

## The Effectiveness of Communities of Practice: An Empirical Study

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Knowledge Management (KM) is an emerging discipline with increasing popularity among large organizations. Greater importance than ever before is being placed by companies on their ability to share knowledge and the techniques and technologies that facilitate knowledge transfer (Murray and Peyrefitte, 2007). Knowledge Management allows organizations to share, capture, organize, and store internal company knowledge and intellectual capital. It is a way of finding, understanding, and using knowledge to create value (O'Dell, 2004). David C. Blair (2002) defined Knowledge Management as the active management of organizational support and expertise. One critical component of KM initiatives is creating methods to facilitate sharing of information. One of these methods supported in most enterprises with KM initiatives is the Communities of Practice (CP). Etienne

Wenger (1991) defined communities of practice as a method to promote organizational learning through information sharing. The key characteristics that identify a group as a community of practice include: (1) a recognized **domain of interest** that the group members share an interest in and commit to, (2) **relationships** between group members that allow them to engage in joint activities, share information and help each other, and (3) the development of a **shared practice** that consists of shared resources, experiences, stories, tools, etc. (Wenger *et al.*, 2002).

Communities of Practice appear to be an evolution of the team concept (Wenger *et al.*, 2002). Although conventional teams have been highly successful over the years, Communities of Practice appear to provide additional benefits by being more responsive in dealing with the opportunities and challenges of today's rapidly

changing environment, growing global competition, and the ever advancing information technology. Communities of Practice can provide organizations with a way to capture tacit or implicit knowledge by connecting people with similar interests, allowing them to capture information and make it accessible to the organization at large. Furthermore, as Droege and Hoobler (2003) point out, CPs are structures that can effectively prevent loss of tacit knowledge associated with employee turnover by providing the connections necessary for transfer and retention of knowledge.

Communities of Practice provide their members with a group of peers whom they can contact quickly and easily through technology, pose issues or specific problems, and obtain suggestions, in a relatively short timeframe. Therefore, Communities of Practice can help organizations transform from the traditional multidivisional or M-form organization into more competitive learning, or L-form, organization (James, 2002).

Although in recent years a growing body of literature has been emerging on communities of practice regarding their characteristics, the advantages they offer, the organizational motivation to use them, and ways of designing and putting them into practice, a cursory review of these works reveals that the vast majority of them rely on anecdotal case studies. This is understandable since the concept and related practices are still new and emerging. As such, systematic empirical studies on the subject are scant. This article is an attempt to narrow the above gap in the literature by presenting the results of an empirical study that explores the impact of select community characteristics on

perceived overall community effectiveness, as reported by community members, and satisfaction of community members with their community experience. The results of the present study should provide new insight into the characteristics of successful CPs and, ultimately, contribute to the shaping of newer and more effective KM initiatives. Knowledge of predictors of community effectiveness can also assist in maintaining the overall health of active communities and providing a foundation on which community leaders can build to ensure a successful outcome for the organization and a rewarding participation for community members.

## RESEARCH OBJECTIVES

This study will explore the effectiveness of Communities of Practice, using empirical data obtained from State Farm Insurance Companies. State Farm is the largest property and casualty insurance company in the United States and operates in a decentralized structure with 13 zone offices, more than 300 claim offices and contact centers, and 17,000 agents. Recognizing the need for better knowledge sharing and connectivity among these decentralized offices and processing centers, State Farm launched a KM initiative. The centerpiece of this initiative has been the formation of a network of communities of practice with a focus on inducing a greater quantity and quality of intentional collaboration and accelerating the transfer of best practices throughout the organization through the CP network. The CPs are self-directed and led by members of the group, rather than by a manager or representative from the corporate office. Also, the communities were built following a

prescribed methodology that included definition of objectives through a community charter. Community members use document-sharing electronic folders for exchanging documents, and use conference calls, web-conferencing software, and e-mail to conduct community activities. At the time this research was initiated, the company had plans to significantly expand its CP network by launching new additional communities. The company also has plans to develop a more focused approach to measuring the benefits of employee involvement in such communities. The company is building a benchmarking survey that will be used when a new community is first launched, and utilized again at later points along the life-cycle of the community. The organization intends to continue collecting such tracking data, with the ultimate goal of assessing community efficacy in contributing to the company's KM initiatives.

