A Review of Community of Practice in Organizations: Key Findings and Emerging Themes

Anukrati Agrawal
Washington State University, Pullman
anukrati.agrawal@wsu.edu

K.D. Joshi
Washington State University, Pullman
joshi@wsu.edu

Abstract
Considerable research has been conducted in the area of Communities of Practice (CoP) over the past two decades. This concept, introduced and popularized by Brown and Duguid (1991), has been applied in practice and has formed the basis of numerous scholarly articles. This paper takes a small step towards reviewing the extant literature on CoPs, focusing only on empirical papers. We use the following three step process for the literature review – 1) develop a criteria for the types of articles to be included in our analysis, 2) a literature search strategy, and 3) prepare a scheme for categorizing and analyzing the articles. Based on the review, we synthesize the literature on CoPs within the organizational context and uncover key emerging themes which can be used to reveal research gaps for future work.

1. Introduction
Brown and Duguid (1991) introduced and popularized the notion of Community of Practice (CoP) to the business community in their seminal article which appeared in Organization Science two decades ago. Brown and Duguid’s work was developed on Lave and Wenger’s (1990) practice based theory of learning. Over the past two decades, considerable research has been conducted in the area of CoP. This concept has been applied in practice and has formed the basis of numerous scholarly articles. It is time to review the past and take account of what has been done, what we have learned, and what we need to focus on as we move forward. This paper takes a small step towards addressing the aforementioned questions by reviewing the extant literature on CoPs. We scope our study by focusing only on the empirical articles where the CoPs have been studied within the boundaries of an organization. This scoping ensures some reasonable amount of homogeneity within the review sample which makes the comparisons among the studies more useful. Moreover, it also allows us to examine how organizations have incorporated and coupled the CoPs structures with the organizational structures which are more formal, hierarchical, and bureaucratic. The main contribution of this work is that it synthesizes the literature on CoPs within the organizational context and uncovers key emerging themes which can be used to reveal research gaps for future work.

2. Literature Review

2.1. Literature Review Process
We followed the following three steps for our literature review proposed by Leidner and Kayworth [44] to develop the criteria for what kind of CoP articles will be included in our analysis, 2) outline a literature search strategy, and 3) prepare a coding scheme for analyzing and categorizing the articles.

Considering the enormity of the literature on Communities of Practice over the past two decades, we chose to limit our initial round of analysis to empirical studies related to CoP literature published in business journals. We adopted this strategy for following two reasons – 1) to avoid having an unmanageable sample of articles with limited value, and 2) to develop a better understanding of what empirical findings have been established regarding the working of CoPs in organizational setting. In addition, to bolster our understanding of the empirical CoP literature, we also focused on identifying CoP related articles in leading management journals.

We used the following approaches to search for the appropriate literature. First, we conducted search in the primary business database, EBSCO, searching for phrases such as “community of practice”, “communities of practice”, and “community-of-practice” in the title of the paper. We confined our search to these phrases being present in the title, as we wanted to concentrate on core CoP articles, and exclude others which simply apply the notion of CoPs to some other context, but do not study the CoP phenomenon itself or how it affects organizations. Second, we searched for the phrases such as “community of practice”, and “network of practice”, in
the keyword or abstract of some of the most impactful management and organization journals including – Academy of Management Journal, Academy of Management Review, Organization Science, Strategic Management Journal, and Administrative Science Quarterly. We expanded our search criteria to abstracts and keywords this time, as we did not want to miss any seminal articles on communities of practice in these journals.

We conducted this review in spring of 2010. The resulting 43 articles reviewed came from 33 different journals. In our method for analysis of empirical CoP studies, we reviewed each article to determine the following information: what aspect of CoP were being studied, whether the article studied structural, epistemic, both or none of these characteristics of a CoP, relevant findings, methodology used, whether the CoP studied was online or F2F, and the domain of application of the CoP (business, education etc.). The classification of our articles in these categories provides the basis for subsequent analysis to identify themes in empirical CoP research which can be used to develop future research.

