Guidelines to Align Communities of Practice with Business Objectives: An Application of Social Media

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Abstract

Communities of Practice (CoP) have long been considered a powerful Knowledge Management mechanism. CoP however, are often viewed independent of organizational goals and structures. CoP are known for knowledge sharing and learning. In this paper we argue that CoP supported by social media have great potential to contribute to business objectives. This investigation is an embedded case study that includes 54 CoP within a prominent Engineering multinational firm. The investigation explores the extent to which the 54 CoP contribute to business objectives. The paper’s contribution is in providing five guidelines for practice that outline how CoP can be best designed to contribute to business objectives and how social media can serve as the vehicle through which to execute those guidelines.

1. Introduction

Communities of Practice (CoP) are increasingly becoming a powerful Knowledge Management (KM) mechanism for geographically distributed organizations [9, 22, 35]. Geographically distributed organizations face KM challenges arising from the difficulty organizations have in identifying the sources of knowledge, (what people know, or who knows what) [20], connecting disparate sources of knowledge necessary for adapting and innovating for any particular organizational goal [20, 23], protecting against knowledge loss from turnover [26], and creating an environment to develop shared understanding by sharing knowledge. Such challenges have a direct negative effect on organizational learning and KM [26]. Practitioners and scholars have identified CoP within organizations as a mechanism to facilitate knowledge exchange between individuals by connecting isolated and distributed pockets of expertise. CoP minimize the possibility of knowledge loss due to employee attrition by integrating individual knowledge into community shared practices [30, 31, 16].

There is little debate as to whether CoP are of benefit to the organizations within which they exist. However, there is no agreement on how to best support CoP [9, 1] and align them with business objectives [specific goals defined in an organizations strategy]. Our initial focus on CoP was largely of the perspective that CoP facilitate knowledge exchange between individuals and integrate individual knowledge into community shared practices [31]. More recently scholars began to investigate the alignment between business objectives and CoP (e.g. [3]) and the ROI of CoP (e.g. 21). Studies like Vestal [29] and Lemons [15] emphasize the importance for organizations to align their learning strategies [34] and practices [15] within CoP, with organizational objectives. Despite this emergent focus, a comprehensive view of how organizations can better align CoP with organizational objectives is still needed. To this end, this paper reports on an in-depth investigation of how 54 CoP can best be aligned with the objectives of one distributed organization. Furthermore, in this paper we explore how Social Media (SM) can serve as the tools to facilitate this alignment. In this study we focus on CoP around specific organizational expertise or practice area (e.g. Business Analysts or Project Management). We also focus on intra-organizational CoP.

In the following three sections we explore the theoretical background for CoP, the properties of social media, and define the research questions. Due to the extensive CoP literature and limited space for this publication, we limit our review to studies that considered CoP in relation to business objectives. In section 5 we present our methodology and a description of the case study. Section 6 highlights the main findings of the study. The paper concludes with a discussion of guidelines for practice derived from our findings as to how organizations can best align CoP with business objectives using social media. The CoP of interest to this research are supported by information and communication technologies and are often referred to in the literature as Virtual Communities of Practice. We consider these CoP since they are now the norm rather than the exception according to scholars like Dubé [9].

2. CoP Aligned with Business Objectives

First introduced by Lave and Wegner [17], "Communities of practice are groups of people who..."
share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis” [17]. CoP are very common and take a variety of forms. They may be small or big, long-lived or short-lived, co-located or distributed, homogeneous or heterogeneous, within or across organizational boundaries, spontaneous or intentional, unrecognized or institutionalized [31]. CoP differ from other, more formal organizational units. Interest is usually the primary driver for individuals choosing to participate, leading to a variety of participation styles and formats for any given group. Consequently, there are few formally-defined requirements and goals which, yields relatively undefined boundaries for the community. Furthermore, CoP are primarily geared towards individual learning, through a social learning process. As indicated in the introduction, CoP have many benefits. However, they have one significant limitation: CoP can help gather knowledge across an organization, but rarely have the executive power to address organizational issues or objectives [9]. CoP are also “resistant to supervision, interference, and cooptation by an organization” [13]. These limitations are due to the independent, grassroots approach, and voluntary nature of CoP. Our paper and the remainder of this review focuses on this issue. The disconnect between CoP and formal business structures makes it difficult for CoP to contribute directly, and purposefully to business objectives (with the possible exception of knowledge management initiatives), and can lead to missed opportunities. In our conversation with our case site, management’s primary question to us was “how can we better realize the potential of CoP towards business objectives?”