The key research question examined in this study was, "What community characteristics contribute to the effectiveness of Communities of Practice?" In the course of pursuing this broad question, we have also explored the answer to more specific questions, such as:

- Does participation in Communities of Practice have an impact on community members' job performance?
- Does the strength of community leadership play a role in determining the quality of experience employees report?
- Is participation in Communities of Practice, in general, a satisfactory experience?
- Does the affective commitment of community members to its viability and success play a part in determining its effectiveness?

The term "Community of Practice" was coined only within the last decade or so (Wenger, 1991), al-

though the actual application of the concept in practice is not new. Communities of Practice are a natural context for organizational learning. As such, a growing number of organizations in a wide variety of industries are beginning to focus on CPs as an important tool for improving job-related knowledge and learning. Further, they can play an important part in bridging organizational learning with organizational strategy and, thus, could potentially become the paramount structural form of the 21st Century (Snyder, 1997).

Despite the growing popularity of CPs, empirical research on the effectiveness of CPs, has been very limited. Therefore, this study is intended to shed some light on the subject by attempting to identify predictors of CP effectiveness. The study focuses on such variables as level of trust among community members, perception of interpersonal connectedness to co-workers, level of member commitment to the success of the community, community leadership strength, perceived impact on one's job performance, perceived overall community effectiveness, and level of satisfaction with the community experience. It is hoped that the results of this study will add to the understanding of the factors that need to be considered in the design and implementation of communities of practice in order to enhance learning, promote sharing of best practices, and ultimately enable companies to place a more focused effort in integrating KM practices into their cultures.

## **LITERATURE REVIEW AND RESEARCH MODEL**

Knowledge Management has been recognized as a specific discipline

since the mid-90s. The discipline includes a number of models or methodologies, including Communities of Practice, Action in Review, Peer Assist, and Tacit Knowledge Discovery. There are also a number of technologies associated with Knowledge Management, including collaborative software, blogs, instant messaging, expertise location, and advanced search and cataloguing software.

One of the most developed and widely-practiced models across organizations is the Community of Practice (Brown and Duguid, 2000). This is particularly true in such process-intensive operations as manufacturing, health care, and research. Communities of Practice were first discussed in the literature by Etienne Wenger (Wenger, 1991). One of the first documented applications of such collaboration groups involved Xerox's machine repair representative (Brown and Duguid, 2000). While this study demonstrated how working in knowledge-sharing groups can move organizations from process re-engineering to knowledge management, Anand, Gardner and Morris (2007) in a more recent study of consulting firms documented the efficacy of Communities of Practice as effective knowledge-based structures capable of producing innovations. Additionally, Kranendonk and Kersten (2007), in their review of the CP adoption by the government of the Netherlands, concluded that CPs are very powerful instruments that can assist in solving complex problems not easily tackled by individuals.

McDermott (1999) suggests that there are three basic considerations an organization should take when designing a CP. The organization should determine: (1) the kinds of knowledge that will be shared in the

group—i.e., explicit or tacit knowledge, (2) the group's sense of identity, and (3) the extent to which the knowledge shared is integrated into actual work. Wenger, McDermott and Snyder (2002) assert that most Communities of Practice are formed on a voluntary, informal basis and should indeed be formed in this manner in order for them to succeed. On the other hand, Perry and Zender (2004), in their study of the American Health Information Management Association (AHIMA), showed that Communities of Practice can be formed intentionally and still be successful. The association (AHIMA) needed a new, efficient and effective way to help their members share and manage knowledge and, thus, experimented with Communities of Practice. The concept was well received and took off quickly. After five years, the AHIMA (with approximately 48,000 members) had successfully formed and maintained 200 communities.