2.2. Literature Review

In total, we reviewed forty-three articles. Nine of the forty-three papers were categorized in the structural category, five in the epistemic category, fourteen in both and fifteen in neither of these two categories. Five of the forty-three articles studied virtual CoPs, two looked at the complementary online aspect of F2F communities, and the remaining studied face-to-face communities. Seventeen of the articles studied CoPs in the business domain, six in the educational domain, three in the governmental and two in the health-care domain. Some of the other settings in which CoP was studied included air traffic management, call centers, water supply sectors, public defenders and mixed domains. These articles were also classified based on the research methodology used to conduct the CoP research. Table 1 below presents the frequency distribution of the methods used in these forty-three articles. The research method count overlaps, as many articles used more than one research method for their study. Qualitative methods are the dominant methodology in use.

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The following five themes emerged from the synthesis of the extant literature: 1) CoPs can be intentionally created; 2) Seeding Communities of Practice - Generative and Degenerative Seeding Structures, 3) Epistemic Entailments of Communities of Practice cover two themes – Epistemic pressures surrounding the emergence of CoPs and KM activities used in CoPs, 4) Impact on CoPs on organizational performance; 5) CoP concept is not an monolithic concept.

3. Key Findings and Emerging Themes

3.1 CoPs Emerge Naturally or Can Be Created Intentionally?

The extant literature suggests that CoPs can be intentionally created. In addition, significant amount of studies (as discussed below) provide prescriptions and guidance for building effective CoPs in a systemic and deliberate manner. Soekijad et al. [28] suggest that contrary to the popular belief (that CoPs emerge naturally), they can also be deployed successfully. Garavan et al. [13] studied the strategies used by CoP managers to illustrate that CoPs can be intentionally created. Dube et al. [1] study found that having a voluntary membership, and naturally occurring CoP, does not guarantees success, as in their study, half of the CoPs with voluntary membership succeeded and half of them failed. Kranendonk and Kersten [7] conducted case study of a government-driven CoP to investigate the steering conditions and characteristics of an intentionally created CoPs. They claim that “designing CoPs on the basis of theory can be successful: The CoPs planned by management as new ways of working show patterns of development identical to those of CoPs emerging from free engagement in domain interests, pp. 947”. Chua [2] and Schwen and Hara [19] provide a cautionary note. Chua [2] identified parameter which should be considered while creating and sustaining a CoP, but recommended that one should try to foster a naturally occurring potential CoP, rather than attempting to create one from scratch. Similarly, Schwen and Hara [19] suggest that CoPs are not likely to be forced, rather they emerge naturally. However, based on our analysis of the literature, we conclude that CoPs can be intentionally created if appropriate seeding conditions provided by the organizations.
3.2 Seeding Communities of Practice

Papers in this category cover the factors that facilitate or constrain the development, sustenance, and effectiveness of CoPs. These factors include generative and degenerative structures and behaviors which are critical in seeding CoPs. The cultivation of an effective epistemic environment within CoPs depends on the robustness of these structures.