In CoP literature we have learned that most organizations sponsoring CoP focus on CoP as a knowledge management strategy including mentoring, staff development, knowledge capture, and knowledge sharing (e.g. Turner Construction Company [15]). In recent years, it is evident in practitioner and scholarly periodicals that organizations have taken interest in CoP to achieve business objectives. Kumba Resources, for example, aligned CoP with organizational objectives focusing on developing core business competencies. Others in industry have focused on innovation [22]. Millen et al. [22] focused on identifying ROI for organizations investing in CoP. Research studying organizational sponsorship of CoP has predominantly focused on how to make CoP more effective or on effective cultivation of business CoP. In their recent review of the CoP literature, Agrawal and Joshi [1] identified various studies investigating how to sponsor and sustain CoP. Two themes Agrawal and Joshi [1] identified that were of specific interest to us were themes that addressed goal congruency between CoP, community members, and the sponsoring organization. The papers identified in the goal congruency theme suggest that goal setting for CoP and identifying measurement contribute to organizational returns and CoP success. The papers identified in the organizational sponsorship theme suggest the funding and support by organizational sponsorship enhances CoP success. Also in their review, Agrawal and Joshi [1] suggest that there should be a balance between organizational sponsorship and goal directing and autonomy of CoP. Studies focusing on the relationship between organizations and CoP focused on one element and lacked a comprehensive approach on how organizations can achieve alignment with CoP without impeding their social and organic nature. Our research focuses on first understanding the nature of how CoP may contribute to business objectives and secondly on developing guidelines on how organizations can best cultivate CoP’s utilization of social media. In the following section, we review social media literature and identify how these tools are being used by businesses for KM strategy.

3. Social Media Facilitating KM

In 2006, McAfee [21] coined the term Enterprise 2.0 as aligning the practices surrounding social media tools with the organizational goal of knowledge management. Social media tools have many characteristics that make them prime candidates for contribution to knowledge management strategy. Not only do these tools enable virtual sharing of information by informal interaction and communication [32], but they are intrinsically flexible and capable of strengthening widespread information flows [27]. These goals can be accomplished by directly connecting employees, thereby avoiding traditional routes that can be cumbersome and sluggish [32]. Social media tools have clear potential to help organizations improve how employees share knowledge [10]. The emergence of Enterprise 2.0 can be observed in various forms and contexts in the workplace. As highlighted in Table 1, each social media tool offers a different form of connectivity, is associated with a unique set of advantages, and has potential to better accomplish knowledge management efforts as well as other business objectives.

As organizations are beginning to explore the benefits that Enterprise 2.0 offers, answering the question of where and when to utilize various methods of social networking and connectivity is critical. Current efforts of integrating social media into the enterprise are results of convenient implementation as leaders of organizations seek quick wins. However, this merge of social media and organizational culture can reach its full potential if pursued as a purposeful
### Table 1. Social Media and their use in business

