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Communities of Practice and Performance: Perceptions of IT Personnel in Small Organizations in the USA

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ABSTRACT

Understanding technology users' perceptions regarding technology organization communities of practice and performance is an arising topic of interest for many researchers and organizations. This research aimed to deepen the understanding of technology organization communities of practice by examining perceptions of small organizations IT personnel. Results suggest that a regional technology community of practice would be beneficial.

BRIEF REVIEW OF LITERATURE

Research has shown that several small companies tend to manage their information technology (IT) with low level of internal IT expertise or education (Cragg, 2002; Cragg & Suraweera, 2005; Pollard & Hayne, 1998). Thus, when IT problems occur the internal IT personnel are forced to employ costly external IT expertise to fix the problems (Cragg & Suraweera, 2005; Fink, 1998; Gable, 1996; Thong, Yap, & Raman, 1996). As a result, many small companies are looking for a more cost effective way to manage their IT and internal IT personnel through the use of technology communities of practice (Millen, Fontaine & Muller, 2002). A technology community of practice is an informal technology network of people sharing information and knowledge with one another (Mojta, 2002; Jones 1997).

Communities of practice typically contain three characteristics including the domain, the community, and the practice (Wegner, 2004).

- Domain: A community of practice has an distinctiveness defined by a shared domain of interest in which members value their collective competence and learn from each other (Wegner, 2004).
- Community: Members engage in cooperative interactive activities and discussions to help each other and share information (Wegner, 2004).
- Practice: Members of a community of practice are practitioners who develop a shared repertoire of resources, experiences, ideas, tools, and ways of addressing specific topics (Wegner, 2004).

The exact role that technology communities play in employee performance is of particular interest to researchers. Although a relatively new field, researchers anticipate a positive correlation between the use of communities of practice and an increase in organizational and individual performance (Lesser & Storck, 2001). Specifically, communities of practice have the potential decrease the learning curve by creating informal relationships between local IT professions. As a result, IT professionals will have the opportunity to consult other professional regarding a problem or issue occurring within the organization. In that same sense, it can strengthen relationships so an individual can tap into a group's resources to personally get ahead. In addition, the access to information that accompanies the idea of a community of practice can also be viewed as a means for an individual to set him or herself apart from coworkers (Wenger, McDermott & Snyder, 2002). The opportunities offered by a community reinforce the individualistic portion of United States of America(USA) culture.

While, the future of communities of practice is anticipated to become a vehicle for improving performance in IT departments, the exact extent to which small organizational personnel perceived communities of practice for influence performance is still immeasurable. Measuring employees perceived perceptions of communities of practice for influencing organizational and individual performance is important. Should employees perceive communities of practice as non beneficial, then managers may be wasting valuable time, dollars and resources by allowing personnel to take the time to build relationships with outside employees via the use of communities of practice.

RESEARCH GOAL

The goal of this study was to investigate technology users' perceptions regarding technology organizations of practice. This study was funded by a Susquehanna Economic Development Association (SEDA) Council of Government (COG) the Promoting Technology Adoption for Progress (PTAP) Phase I Grant.

METHODOLOGY

The development and validation of the PTAP survey consisted of four steps. The first step was to identify objectives and the set of criteria that was needed to accomplish those objectives. A Formative Committee was formed to determine the objectives and criteria utilized for the development of a set of criteria. The group consisted of two technology professors from Bloomsburg University of Pennsylvania (Bloomsburg, PA) and Pennsylvania State University (University-Park, PA), as well as two SEDA COG employees. The Formative Committee was recruited based on their technology experience and research. To add balance to the committee, each university involved either graduate or undergraduate students in the research.

The Formative Committee examined current community of practice studies associated with technology. A Delphi process was utilized to

develop a specific set of criteria necessary for the successful inclusion of usability techniques (Roth & Wood, 1990). The Delphi process required the members of the Formative Committee to design and provide feedback to a set of questions, based upon the review of literature. The feedback was assessed and scored according to importance and the results were included in a second questionnaire that was administered to the Formative Committee. This process continued until the Formative Committee had reached consensus regarding the set of criteria.