3.2.1. System Quality and Satisfaction. Dube et al. [1] conducted an exploratory study to investigate the impact of structuring characteristics on intentionally created Virtual CoPs (VCos). They uncover the importance of good leadership during the launching phase. They suggest that it is very important for the successful launch of the VCos that the leaders are highly motivated and involved in the VCoP and that they are able to “sell” the importance of the VCoP topic (practice) to its members. In addition, they suggest that an engaged and dedicated leader can help mitigate the deficits in other structural supports which may obstruct the development and effectiveness of CoPs. Chua [2] in their study of the inception, development and eventual demise of a community of practice among e-learning instructional designers found that the leaders of CoPs need not be people in high position in the organization. Probst and Borzillo [3] in their extensive investigation of 57 CoPs from European and US companies uncovered 10 key factors (which they refer to as 10 "commandments") that lead to a successful development CoPs. Two of the ten commandments focus on CoP leadership. They found that CoP leaders, who are “best practice control agents” within their organizations, are critical to its healthy development. They also found that the CoP leaders must have a driver and a promoter role, which focuses on steering the CoP in the right direction and publicizing the achievement and the impact of CoPs on organizational goals. Verburg and Andriessen [4] developed a Community Assessment Toolkit (CAT) to assess the overall performance of Communities of Practice (CoPs). This Toolkit views the role of the leadership as a coordinator and facilitator of CoP activities. In this toolkit, leadership’s engagement is captured by assessing his/her role in organizing meetings, stimulating members to participate in the community, sharing his/her own expertise with the community members, coordinating CoP related activities, making external contacts, connecting the community members with each other, promoting the community towards management, alerting members to interesting external activities (e.g. conferences). Ribeiro et al. [5] downplayed the role of leadership in their examination of Quantum CoP which emerge around an existing core community and are transient in existence. In their case study they revealed that members of a Quantum CoP are not driven by leadership dictat, but by a desire to enhance the community to which they belong. Hemmasi and Csanda [6] tested the effects of perceived community leadership strength on community effectiveness and member’s satisfaction with community experience using survey data. In their model community leadership positively effects community effectiveness. However, its direct effects on community satisfaction are not significant, but it seems to play an indirect role though community effectiveness which has a strong positive effect on member satisfaction. Kranendonk and Kersten [7] in the case study of an intentionally created government-driven CoP concluded that leadership’s (they refer to them as master) full engagement is critical to CoPs. They indicate that leadership functions more effectively when their role is integrate in the CoP and in the activities. If the leaders distance themselves, they are unable to relate to the needs of the CoP. Based on this review, it is clear that leadership can play a critical role in seeding and cultivating effective CoPs.

3.2.2. Organizational and Member Commitment. These papers assess the role commitment of the sponsoring organization and CoP membership play in fostering CoPs. Corso et al. [8] posit an evolutionary model for CoPs from the insights gained from their field research on 7 case studies. This evolutionary model shows the importance and the inter-play of organizational commitment and member engagement in the development of CoPs. Gibson and Meacheam [9] studied a health service CoP to identify the individual and organization commitments needed for building a successful CoP. They found that at an individual level, a CoP member’s commitment to the practice of CoP which in this case was improving the lives of people with diabetes was critical to its effectiveness. In addition, they found that CoP members need to be commitment to the epistemic aspects of CoPs by sharing and seeking knowledge from other members, effectively manage personal relationships, and understanding the roles of other members of the CoP which will allow them to fulfill their primary commitment of improving the lives of people with diabetes. At the organizational level, they found that the organization’s commitment over time in forms of funds, innovation facilitation, and assessment of CoP performance helped in the cultivation of CoPs. Hemmasi and Csanda [6] tested the effects of CoP member’s commitment on community effectiveness and member’s satisfaction with community experience using survey data. Their results suggest that member commitment has no impact on either the community effectiveness or the member satisfaction construct. In
our view, this theme is not well defined and characterized in the CoP literature. Moreover, this concept seems to overlap with the organizational involvement and member engagement concept discussed below.

### 3.2.3. Power Dynamics

Contu and Willmott [10] use the Orr’s [39, 40] study of photocopier technicians to draw attention to the role of power as a generative parameter for CoPs. They suggest that the role of power relations has been neglected while studying the learning phenomenon in organizational CoPs. In their study they argue that the photocopiers’ motivation in Orr’s example to engaging in the practice of fixing the machine was not to “please the customers,” but was instead driven by power factors. They recommend examining the development of CoPs from the power relations perspective and assessing its effect on the learning practices in an organization. This work characterizes power as the power dynamics among the photocopies and other stakeholders within the organization, in other words, the power strain is not within the CoPs but is external to CoP. However, when the power differential is created within the members of the CoPs, then it seems to have a degenerative effect on CoP sustenance [11].