<table>
<thead>
<tr>
<th>Social Media</th>
<th>Business Use</th>
<th>Business Objective</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSS – Microblogging</td>
<td>Identify Skills</td>
<td>Knowledge Management</td>
<td>Telus uses SharePoint 2010’s MySites to enabling connections to be made between employees and their skills [24].</td>
</tr>
<tr>
<td></td>
<td>Effective Communication</td>
<td>Increase productivity &amp; innovation</td>
<td>Telus, uses SharePoint’s feed to internally publicize current projects reducing reliance on e-mail correspondence to improve productivity [24].</td>
</tr>
<tr>
<td>Wiki</td>
<td>Content Creation</td>
<td>Collaborative content creation</td>
<td>CoActive Digital develop company’s wide intranet for sharing and creating content collaboratively [19].</td>
</tr>
<tr>
<td></td>
<td>Knowledge sharing</td>
<td>Knowledge Management</td>
<td>Peacock Productions of NBC Universal use wikis as the central information repository to manage both explicit and tacit knowledge [4].</td>
</tr>
<tr>
<td>Blog</td>
<td>Manage workflow activities</td>
<td>Increate internal cross functional Collaboration</td>
<td>CORT Business Services uses wikis and blogs to help to manage the workflow for its e-commerce activities [18].</td>
</tr>
<tr>
<td></td>
<td>Knowledge sharing and creation</td>
<td>Knowledge Management</td>
<td>Dresdner Kleinwort Wasserstein use blogs to record an interaction, its output, and the identities of all involved and make readable by anyone in the company [21].</td>
</tr>
<tr>
<td>Intrapedia</td>
<td>Content creation</td>
<td>Knowledge Retention &amp; Training</td>
<td>Jet Propulsion Laboratory (JPL) created JPL Wired as a company-wide “Wikipedia” to combat the growing “brain drain” associated with retiring employees as well as training supplements for new hires [25].</td>
</tr>
<tr>
<td>Mashup</td>
<td>Information accessibility</td>
<td>Improve decision making and productivity</td>
<td>Adobe provides “Genesis,” a mashup interface that allows users to pull in different “workspaces,” and social tools like instant messaging [12].</td>
</tr>
<tr>
<td>Tagging</td>
<td>Knowledge Organization</td>
<td>Knowledge Management</td>
<td>Google’s iGoogle offers a user-focused layout that displays applications and information chosen which enables aggregation of components from different sources into a personally customized Web site [5].</td>
</tr>
</tbody>
</table>

step in a carefully-architected strategy. The most innate location to maximize the benefits of social media is within existing CoP. CoP inherently emphasize strong relationships and require social interactions [15]. In taking advantage of the highly social nature of CoP, social media tools offer immediate improvements to CoP. As social media becomes a common forum used within strategies highlighted in table 1, they could also be more commonly used by management and the leadership to align CoP with business objectives. This alignment is the central theme of our study.

### 4. Research Questions

This study explores the general question of how to enable CoP to act as a mechanism that enables organizations to realize their business objectives. Specifically we ask three research questions:

- To what extent do CoP contribute to business objectives?
- What are the factors that impede or enhance CoP contribution to business objectives?
- How can social media be used to enable CoP’s to contribute to business objectives?

We address the first two research questions using the empirical data as discussed in the findings. We address the third research question building on our findings in the discussion section.

### 5. Methodology

To investigate the extent to which CoP contribute to business objects, and to identify the factors that impede or facilitate this contribution, we decided it was best that we investigate the phenomenon in a natural setting. As Yin defines it, a case study is “an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used” [33, pg. 23]. More specifically, we employed a single embedded case study design. The case for this study Parsons Brinckerhoff Quade and Douglas, Inc. (PB) and the embedded units of analysis are the 54 CoP called Practice Area Networks (PANs) within PB.
5.1. Practice Area Networks (PANs): Communities of Practice at Parsons Brinkerhoff (PB)

PB is a leading multi-national planning, engineering, program and construction management firm. The firm was founded in 1885 and has been involved in some of the largest public works projects throughout the world including: the initial New York subway, Britain's rail system Network Rail; and Cairo's Metro. PB is an interesting case of a multi-national distributed knowledge-based organization. The firm has grown in its geographic dispersion and diversity of technical expertise. Since the late 1980’s, PB has grown from less than 1,000 employees based in the US to about 12,000 employees in over 80 countries around the globe. In order for PB to capitalize on the diversity of knowledge and expertise they needed to identify and utilize that knowledge throughout the organization. This is especially important considering the fact that the average age of the PB engineer was 55 and nearing retirement. The fact that PB employees are from diverse cultures and dispersed in many offices throughout the world created a challenge in uniformly identifying and compiling the aggregated skills and knowledge of all PB employees. To address the challenges facing PB in terms of knowledge integration and an aging workforce, a grassroots effort launched PB’s CoP initiative in 1994. This initiative was focused on building Practice Area Networks (PANs). The mission of the PAN program was to promote knowledge sharing, mentoring, career development and serve as a company resource for knowledge.