Communities of Practice go through different "life stages," much like any type of organization. While McDermott (2001) characterizes community life cycle as growing, maturing, changing, aging and dying, in Wenger's (2002) view, communities evolve through several stages, starting in "potential" state followed by "coalescing," becoming "active," "dispersing," and becoming "memorable." In a study of eight doctoral students operating as a CP in New Zealand, however, Annick, Howard and Schoenberger-Orgad (2004) identified a "pre-potential" stage based on participants' emotional state (e.g., isolation and fear) upon CP involvement. These observations are by and large consistent with the IBM Global Services' experience

when it began implementation of a business model that focused in great part upon Communities of Practice, formed around various competencies of the organization. A research study spanning five years was then commissioned by IBM to review the success of these communities. Researchers labeled the stages of development of communities as the potential stage, building stage, engaged stage, active stage, and adaptive stage (Gongla and Rizzato, 2001). Furthermore, the degree of success that different communities reached depended on the community's life stage. Some communities, for example, never left the "building" stage yet were able to continue to be successful if community members had ready access to each other, an interested and proactive facilitator, a system of collecting knowledge that was easy to use and maintain, and a working topic that continued to be relevant to the members and their jobs. On the other hand, communities that failed typically never had a firmly-defined domain, had difficulty collecting and maintaining knowledge generated by the community, and lacked a facilitator focused on helping the community be successful.

Recently, the University of Virginia and the Network Roundtable examined the value that Organizational Network Analysis (ONA) has for Communities of Practice (Cross *et al.*, 2005). This study centered on developing network analytic interventions and metrics that may be used to improve communities of practice and track the success of community initiatives. Another study explored the structural features of Communities of Practice by researching virtual CPs from several different organizations (Dube *et al.*, 2005). Results pointed to

the role of several characteristics, including the engagement and activity level of the leader, the topical relevance of community subject matter, and technology aptitude and literacy of its members. Bogenrieder and Nooteboom (2004) studied CP from a competence perspective. Their study results focused on the importance of different types of knowledge/learning that may be employed to balance stability and flexibility of the community's various relationships.

Dube, Bourhis and Real (2005) performed a study involving 14 different organizations that implemented 18 different Communities of Practice. These communities were observed and monitored over a period of three years. Analysis performed by the researchers focused on determining the degree of health each community reached and whether each community ever actually existed or not. The results showed that the common factors shared by the five lowest-scoring communities included facilitators that had very low or no involvement with their communities and topics that were not relevant to the daily concerns of the members. Further exploration showed that four of the five communities that failed did not have direct support from their organization. The significance of the latter factor has been further established in Zell's (2001) study of Hewlett-Packard. This research focused on HP's use of the Work Innovation Network (WIN) project as a vehicle to break down the barriers that impede diffusion of innovations. The WIN project was made up of several Communities of Practice focused on sharing innovations throughout the organization in order to improve HP's competitiveness in the marketplace. Information

from the WIN communities concerning their successes and failures was shared among them in order to maximize learnings. The resulting information exchange proved to be a key to HP's success with these groups. However, of note is the fact that the WIN network was not formed with corporate management's approval. When HP needed to find areas in which to cut costs, the WIN network was eliminated. This may suggest that in order to experience long-term success, communities should obtain support of upper-level management.

Other broader organizational contexts that appear to affect knowledge-sharing are organizational structure, the ease of use and perceived usefulness of the system, the level of trust among members, and the recognition that community members receive for their involvement (Sharratt and Usoro, 2003). For instance, Dupouet and Yildizoglu (2006) studied the effectiveness of CPs in a call-center environment where one group of employees had only the community to consult with, and another group had the additional benefit of a management structure for assistance. It was found that while the CP-only group was able to handle more problems, the existence of a hierarchy in the latter group improved CP communications. The authors concluded that CPs were complementary to hierarchy as a structural component.