Thompson [11] studied the attempt of one of the largest global IT hardware and services organizations to create its own Web-design CoP. Thompson’s focus was to examine whether CoPs work best when they are left alone, without any organizational “interference”, or whether there are ways in which organizations can provide helpful support to such CoPs. He found, that one of the degenerative mechanisms which threatened to obstruct the sustenance of the CoP was the emergence of the bench concept which created a hierarchy distinction between members who were working on a client project and were billable and the members who were not currently on client project. This distinction created a power differential among the CoPs members which altered the organic nature of the community. This finding is supported by Chua [2] who advocates the use of informal and non-bureaucratic control structures for CoPs and by Probst and Borzillo [3] who list overcoming hierarchy-related pressures within the CoP as one of the 10 "commandments" critical to the success of CoPs based on their investigation of 57 CoPs in European and US companies. Pastoors [12] studied a CoP comprised of consultants from one of the world’s largest IT companies to understand the difference between the experiences of formal “top-down” CoPs and informal “Underground” CoPs. He found that hierachical control structures are not favorable for CoPs as it induces mistrust among the CoP members. Garavan et al. [13] who studied the strategies used by leaders in four intentionally created CoPs in Ireland found that deliberately managing power dynamics within a CoP is critical to its development. Some of the strategies suggested by them include setting the rules which focus on community as a whole, managing member behaviors that threat to spoil the essence of community, managing conflicts between CoP members, serving as a coach and a role model for the members, and having face-to-face interactions with CoP members. Hong and O [14] uncovered that power conflicts between two different communities1 dampens the learning between the communities. They conducted a case study of an education institution, where the top management outsourced the IT operations. They studied identity and power conflicts between the following two communities – 1) community of the outsourcing staff, and 2) the community of the in-house workers. Their results suggest that difference in perceptions of identity and perceptions of power of different CoPs can hamper the working relationship and hence the learning process between them. In their case, due to the conflicting identities and power inequalities the in-house workers could not get the outsourcing staff well integrated into their daily work activities, which in turn created obstacles for the learning and knowledge sharing processes. They conclude that asymmetric power distribution is a by-product of identity conflict, as power was very much derived from identity.

### 3.2.4. Composition of CoPs

These papers examine the makeup of the CoP members and its effects on the development and effectiveness of CoPs. Rohde et al. [15] studied integration of student project teams members with the CoPs of local start-ups in the area. Their findings suggest that differences in cultural background and historical experiences of the “students” and “entrepreneurs” made the process of social identification more difficult which made successful community building less likely. Van Beynen and Fleury [16] studied Karst CoP of cavers which comprised of formal caving researchers and an informal cohort of recreational caving enthusiasts. Their findings suggest that a community lacks institutional memory when it is in a constant flux because people frequently join and leave the community which in turn hampers the learning process in a CoP. Thompson [11] in his investigation of the attempt of one of the largest global IT hardware and services organizations to create its own Web-design CoP found that rapid and in-organic growth of this CoP

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1 We don’t consider this a true CoP but have included it in the study because it complied to our search criteria.
lead to its demise. This rapid growth was not natural, but rather forced by the organization when they infused about 140 new members into this community. Hara [17] examined the role of information technologies (IT) in supporting CoP of public defenders found that physical distance which limit access to all the members obstructed its growth. CoPs comprised of members who are not co-located can constrain its growth and sustenance. Probst and Borzillo [3] in their study of 57 CoPs from European and US companies found that a lack of core group of people was one of the top five reasons for CoP failures. A critical mass of people who are fully engaged with the community is crucial for its survival. Kranendonk and Kersten [7] while studying CoPs observed that intentionally created CoPs often entail bringing together a mix of totally different people from totally different backgrounds. This lack of a shared experience should be recognized and deliberate steps to create a cohesive community should be taken.

3.2.5. Goal Congruency- Among the Key Stakeholders, Community and Organization. These papers focus on the effects of the fit between the goals of the sponsoring organization, objectives of the CoP, and the goals of the CoP embers on CoP development. Anand et al. [18] found that a good fit between the community members and the organizational goals provide a critical generative structure for innovation. They call this fit a socialized agency which drives community members to align their career moves with their firm’s growth objectives. Dube et al. [1] conducted an exploratory study to investigate the impact of structuring characteristics on intentionally created VCoPs. They uncovered that the success of VCoPs depends on the degree to which the VCoP objectives are congruent and integral to the work of participating members. Schwen and Hara [19] also found that CoPs which support knowledge in action (knowledge embedded in work practices), rather than declarative knowledge are more successful. Theses finding are supported by Brown and Diguid [32] who through the use of Orr’s case study highlighted the need for learning through work related practice.