Each PAN consisted of employees who have voluntarily enrolled in that particular CoP, and is led by a PAN Coordinator and a small Coordinating Committee. Each PAN had a small budget to conduct activities. The committee was responsible for organizing activities such as communication among PAN members, communication with other PANs in related areas, mentoring of members, review of research and development needs, and dissemination of lessons learned. PAN activities took place primarily through computer-mediated communication (mostly mailing lists). Each PAN was given space on the firms’ intranet which all employees could access.

5.2. Data Collection

To gain comprehensive understanding and to achieve triangulation using the case study method, we collected data from multiple sources including PAN intranet sites, (which included PAN membership, resources available at each PAN site, levels of activity, relations with other PANs, relations with corporate level entities, and PAN interactions in discussion boards and archives), organizational and PAN documentation, (regarding PAN and organization history, procedures, rules, membership and norms), and 42 semi-structured interviews with 32 PAN coordinators, 9 active members, and 1 PAN initiative leader. The interviews contained questions regarding the perceived function of the PANs, PAN activities, organizational support, and instances of PAN activities contributing to business objectives. Lastly, the study referred to secondary data from a survey of PAN coordinators in 2003. Coordinators responded to questions about the relative activity within their individual PAN membership compared to other PAN memberships and about the other PANs with which their PAN membership interacted most.

5.3. Data Analysis

We used two content analytic schemes to analyze the data. The first content analytic scheme analyzed the PAN intranet sites to identify PAN activity level, membership, collaborative relations with other PANs, and relations with corporate entities. The second scheme analyzed interview data to confirm the elements identified in the first content analytic scheme and identify the role PANs played in the organization, and their level and type of contribution to business objectives. Documentation data were reviewed to confirm, disconfirm and enrich findings in the analysis of the interviews and the intranet sites. We also conducted a Social Network Analysis (SNA) produced using UCINET Software Version 6.126 to identify the structure of the relationships between the 54 PANs as a descriptive tool to illustrate the relationships between PANs.

6. Findings

Interviews revealed how PANs are perceived at PB and how they operate. In addressing research questions 1 and 2, analysis of the interviews revealed that the dominant perception amongst interviewees was that the PANs were focused on individual learning and technical problem-solving as the literature in our review suggested. Some interviews also revealed that PANs do facilitate business objectives. However, these instances contributing to business objectives happened sporadically and were not considered a core function of the PANs. The interviews and analysis of PAN sites revealed the characteristics and behaviors that enabled some PANs to contribute to business objectives. In the remainder of this section we detail the findings providing context from the interview data.
6.1. Perceived and Actual Function of the PANs

Central to our research questions of whether CoP contribute to business objectives or not is how members of the CoP and management view the CoP function. Interviews with PAN coordinators and members revealed that most PANs at PB were viewed as a mechanism to connect individuals across the organization. Interviewees emphasised that the value from the PANs was derived from the support each PAN provides for individual members working to solve technical problems or compile new project proposals. The interviews suggest that both PAN members and management view the PANs as an informal mechanism for knowledge exchange and mentoring. The quote below from one of the coordinators best illustrates this finding.

"I think, I believe that the function of the PAN has been only loosely defined within PB, and that is primarily to serve as a networking community for people who are interested in a particular subject area. The PANs are used by the members of the PANs to obtain information, to ask questions, and in a few cases, perhaps to have more extensive collaboration, but from a corporate point of view, it isn't clear to me that the PAN has a real function other than being an enabler for the individuals who join it."