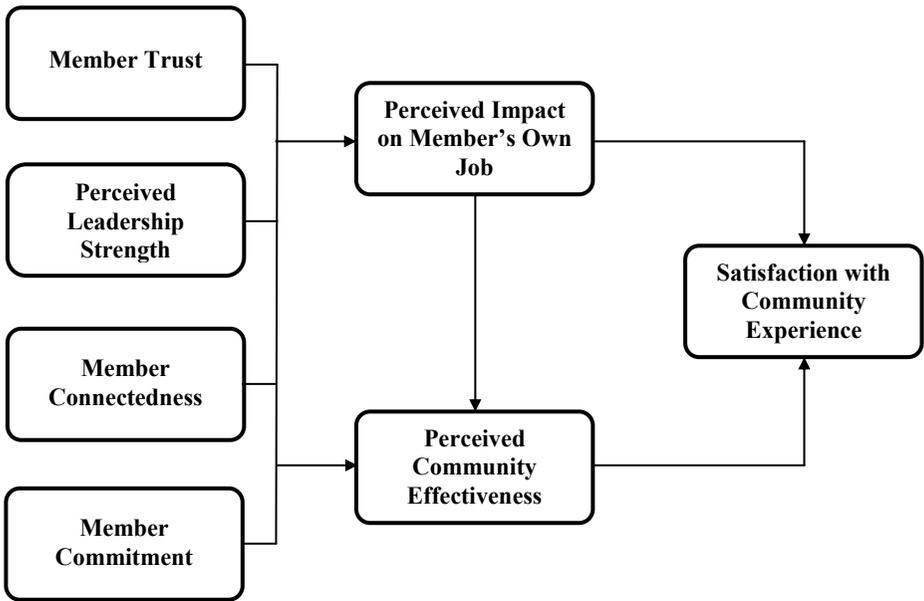
A Delphi study aimed at predicting the future of KM in ten years was conducted by Scholl, Meyer and Heisig in 2004. Knowledge Management experts felt that the most important advancement in KM was placing priority on human factors and integrating KM into common business practices. They acknowledged that communities will continue to be practical

methodologies, but felt that the organizational climate in which they operate (i.e., collaborative, rather than command and control) would be key to their success. The significance of the human component that the above Delphi study stressed was again emphasized in a study of online communities (Schwen and Hara, 2003). In this study, even with robust infrastructures and state-of-the-art technology, the virtual environment was only modestly used. Of course, such results do not negate the important role that technology plays in knowledge management. In fact, with the growing popularity of Communities of Practice, technologies available for use in these contexts have proliferated (White *et al.*, 2005). These technologies not only play a critical part in facilitating information-sharing among community members, but also appear to empower the members to become more inventive and effective in the management of their communities (White *et al.*, 2005).

The review of the literature revealed limited empirical studies on the perception of satisfaction with participating in Communities of Practice. The model proposed in this study (see Figure 1) combines several community attributes into a conceptual framework that examines not only perceptions of community members regarding its effectiveness, but also the members' satisfaction with the community experience.

It is noteworthy, however, that the scope of the present research is limited only to the role of the social and psychological environment of Communities of Practice as perceived by community members. Therefore, other types of community attributes such as those related to community composition (e.g., size, demographic

**Figure I**  
**The Research Model**



and professional diversity), knowledge-sharing technologies used (e.g., type of shareware software), and variety and relative application of various complementary interaction modes (e.g., face-to-face meetings, email, intranet, conference calling, instant messaging) were not included in this study.

As the model shows, a community's leadership quality, trust among its members, members' feelings of connectedness, and member commitment to the community are all expected to impact the study's outcome variables. Leadership is considered important because of its pivotal role in setting and articulating community objectives, motivating the members, providing resources, identifying and removing obstacles, and being gen-

erally instrumental in creating a supportive and collaborative team environment that can enhance members' job performance, morale, and overall community effectiveness. Trust among community members is deemed to be an important variable since higher trust and confidence among community members tend to result in greater community involvement, more information sharing, and a more enjoyable and satisfactory experience. Members' feelings of connectedness to the community can have very similar results, but can arguably go even further by both providing for a greater sense of identity with the community goals and prompting members to cultivate new contacts and relationships with peers performing similar job functions. Fi-

nally, member commitment to the community's goals and success is expected to be an important factor in leading members to devote more of their time and efforts to the community, become more actively engaged in community activities, and display greater willingness to exchange information with their community peers.