Gibson and Meacheam [9] in their work found that a good fit between the focus of the CoPs and the objectives of the organizations employing the CoP members amplifies CoP success. Corso et al. [8] developed a six-stage prescriptive model which provides guidelines for developing effective CoPs based on two years of field research using 7 case studies. In their prescriptive model they prescribe establishing a strategic fit between the CoP and organizational goals as their first stage. This stage is referred to as strategic concept where the vision of the CoP is defined such that it contributes to the company strategy and to CoPs members’ needs. Probst and Borzillo [3] investigated 57 CoPs from European and US companies to study the factors which lead to the success and failure of CoPs. They found that sticking to strategic objectives was one of the 10 key success factors. Their results show that the CoPs which are developed with clear mission to develop and share practices eventually contribute to lower costs/increase revenues for the organization once they have been deployed and multiplied across the organization. They indicate that setting clear and measurable objectives provide CoP members with a concrete direction to follow.

3.2.6. Involvement of the Sponsoring Organizations. These papers address the role of sponsoring organizations in building and sustaining effective CoPs. Anand et al. [18] identified organizational support, in the form of professionals, resources and funding, as critical to generative knowledge structures, such as CoPs. Venters and Wood [20] conducted an interpretive case study to report the failure of a knowledge management tool, which aimed to support the creation and cultivation of a CoP among a strategically significant group of people. They found that it disengaged their headquarters from this community which lead to the lack of social cohesion and shared objectives with the authors claim are necessary elements for the emergence of CoPs. Probst and Borzillo [3] investigated 57 CoPs from European and US companies to study the factors which lead to the success and failure of CoPs. They provide a list of 10 “commandments” that lead to successful development and sharing of best practices in a CoP, one of which recommends forming a governance committees with sponsors and CoP leaders which will ensure the involvement of the organization. Verburg and Andriessen [4] developed a Community Assessment Toolkit (CAT) to assess the overall performance of Communities of Practice (CoPs). This Toolkit characterizes the support from the organization as time and encouragement provided to the members by the company to participate in the CoP activities.

Corso et al. [8] developed a six-stage prescriptive model which recommends building a governance structure which consists of defining the coordination roles and mechanisms necessary for the correct functioning of CoP structures. Bourhis and Dube [21] closely followed the experiences of eight VCoPs over a six- to nine-month period to uncover organizational practices which can help companies to sustain their VCoPs. They found that organizations which provide ongoing support to develop knowledge sharing cultures, which provide adequate resources, and
regularly monitoring of CoP leadership had the most impact on a VCoP’s success. For example, despite being hierarchical, organizations’ top management regularly informed other managers about the VCoP activities in the top management meetings - signaling and requiring that they willingly offer their full support to these emerging CoPs. In addition, top management provided financial resources to support F2F meetings of the VCoP members. Chua [2] acknowledge the critical role financial resources play in the sustenance of CoPs, but interestingly concluded that it is not good for the CoPs to demand the management for resources until the CoP has shown some positive outcomes, as this creates a pressure on the community members. Instead he suggests that as the community develops and starts delivering tangible results, it should garner greater support from the management. Management support, in the form of resources or mandates, could afterwards be leveraged to spawn more successes, which can in turn help sustain the community. Gibbon and Meacheam [9] also found that funding and long term organizational support determines CoP success.