The analysis of the PAN intranet site revealed that the PANs vary in their intensity and types of activities. The type of activities in any single PAN varied based on the disciplinary nature of the PAN. The information technology tools available varied (e.g. file sharing, forums, etc), but those used were primarily simple email lists. As indicated above, the most common function of the PANs was to connect individuals across the organization and provide a mechanism for knowledge exchange. We found the most common type of activity to meet that function was a query based interaction. These interactions consisted of a member sending out requests for information, usually technical or procedural in nature. The query was distributed to all members by the PAN coordinator. Responses went to the individual seeking those answers. Active PANs archived responses on the intranet site in a discussion board or in file folders. Most PANs did not archive these exchanges, thus missing an opportunity to capture valuable knowledge and lessons learned.

The more active PANs at PB went beyond knowledge exchange. They performed other functions including dissemination of cutting-edge knowledge, creating knowledge repositories of queries and current practices in the field, and becoming a change agent for corporate initiatives. Active PANs did so by using their intranet sites and newsletters to share updated information about articles and best practices in their field and about conferences and development opportunities. These efforts initiated and carried out by PAN coordinators and PAN coordinating committees made the leadership of the individual PANs the main factor in their success and contribution to the business objectives of the organization.

6.2. Leadership: the PAN Coordinators

PAN activities were largely initiated and maintained by PAN coordinators. In the previous section (6.1), we indicated the importance of PAN coordinators’ efforts and initiatives. It was surprising to see that all PAN coordinators interviewed indicated that PAN coordinator training was limited. All PAN coordinators indicated that they did not always have a clear idea of what their role was. Additionally, they indicated that they would like more training on technology tools available to them and the possibilities for contributing to business objectives through PAN use. This finding is best summarized by the following quote in response to questions about what the organization could improve upon in regards to the PAN coordinators.

"in terms of PAN coordinator, maybe some training... That’d be kind of nice. I think we’re kind of left to our own devices, and so it depends on a lot, a lot on the person who’s heading up the PAN and what kind of ideas they have and then what kind of energy they have to go after that. And then what kind of help they have too.[omitted for space]... I mean I understand they don’t want to outline everything so that you don’t have any leeway, I think they wanna leave it so the creativity of the PAN coordinators..."

In addition to PAN coordinators training, all interviewees indicated that limited support of PAN coordinators leads to limited PAN effectiveness, as indicated in the quote below. Support for PAN coordinators could be in the form of larger budget, technical support, supportive culture and reward systems to appreciate coordinator and member involvement.

"Other than funding to allow us the time to put this stuff together, I think that it’s important for upper management to reiterate the importance of our PANs and knowledge management so that if our supervisor finds..."
someone working on this sharing of information that they are supported. Mostly I am thinking of people being encouraged to do so and respected for doing it. I don't think that everyone can hope to be keeping a charge number to write articles because there are so many of us and there are so many articles to be written, but I think there should be some emotional or professional recognition and support when people do take the lead and want to share what they have done.”

6.3. PAN Contributions to Business Objectives

As indicated in section 6.1, PANs were viewed as an informal mechanism for knowledge sharing. Most interviewees revealed that the PANs were not directly connected to business objectives (as the previous quote illustrated). Nonetheless, when interviewees were asked about the outcomes of the exchanges and activities within the PANs, 11 (26%) interviewees provided a number of specific examples of instances that led to business development, increased efficiency, innovation, global integration, staff development, and knowledge integration. We compared these outcomes to the newly formulated strategic goals of the firm and identified much overlap between the two lists. Below we summarize two examples of PAN activities that led to achieving business objectives.

Example 1: PANs as a mechanism for business development

A junior employee participating in the Geotechnical PAN asked a question on behalf of a client. Based on the question, a senior engineer in the PAN residing in another geographic region identified a possibility for additional project with the client. The senior person, assisted by the junior person, eventually proposed a new project to the client generating $400,000 in additional revenue. This is an example of leveraging the expertise of organizational resources through the PANs. In this example we see how the PANs could serve a broader market by connecting across expertise areas. This activity does happen within various PANs but not in a systematic way and is highly dependent on individual members’ foresight and initiative.

