP member is seeking information from peers or experts to perform his or her job better. If community interaction is viewed in this light, whenever VCoP members answer one another's questions or provide advice, they are filling those informal training requests with impromptu training experiences. As a result, virtual communities of practice act as informal training networks and they provide constant informal training and mentoring opportunities. VCoP leaders indicated that community members also impact and influence formal training opportunities by identifying where collective knowledge gaps exist and requesting formal training for VCoP members in order to fill those gaps.

### **VCoPs Foster Innovation**

Virtual communities of practice also benefit their sponsoring organizations by fostering innovation. VCoP builders and leaders indicate that VCoPs tend to foster innovation and refine organizational processes because the members examine problems and processes from multiple perspectives in a non-threatening, nonhierarchical, non-constrained environment and often create new processes or streamline existing processes. One VCoP expert focused in on this organizational benefit in her interview when she said, "If you bring the right people together and help them share their tasks and knowledge and collaborate on problem solving, you have innovation... so a community of practice is a perfect structure to engender innovation." Other VCoP builders echoed this expert's assertion when they told us that their VCoP members generally get excited about having opportunities to innovate and take advantage of those opportunities.

### **VCoPs Help Organizations Reduce Costs**

Virtual communities of practice can help companies reduce their bottom line in a variety of ways. VCoP builders and leaders indicated that by sponsoring virtual communities of practice they were able to reduce the need for travel, decrease their overall training budget, reduce duplicated efforts, and minimize the time it takes to communicate with VCoP members across the world. In particular, several community builders noted that by utilizing virtual communities of practice as a training and collaboration tool, they have been able to significantly decrease the overall training expenses for their organization. For example, one VCoP builder of a worldwide oil product company indicated that his organization saves \$35,000-\$40,000 every month because members of a specific community of practice discuss and work on issues that they used to discuss in a monthly face-to-face meeting through the VCoP. This builder said that even though VCoPs require specific software and other technology to communicate, the costs associated with that technology are substantially less than paying for all the community members to meet physically on a regular basis so he happily provides the needed software, hardware, and server space needed by the VCoP to operate effectively. Several

community builders also noted that sponsoring virtual communities can help organizations reduce costs incurred by duplicating efforts. One VCoP builder stated that VCoPs “help out the bottom line” as they start to reduce redundancies and eliminate duplicated efforts. Another VCoP leader quantified the costs savings achieved by a particular community in terms of his personal time savings. He commented that he is able to achieve the same gains by relaying a message to members of this community virtually in a couple of hours as he did when he traveled for two or three days to relay the same message with community members physically.

## 4 Conclusion

The research data indicate that virtual communities of practice benefit the knowledge management initiatives of the organizations that sponsor them. The interviewees’ comments evidence the fact that the interaction between VCoP members increases the amount of data, information, and knowledge that is exchanged throughout an organization and heightens employees’ awareness of what others are doing. The information exchange mutually benefits community members throughout organizations and the organizations themselves. The data also indicate that VCoPs increase opportunities for training and innovation, and help to reduce costs. These combined benefits lead to improved management of an organization’s knowledge because they facilitate knowledge generation, knowledge codification and coordination, and knowledge transfer throughout organizations (Davenport & Prusak, 2000). This study’s findings contribute to the growing body of knowledge about virtual communities of practice by identifying specific ways that organizations benefit from sponsoring VCoPs and by revealing critical factors that organizations can influence to strengthen the likelihood that these communities will succeed. As a result, the data are valuable for organizations who desire to strengthen their ability to manage their collective employees’ knowledge and utilize virtual communities of practice in that endeavor. The VCoP builders and leaders who participated in the study collectively articulated that greater information and communication flow, increased opportunities for training and innovation, better utilization of global resources, and reduced costs are benefits that organizations can realize from supporting virtual communities of practice. These benefits directly lead to improved knowledge management on both the individual and organizational level because the virtual communities of practice serve as organizational networks where knowledge is created, disseminated, and transferred throughout organizations.

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