## METHODOLOGY

### Data Collection and Research Sample

This study involved administering a survey questionnaire to all of the 579 employees who were participating in all of the eighteen active Communities of Practice at State Farm Insurance Companies. The communities ranged in size from ten to several hundred members, with the average size of approximately fifty. The majority of the communities were role-based, with members serving in similar positions spread geographically across the country. The roles spanned many different disciplines and represented a diverse cross-section of functional and technical areas within the organization. A few communities were project-based, in which case the background of members was even more diverse.

At the time of the survey, members used two different types of technologies. Some groups used collaborative software called Communispace that provided the ability to share documents and participate in discussion threads, while others used shared drives to share documents. All communities also conducted conference calls to connect members.

The anonymous survey was sent to community members via email. It was accompanied by a cover letter from

the company's KM Director, emphasizing the confidentiality of responses and encouraging members to participate. The letter also stated that the study findings will be shared with community leaders. In addition, a follow-up reminder was sent to all community members approximately ten days after the initial email. It is noteworthy that, as had been stated in the cover letter, subsequent to completion of the survey, the study findings were disseminated among the company's CP leaders.

The survey resulted in 204 completed surveys, representing a 37% response rate. Forty-nine percent of the respondents were female and 51% male. Eighty-three percent of the respondents were community members, 12% leaders, and 5% sponsors (community members who represent various corporate departments and play supporting roles). Seventy-five percent of the respondents had more than ten years experience with the company.

### Variables and Measurement

All study variables, with the exception of demographics, were measured using five-point Likert scales (1 = Strongly Agree, 5 = Strongly Disagree). All items constituting each of the research constructs were developed by the authors and then, to ensure content validity, modified based on feedback from colleagues and MBA students in a graduate research methodology class. In addition, once the data were obtained, construct validity of each multi-item scale was verified through factor analysis. In each case, a single factor accounted for a high percentage (ranging from a low of 48% for Trust to a high of 77% for Leadership Quality) of the combined

variance of the items comprising the scale.

*Overall community effectiveness* was measured using five items dealing with such issues as the extent to which the community was meeting the respondent's expectations, was a valuable source for meeting business objectives, and the respondent would consider starting another community about a different topic. *Community's impact on the respondent's own job* was measured using ten items concerning such issues as the degree to which the community had helped the respondent to come up with new ways of doing his/her job, become more innovative, adopt a new best practice(s), improve his/her work performance, and enhance his/her productivity.

*Member commitment to the community's goals and efforts* was assessed through five items dealing with such issues as the extent to which a respondent actively participated in knowledge sharing in the community, willingly devoted time to the community even when it competed with his/her work, was willing to share ideas with the community even if he/she did not get credit for it, and shared practice(s) with others in the community. *Members' perceived connectedness with the community and its other members* was operationalized using four items involving such issues as extent of forming new contacts and relationships, feeling connected to people doing similar work, and sharing common goals with other community members. *Perception of community's leadership quality* was captured through five items in which each member evaluated his/her leader's effectiveness regarding such things as encouraging/motivating members to actively participate in the community, being a good role model for collaboration and infor-

mation sharing, and keeping the community on task. *Trust in other community members* was measured using six items dealing with such issues as the degree to which a member trusted his/her community members, believed other members communicated honestly with him/her, was comfortable sharing opinions and ideas with others, and felt comfortable sharing frustrations and negative feelings with other community members.

Five items were used to measure *member satisfaction with the community*. These items involved the degree to which a respondent enjoyed his/her community membership, felt more satisfied with his/her work as a result of participating in the community, and was happy with the community experience.

### Data Analysis

Regression analysis will be the primary means of testing the hypotheses depicted in the research model (see Figure I).