Example 2: Improved Efficiency and Innovation

In this example the Environmental Planning PAN coordinator identified inefficiencies in how PAN members like herself dealt with public comments in projects that had an environmental planning component, which included most projects at PB. After identifying the inefficient and diverse ways employees used to deal with the public comments in projects, the PAN coordinator assembled a task force to investigate the issue and secured funding to create a IT tool to improve this important business activity for PAN members and the organization. The quote below illustrates this event:

“I had a project myself, and on it we were getting literally hundreds of public comments. And this happens a lot in the work that I do... [omit due to space] and the question is how do you organize them. So I went out to people in the company who do the same work that I do, and I asked them how to deal with all these comments. And they were doing the same thing I was [omit due to space]. And I was like, ok wait a minute, there’s got to be something better. [omit due to space] And so through the PAN I put together a task force that identified with the kind of a tool we would need in a tool. And PB supported the development of a database, [omit due to space] we ended up with a product we call PB CommentSense.[omit due to space] So that was a technical need that has been identified, that has been developed out of, and through the PAN.”

This effort, in collaboration with an IT group in the firm, led to the creation of an innovative tool to improve efficiency. This tool was then marketed through the PAN and its members throughout PB. The tool has also been used to distinguish the company in related project proposals. This is a clear example of CoP contributing to business objectives to increase efficiency.

The two examples above illustrate the role the PANs can play to directly contribute to business objectives. Unfortunately, due to the perceived and real disconnect between the PANs and corporate strategy, these events happened inconsistently and were highly reliant on the initiative of the PAN coordinator, coordinating committee and individual members. All instances of PAN activities leading to business objectives were found in the more active PANs only.

6.4. PAN Alignments

An interesting finding from the interviews suggested that PANs aligned with corporate entities are more likely to facilitate business objectives than those that are not aligned. PANs that had the support of corporate level initiatives or personnel had a deeper understanding of business objectives and had access to
resources and capabilities to better contribute to business objectives as indicated in the quote below:

"I am very fortunate that the PAN that I have is such a large envelope of disciplines and interests, not only as it applies to the design of construction of projects, but also to managing projects and the office infrastructure within our company. So, it’s such a huge umbrella that it is easily melded in with other corporate initiatives. Whereas with the HazMat PAN coordinator, it’s such a small, specific area, although it is very important, that it doesn’t merge as easily with corporate initiatives as mine happens to."

In addition to alignment with corporate level initiatives and personnel, our analysis revealed that PANs aligned with other PANs were more active and more likely to contribute to organizational learning and business objectives. Figure 1 illustrates the relationships between PANs and their level of activity and membership. PAN alignments vary in nature. Some alignments are based on disciplinary focus or operational focus. Figure 1 illustrates that connected PANs are more likely to be active and are thus more likely to contribute to business objectives. This Social Network Analysis (SNA) is based on secondary data from PAN coordinators collected in 2003 and updated by our analysis of PAN interviews and PAN sites. In figure 1, each node represents a PAN and is labeled with the corresponding PAN number. The shape of the node indicates the membership activity within that PAN: a circle-in-a-box indicates no data available, a circle indicates low activity, a triangle indicates moderate activity, a diamond indicates high activity. The size of the node indicates relative membership size. Arrow directions indicate which PAN coordinators indicated interactions with other PANs. The strongest links between PANs are therefore indicated by bi-directional arrows between two PANs. Figure 1 indicates that the most active PANs, the diamonds, and those that did contribute to business objectives were all aligned with at least one other PAN. There were only four moderately active PANs that were not connected to other PANs.