After the objectives and criteria were established, they were evaluated by an Expert Panel to ensure their validity and value. Members of the Expert Panel consisted of members of the Business Education and Office Information Systems faculty at Bloomsburg University, one government Technology Director, and one industry technology worker. Members of this committee either published material related to technology communities of practices in scholarly journals or had extensive job experience in the technology field. This committee was responsible for validating the criteria established by the Formative Committee. The criteria list was given to members of the Expert Panel who then rated each criterion on a Likert-scale with the five categories listed below:

- Not of any concern: should not be addressed in the research.
- Of minimal concern: could be included, but would not really enhance the research.
- Of moderate concern: should be included in the research.
- Of great concern: needs to be included or the research would not be valuable.
- Of critical concern: must be included or the research would be of no use.

The feedback was assessed and scored according to importance. The ratings of the individual criteria were examined by the researcher and the Expert Committee. Any criterion that received an average rating less than 2.0 was examined to determine if it should be considered in the design of the study. Additional suggestions and comments made by the Expert Panel were also addressed individually by the Formative Committee.

Once the objectives and survey were validated by the Expert Panel, the survey was piloted. Twenty-five Bloomsburg University employees who utilize technology on a daily basis were randomly selected. After the pilot study was completed, the researcher collected and analyzed the data. All unanswered questions and comments were examined and addressed appropriately in the survey. After all corrections had been made, the survey was distributed online to the companies located throughout Columbia and Montour counties. The online survey was self-reported and took approximately ten to fifteen minutes to complete.

PARTICIPANTS

This study collected data from a random sample of participants (n=763), 458 females and 303 males, 427 less than 40 years of age and 336 older than 40 years of age, with 419 having some form of a college degree. The participants were people working in Columbia or Montour County that utilized technology in their everyday tasks at work. Participation was voluntary and data was held confidential. There was no monetary compensation for participation.

PROCEDURE

Extensive personal phone calls, letters, and e-mails were sent out to organizations within Columbia and Montour counties. Participants were asked to utilize the Internet to access the online survey. An informed consent form explained the study as identifying technology users and technology innovators (businesses and individuals responsible in each) within the region.

Consenting participants clicked *Enter the Survey* and the 32-item PTAP survey appeared. The survey was structured to gather information about the nature and frequency of participation within the community and to capture self-reported judgments about the benefits that result from community activities.

At the end of the survey, users clicked on *Submit*. The data was only processed if all required field questions and employment zip code were answered. If the requested information was not completed, an error message in red font would appear on the screen redirecting the participant to complete the missing item. If all required questions were submitted, a thank you message appeared on the screen and the participant was redirected to the researcher's webpage.

The data was transmitted into a Microsoft Access database in table format according to each of the survey question's context. From Access, the data was imported into SPSS (Statistical Package for Social Sciences) for statistical analysis.

DATA ANALYSIS

Comparisons were made among the data via a Pearson r correlation. The data was tested for significance ($p>0.05$) using Independent Sample t-Tests, and an analysis of variance of the means testing (ANOVA).

RESULTS

To understand the perceived value or benefits of the community, participants were asked to utilize a 5-point Likert scale (1=strongly agree, 2=agree, 3=no opinion, 4=disagree, 5=strongly disagree) to assess their perceptions regarding personal and organizational benefits. Personal benefits consisted of increased or improved skills and know-how, personal job satisfaction, sense of belonging, professional reputation, and personal productivity. Organizational benefits included increased or improved knowledge and resources, collaboration, general consensus, community reputation and trust.

Table 1 lists the overall mean score of the survey participants' perception of if technology discussion groups can influence various personal benefits. Table 2 lists the overall mean score of the survey participants perception of if technology discussion groups can influence various community benefits.

The level of education positively correlated with reported personal benefits including productivity ($p<.007$), as was personal reputation ($p<.037$). Additionally, how respondents primarily educated themselves about technology positively correlated with personal benefits including skill sets ($p<.008$) as well as a sense of belonging ($p<.001$).

The level of education also positively correlated with reported organizational benefits including trust ($p<.011$). Additionally, the length of time the respondents were employed with their current employer positively correlated with organizational benefits including general consensus ($p<.001$), and community reputation ($p<.009$).

Additional significance occurred between age and personal and community benefits. Table 3 lists the results.