## RESULTS

Descriptive statistics, Cronbach's alpha reliability coefficients, and Pearson correlations among the research constructs are presented in Table 1. As is clear from this table, reliability of all of the above multi-item measurement scales were strong. Cronbach's alpha inter-item consistency coefficients ranged from a low of 0.72 for Trust in community members to a high of 0.91 for perceived community's job impact.

Table 2 shows the percentage of positive responses (strongly agree or agree) for the various study constructs. Results clearly indicate that

**Table 1**  
**Descriptive Statistics and Pearson Correlations**

Variables	Mean (S.D.)	Alpha Coefficient	1	2	3	4	5	6	7
1. Community Effectiveness	2.07 (0.68)	0.83	1.000	0.532**	0.780***	0.669***	0.738***	0.428***	0.487***
2. Member Commitment	2.35 (0.74)	0.75		1.000	0.622***	0.625***	0.609***	0.300***	0.574***
3. Community Satisfaction	2.32 (0.73)	0.73			1.000	0.774***	0.802***	0.420***	0.571***
4. Member Connectedness	1.88 (0.66)	0.84				1.000	0.729***	0.424***	0.600***
5. Job Impact	2.42 (0.73)	0.91					1.000	0.441***	0.554***
6. Community Leadership	2.03 (0.93)	0.87						1.000	0.455***
7. Trust	2.16 (0.67)	0.72							1.000

\*\* $\alpha \leq .05$ , \*\*\* $\alpha \leq .01$ .

**Table 2**  
**Overall Member Reaction Regarding Their CPs**

<b>Constructs</b>	<b>Percent Favorable Response</b>
Community Leadership	89.7
Member Commitment	79.4
Trust	93.6
Member Connectedness	92.6
Job Impact	79.9
Community Effectiveness	92.2
Community Satisfaction	79.4

respondents' overall perceptions of various community characteristics and functions were all favorable. Virtually all constructs, representing various characteristics and dimensions of community experience, were rated favorably by well over four out of five respondents.

Next, multivariate regression analysis was used to examine antecedents of community impact on one's job, perceived community effectiveness, and member satisfaction with community involvement. It is noteworthy that respondents' demographic characteristics, (i.e., gender, role in the community, and tenure with the company) were included as control variables. The analyses results are presented in Table 3.

As is clear from Table 3, perceived Community Leadership strength, Members' Commitment to the Community and its goals, and feelings of Connectedness to Community Members all had significant positive rela-

tionships with perceived impact on the job. The predictor constructs account for close to two-thirds of the variance of the dependent variable. It appears that the impact of the community on members' own job performance are considered more favorable when members: (1) perceive the quality of community leadership more favorably, (2) feel connected to, and have a sense of shared identity with, other community members, and (3) are committed to the community's goals and success.

Table 3 also presents the regression analysis results for Community Effectiveness as the dependant variable. In this model, the strongest predictors of community effectiveness, as perceived by the members, are the apparent impact on members' jobs and their feelings of connectedness to the group and with other members. Strength of community leadership also is a predictor of members' perceptions of effectiveness. Interest-

**Table 3**  
**Determinants of Perceived Job Impact, Community Effectiveness, and Community Satisfaction**

Independent Variables	Dependent Variables & Regression Coefficients		
	Job Impact	Community Effectiveness	Community Satisfaction
Constant	0.590***	0.294	-0.881
Gender (Male = 1)	-0.006	-0.021	0.076
Status (Member = 1)	0.212**	-0.183**	0.021
Company Tenure	0.002	-0.034	0.111
Community Leadership	0.091**	0.084**	0.033
Member Commitment	0.227***	0.027	0.264
Trust	0.121*	-0.005	-0.014
Member Connectedness	0.544***	0.219***	1.021***
Job Impact	-	0.472***	1.061***
Community Effectiveness	-	-	1.171***
	<b>R<sup>2</sup> = 0.615***</b>	<b>R<sup>2</sup> = 0.600***</b>	<b>R<sup>2</sup> = 0.776***</b>

\* $\alpha \leq .10$ , \*\* $\alpha \leq .05$ , \*\*\* $\alpha \leq .01$ .

ingly, perception of overall community effectiveness seems not to be a function of the members' commitment to the community or their trust in other community members.