Alignments between the PANs provided a vehicle to facilitate wider scale contributions to business objectives. This is best illustrated through the example of the alignments between Information Technology (IT) related PANs. Five PANs including IT, CADD, Geospatial, Software Engineering, and Graphics PANs are formally aligned with one another and also aligned with the Chief Information Officer. Members of these PANs faced similar issues regarding staff development. IT related organizational units did not have a formalized way for the development and training of their staff. These organizational expertise areas were also challenged to retain staff due to a lack of career advancement paths that were available in the engineering units. To address the issue of professional development and career advancement, the IT PAN initiated an effort to create a certification program and promotion paths. The effort was adopted by the CADD PAN. Additionally, through informal collaboration with Project Administration PAN, the Project Administration PAN also adopted a similar effort. The efforts of the PANs lead to a proposal to formalize the professional development process of IT personnel which was adopted by the organization. Staff development is a main business objective. The PANs
have contributed to the fulfillment of this business objective across various units in the organization (and this phenomenon was therefore not concentrated in one PAN or one cluster of PANs). We found these alignments can be based on either disciplinary focus or commonality of issues.

7. Discussion and Conclusion

The discussion of findings and the literature reveals that CoP (PANs in the case of PB), have the potential to contribute to business objectives in significant ways. At PB, the common perception of the role of the CoP was focused on knowledge exchange and individual learning. The findings from interviews, however, suggest that the CoP also contribute to business objectives, though in some PANs only sporadically. A number of factors influence the CoP contributions to business objectives, including CoP alignments, CoP leadership preparation and motivation, organizational support, and CoP focus (disciplinary focus and objectives). Our findings suggest that in order to harness the power of CoP, the organization must align these CoP with the appropriate organizational entities and resources and orient them to specific business objectives. We organized the factors from our findings enabling or hindering CoP contribution to business objectives into five design guidelines. To address the third research question we also identified what social media tools can be used to facilitate each guideline when appropriate. These guidelines can be used by organizations to best position CoP to contribute to business objectives. These guidelines are:

1. **Align CoP with organizational strategy**

   Determining where each CoP resides within the organizational structure is necessary to determine the appropriate role the CoP can play in contributing to business objectives. Clear definition of the role of the PAN is necessary. Once the role of the PAN is articulated in relation to the structure of the organization and related business objectives, proper alignments between the PAN and appropriate personnel and initiatives should be formed. These alignments can take many forms including having organizational initiative leaders be part of the coordinating committee. An example of this is illustrated in the IT PAN and the relationship it formed with the CIO of the organization. The CIO is invited to PAN coordinating committees where he and the PAN exchange ideas and information and collaborate on achieving business objectives.

   This guideline can be achieved through each individual in a top management position maintaining a blog that clearly defines and regularly updates his or her strategic initiatives and priorities. These blogs should be included in the CoP shared space. The blog provides members and leaders of CoP with a solid reference point for enabling the alignment of activity within a CoP and its role in the organizational strategy. Regular blog posts will allow for the quick and interactive exchange of ideas and information as well as ensure that CoP are participating in value-added activities.

2. **Create Proper alignments between the CoP**

   Once the proper alignments have been established with organizational structure and strategy, align each CoP with other related CoP. CoP may collaborate on topics based on disciplinary interests to them, collaborate on problems they face or key objectives. Collaborations between the IT, CADD, Geospatial, Graphics, and Software Engineering PANs seemed very straightforward due to their disciplinary commonalities. However, collaboration between CADD PAN and Project Administration PAN was not necessarily as clear at first examination. The CADD and Project Administration PAN faced similar concerns regarding the type of employees and related employee development challenges on which they were able to collaborate.

   Formal leaders of CoP within an organization can establish effective alignment between CoP by generating three levels of update outlets using various social media. Each level should be comprised of a deeper level of detail on each leader’s CoP in order to encourage effective and efficient browsing by leaders of other CoP in the organization. At the topmost level, leaders must participate in tagging the discussions, documents, and exchanges that occur within their own CoP. The next level will consist of RSS feed updates, providing other leaders with a quick highlight of recent activity within each CoP. This can be done using an internal Facebook- or Twitter-type application that allows users to “follow” certain profiles of interest. Finally, by maintaining a blog, leaders have access to more in-depth look at the current progress and nature of other CoP across the organization. These tools provide CoP leaders with the opportunity to remain updated on other CoP while making connections and alignments when necessary.