Further analysis was conducted to see if company size showed significant differences between personal and community benefits. This would provide insight for specific organizational characteristics that might need to be addressed in the formation of technology communities of practice. All of the personal and community benefits show significant results among the size of the company (the number of employees). The results seem to indicate that, in general, smaller size corporations do

Table 1. Perception of if technology discussion groups can influence various personal benefits

	N	Mean
Skill Set	761	2.12 (Agree)
Productivity	761	2.03 (Agree)
Job Satisfaction	760	2.18 (Agree)
Personal Satisfaction	760	2.11 (Agree)
Personal Reputation	760	2.23 (Agree)
Sense of Belonging	761	2.31 (Agree)

Table 2. Perception of if technology discussion groups can influence various community benefits

	N	Mean
Knowledge Sharing,	760	1.86 (Agree)
Collaboration	762	2.00 (Agree)
General Consensus	763	2.26 (Agree)
Community Reputation	763	2.23 (Agree)
Trust	763	2.39 (Agree)

Table 3. ANOVA

		Mean Square	F	p-value
Personal Job Satisfaction	Between Groups	1.378	2.733	.008
	Within Groups	.504		
Community Knowledge Sharing	Between Groups	1.064	2.896	.005
	Within Groups	.367		
Community General Consensus	Between Groups	1.706	3.349	.002
	Within Groups	.509		
Community Trust	Between Groups	2.711	2.707	.009
	Within Groups	1.001		
Would Benefit from Tech. Community of Practice	Between Groups	.519	2.122	.039
	Within Groups	.245		

differ on personal and organizational benefits of technology community of practice.

Additional statistical analyses were conducted to check for gender differences in overall feeling that participants would benefit from participating in a technology community of practice. There was no significant difference for gender (mean male=1.44, mean female=1.44, t=.003, p=.997). The results indicated that, in general, males and females do not differ on their feeling that they would tend to benefit from participating in a technology community of practice.

DISCUSSION

The survey results demonstrated that a regional technology community of practice would be beneficial. The technology community of practice group would be based on individual members from different organizations. Although the members may not share common organizational goals, they may be similarly situated and have similar goals professionally within their respective organizations.

Respondents clearly view technology discussion groups as viable instruments to improve their skill set, and become more efficient problem solvers through shared knowledge. The respondents almost unanimously indicated their belief that technology discussion groups would decrease the amount of time they spend on problem solving. This represents a significant decrease in non-productive time.

The issue of sense of belonging is an area that warrants consideration. Only a slight majority of the respondents appeared to have any affinity to a user group. There are two possible causes for this response. Either the individuals may not share organizational goals with those in the user group, or there is little else to tie the user to a technology community of practice.

This lack of commonality tying the respondent to a group may also be evident in the responses to queries regarding face-to-face technology discussions. The respondents would not be inclined to participate in a face-to-face user group outside of their local commuting area.

This research clearly indicates real benefits to technology communities of practice. The concept of a regional technology group would need to be based on common need. This need may be driven by the technology itself or based on the organizational technology touch points. Additional regional considerations including economic conditions, workforce availability, educational background, and IT infrastructure are factors that affect regional organizations equally.

The research cites strong concern for community and personal reputation. These reputations should be considered in efforts to engage IT professionals in a regional technology discussion group. Issues such as sense of belonging, ability to generate consensus, and trust are emotive and can only develop when opportunities to build relationships are present.

FUTURE RESEARCH

This research identified several interesting factors about community of practice. However, it was limited to the small IT corporations in the Columbia and Montour counties of Pennsylvania, USA. Future studies may be conducted to replicate this research on a larger scale or in other areas.

Additionally, the data obtained in this study can be used to conduct additional research on starting up IT communities of practice. One of the authors, Loreen M. Powell, has recently received additional funding to begin implementing IT community of practices for small organizations in the Columbia and Monroe counties of PA. It is the authors hope to create an information technology (IT) community that will provide the students and the local business in the Columbia and Montour counties with the opportunity to informally network with colleagues in an environment that is stimulating, rewarding, well-organized, and affordable.

LOCATION

The PTAP survey may be accessed online at: http://cob.bloomu.edu/lpowell/PTAPSurvey2.asp

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