Finally, Table 3 demonstrates the full regression model, examining determinants of member Satisfaction with Community Experience. As can be seen from the results, significant relationships were found consistent with those depicted in the research model. To be more specific, apparently when members feel more connected to each other and experience a more positive impact on their own job as a result of community participation, they will also develop a stronger sense of satisfaction regarding their association with the community. In addition, while not significant directly to the member's feelings of satisfaction with the community experience, the strength of community leadership did have positive antecedent effects on both perceived community impact on members' own jobs as well as community's overall effectiveness.

As proposed in the study's research model, the impact on one's own job and the perception of the overall effectiveness of the community both influence the extent to which a member finds the experience of participating in the community as gratifying. Additionally, how connected members feel to each other also predicts the perception of the community experience as being satisfying.

## DISCUSSION

### Research Implications

It is evident from an examination of the mean scores of individual sur-

vey questions regarding job impact that a strong support exists among the respondents for the utility and efficacy of Communities of Practice in their organization. This indicates that Communities of Practice can indeed create value by contributing to increased effectiveness in employees' job performance through greater access that they provide to the ideas, knowledge, and best practices shared among community members.

In addition, the results show that committed membership and active engagement in community activities tend to improve the direct impact of the CP on participants' job performance. In turn, it appears that members who see their community as having a positive impact on their own jobs, and/or feel more connected with other community members, also perceive their community as being more effective. These results seem to corroborate the findings of previous studies. Dube *et al.* (2005), for example, concluded that lack of relevance to the daily concerns of members was a reason for community failure. Also, at IBM Global Services, communities were found to be more effective when their working topics continued to be relevant to the members' jobs and the knowledge collected/shared by community members was considered useful and easy to use (Gongla and Rizzato, 2001).

It is also clear from the study results that the sense of identity and emotional connectedness that community members feel toward their peers in the community, the impact that community involvement has on their own jobs, and the cognitive assessment that they develop of the overall effectiveness of their community are all strong predictors of satisfaction with their community experience. The sig-

nificant role that was found in the present study for such human factors as feelings of connectedness and commitment is entirely consistent with the views expressed by KM experts who participated in a recent Delphi study aimed at predicting the future of KM (Scholl *et al.*, 2004). They also emphasized that placing priority on such human factors will remain the key to success of CPs and other KM methodologies.

The present study's findings regarding the benefits of idea sharing and collaboration through community participation were further confirmed and validated by the responses to the survey's open-ended questions. Many respondents (namely, 141) commented on the various benefits they had drawn from being a part of a community. The importance of the CP instrumentality in establishing connections with other employees in similar roles across the country, as well as the direct positive impact of community involvement on respondents' own jobs, were especially widely cited. Another area of emphasis in the comments related to challenges of CP membership. Based on these comments, the greatest challenge appeared to be finding the time needed to fully participate in community activities. It is reasonable to assume, however, that the more significant the direct job-related value gained from engagement in community activities, the more inclined members will be to make time for such activities. The open-ended responses also suggested that community size may matter and that community membership can grow too large for the CP to remain effective. This assertion, of course, will have to be further validated through future empirical studies.

### **Managerial Implications**

A number of insights can be gained from the results of this study. First, as was shown earlier, virtually all characteristics and dimensions of CP experience were viewed favorably by the overwhelming majority of study participants. This clearly entails a reassuring message for companies regarding the worthiness of the efforts and resources that often need to be expended in order to establish and manage such organizational team structures.

Second, for role-based communities, it is the opportunities that allow members to improve their job performance and productivity (through sharing of job-relevant ideas, knowledge, and best practices) that lead to perception of greater community effectiveness and ultimately result in a more enjoyable and satisfactory experience. As such, the pivotal importance of community activities' job-relevance cannot be overemphasized. Third, this study empirically showed that committed, engaged, and well connected members are the heart of successful communities, and that as long as their CP involvement can be made relevant to their productivity and performance, they would view it as a worthwhile cause and a gratifying experience. Fourth, if increases in member connectivity lead to greater job impact and enhanced community effectiveness, and if these in turn help boost the overall community morale, as the evidence here seems to suggest, then it is encumbered upon community sponsors and leaders to identify and undertake the kinds of measures that are helpful to cultivating and nourishing the membership's sense of connectivity to their peers in their CP network.