3. **Design each CoP to fit its specific objectives and discipline**

   Like Many complex knowledge-based organizations, PB includes a variety of expertise. Diverse expertise and activities within PB require different activities and tools. Once the role of the CoP is defined and the disciplinary nature of the CoP is clarified, each CoP should be designed accordingly.
Design of each CoP must contain both the social and technical elements embedded in the discipline and the IT tools they require for interaction. The uniqueness associated with each CoP is undeniable, each requiring tools that are as flexible as the nature of each CoP. For example, mashups allow users to arrange combinations of existing web apps and services in a way that makes sense to their purpose. This is an ideal way for CoP to customize their virtual space, giving members the power to choose the tools and layout that are appropriate for their purpose. Additionally, an intrapedia site can be implemented as a blank template to all CoP. Members are able to collaborate to define, produce, edit, and share the content that populates the site. The flexibility of these tools allows for high customization needs of the numerous CoP in an organization.

4. **Empower the CoP**

To ensure the effectiveness of the CoP, the organization must provide the appropriate support structures. These structures empower the CoP to contribute to organizational learning and business objectives by having high involvement from skilled employees. To do so, the organization must provide the resources for CoP coordinating committees to conduct the appropriate activities. Additionally, creating a supportive environment with the appropriate reward systems and appropriate tools is necessary. For this reason participation in CoP is essential and must be embedded in organizational strategy and reward structures.

It is also important to make participation an enjoyable and simplified process for members of CoP. To this end Social Media tools can be used. Encouraging members to continuously tag questions, responses, events, documents, etc. will provide links to content both across CoP as well as within the CoP of the user. The popularity of each tag can be displayed on the home page of the organization’s intranet site, giving all employees a quick feel for the pulse of the CoP atmosphere. Each individual CoP can implement this tag cloud as well, giving members quick and direct links to matters that are of interest to them. Additionally, each CoP would benefit from an individual RSS feed that allows members to post and remain connected with others in the CoP. This is especially helpful when the CoP grows larger or spreads out across different geographic regions.

5. **Prepare and empower CoP leadership**

As indicated in the findings section, CoP leadership, including the CoP coordinator and CoP coordinating committee, are essential to the effectiveness of each CoP. In the case of PB, coordinators and steering committees are formally assigned. In addition, there are other members within PANs that emerge as leaders based on their expertise and level of involvement. Critical to the success of PAN coordinators, as indicated in the findings, is their preparation. All PAN coordinators interviewed indicated that they are in need of more training and preparation. While some coordinators were very effective at their role in engaging their PAN members, all agree that more formal training and definition of their role would better equip them to strengthen the PAN activities and contributions. To this end, organizations must provide training and role definition that maintains a balance between autonomy, flexibility and the identified responsibilities and expectations.

Organizations can use Social Media tools for training purposes. Specifically, wikis can serve as a repository and learning environment for COP leadership. One of the key advantages to using wiki technology is its ability to avoid the costly reinvention of the wheel by aggregating information contributed by experts into a centralized location. With wikis in place, CoP leadership will have access to training materials, organizational CoP standards, templates, and best practices in order to be truly prepared and empowered by the organization to lead his or her CoP. Providing this space for CoP leaders to post information on salient issues, building on each other’s experiences and knowledge, is an important step in the continuity of training and role definition for future leaders and members of CoP.

Implementing the guidelines using social media has implications for resource allocation and change in organizational culture. Organizations must allocate the appropriate resources for training and support of these communities. Perhaps most noteworthy is the change in culture required at all levels of the organization. Upper management and its employees must change perceptions of the role of the CoP and their importance to the organization. Striking a balance between alignment with organization structure and strategy and the emergent and informal nature of the CoP is also essential. Our future research will study PB as they implement these guidelines and utilize Social Media tools to do so.

8. References


[26] Robey