Further, as was confirmed by the study results, strength of community leadership has a direct bearing on the members' perception of the community impact on their own jobs as well as the perception of overall community effectiveness. Thus, it appears that a community leader's role has to span multiple dimensions. In fact, results of past research strongly support this conclusion. Michael Workman (2004), for example, suggests that because of the ambiguousness of working in a virtual environment, leaders must be able to provide additional clarity. Cascio (2000) echoes the above assertion by indicating that leaders must act as definers, facilitators and encouragers. Obviously, the leader's efforts should, first and foremost, help the community focus on job-related activities. However, since member connectedness and commitment are also important determinants of community effectiveness, it is important that community leaders also be equipped with the kind of "softer" motivational and people skills that would help increase members' commitment to the community goals and encourage them to increase their level of active engagement in the community's affairs. Training and preparation of community leaders, therefore, should include adequate emphasis on these important leadership roles and skills. In fact, as some suggest, the greatest focus may need to be on the facilitation skills that are required to enable community members to engage and interact and, thereby, allow for more independent connections within the group, especially as it matures (Cascio, 2000).

### **Limitations and Future Research**

When considering the robustness and generalizability of the above find-

ings, it would be prudent to exercise caution in light of this study's potential limitations. First, the data for the study were obtained from the CP network of a single firm and from the financial services industry only. Even though the CPs spanned many organizational roles and positions, and represented a diverse array of working topics from many functional and technical areas, replicating the study using a more heterogeneous sample from multiple organizations in various industries will be desirable to establish the external validity of the results.

Second, even though the relatively high survey response rate of 37% may help temper the concern for presence of a significant and systematic non-response bias, the anonymity of the surveys precluded the opportunity to actually compare respondent and non-respondent characteristics to rule out such a bias definitively. Additionally, this research was conducted less than two years after the company's KM initiative had been launched. As such, 64% of the study participants had been active in a community for only less than a year and approximately 90% for less than two years. This range restriction in the length of community experience among the respondents rendered community age ineffectual for examining its relationship with other variables. As a result, the variable community age was excluded from data analysis in the present study. Future research involving communities with a wider range of longevity can help us understand how to better manage CPs of different maturity level.

It was intimated in the responses to open-ended questions that while larger community size may provide for a larger pool of ideas and knowl-

edge for members to draw from, there may be a threshold beyond which larger membership could become unwieldy and counterproductive. Future research might focus on how the size of CP membership may affect perceptions of CP effectiveness and member satisfaction.

It was somewhat surprising that trust did not appear to be as important in this study as previous literature had indicated. In fact, the data seemed to indicate that both member connectedness and job relevance of CP activities were far more important than member trust. Future efforts aimed at closely examining the role of this and perhaps other relational characteristics of CP membership (e.g., CP cohesiveness) might prove very insightful. Furthermore, community members' willingness to share information is at the heart of CP activities and, thus, central to its existence. Additional research to learn what situations may enhance the motivation to share might indicate how

to extend the life and utility of communities and the extent of members' engagement.

Finally, as a result of growing popularity of CPs, knowledge-sharing technologies are rapidly proliferating (White *et al.*, 2005). These technologies have the capacity to facilitate information-sharing among community members and to empower them to become more inventive and effective in the management of their communities (White *et al.*, 2005). Therefore, additional research into the role of various collaborative technologies, the attitudes that they may engender among CP members (e.g., regarding the extent and ease of their use), and the variety and relative application of various interaction modes (e.g., face-to-face meetings, email, intranet, conference calling, instant messaging) that are used to complement these KM technologies may be instructive in designing more effective CP structures.

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