3.2.7. Environment of the Sponsoring Organization. When CoPs are created within the organizational boundaries, organizational environment affects CoP’s growth and health. These studies evaluate the role organizational environment plays in cultivating CoPs. Venters and Wood [20] in their study of CoPs found that downsizing of the organization negatively affected CoP development, where these communities become too small and started to behave like an underground movements, which eventually lead to increased individualization and lack of trust among the CoP members. Thompson [11] in his case study examined whether CoPs work best when they are left alone, without any organizational “interference”, or whether there are ways in which organizations can provide helpful support to such CoPs. He observed that CoP flourished in informal environment, like no formal dress code, an informal office setup, where people can play music and move around freely, and availability of games like foosball in office. They found that restricting the use of office space by limiting its informal use constrained and formalized the CoP which eventually contributed to its demise. Dube et al. [1] conducted an exploratory study to investigate the impact of structuring characteristics on intentionally created VCoPs. They primarily focus on the launching phase of VCoPs. They found that environment within which VCoPs are developed greatly influences to its success or failure. For example, they uncovered that the VCoPs were likely to succeed in environments in which informal virtual teams already existed and were culturally not only accepted, but also encouraged. Whereas, other organizational environments were hostile to this concept because they brought together people that were not used to collaborating or sharing knowledge or were in the organizational culture where expressing disagreement or making comments was viewed adversely.

3.2.8. CoPs Valuing Mechanisms. In order for the CoPs to survive and thrive, they continually need the support of its members and sponsoring organizations. In order to sustain the support and engagement of the aforementioned stakeholders, CoP leaders not only have to publicize and advertise the successes, but also have to promote and justify its existence by measuring the tangible benefit derived from the CoPs [8]. Probst and Borzillo [3] recommend illustrating tangible outcomes of CoP by highlighting its members’ success stories. The CoP in the Thompson [11] study achieved this with the use of central visual displays to showcase the creative work and amount of activity done by of the CoP members. Verburg and Andriessen [4] developed a Community Assessment Toolkit (CAT) to assess the overall performance of CoPs. They capture and assess the efficacy of the community by capturing its members’ perceptions on variety of key issues ranging from community cohesion to contribution of the community to the sponsoring organization.

3.2.9. Engagement. It is important for the success of any CoP that its members strongly identify with the CoP and that they are excited about the CoP practice [11, 5] – which we refer to as engagement. Two of the five reasons for failures of CoPs in Probst and Borzillo [3] study relate to member engagement, namely, low level of one-to-one interaction between members and lack of identification within a CoP. Cadiz et al. [22] suggest that an effective CoPs are where members are fully engaged with the given practice community. They proposed four major components of engagement within the CoPs which include open communication, shared vocabulary, remembering previous lessons, and learning from each other. According to Cadiz et al. [22], open communication between community members establish trust and motivation to share information which is critical to the establishment of a successful community of practice. Shared vocabulary within a CoP creates a common lingo to interact with each other to facilitate the transfer of information [22]. In addition, having a shared vocabulary may also be a way for the group to establish a sense of exclusivity which can help create a sense of connectedness. Remembering previous lessons by passing on the learning and experiences of older members on to the newer members creates a shared framework of reference and community memory which members can
identify with. Learning from each other through interactions among members who share the same interest is a key to CoPs’ survival. If the exchange of information between community members lack value and no learning is occurring then either the CoP will evolve into a social club or fade away [41]. Van Beynen and Fleury [16] assessed knowledge development, sharing and management among the members of Karst CoP of cavers. Their findings suggest that members will not share information with others if they do not trust correct use of that information. This is specifically true in Karst Cavers case, where the information shared is sensitive information about risky caves. Here the trust is primarily to preserve the fidelity of the practice and its underlying knowledge. Hemmasi and Csanda [6] tested the effects of trust and connectedness among CoP members on community effectiveness and member’s satisfaction with community experience using survey data. In their model, community connectedness strongly predicts community effectiveness and member satisfaction. However, trust has not effect on community effectiveness or member’s satisfaction with community experience. Gongla and Rlzzuto [23], present an evolution model for a CoP which was developed by observing the development of CoPs at IBM Global Services. The evolution model consists of five stages which focus on engaging and involving CoP members in epistemic endeavors. The potential stage focuses on building connections, the building stage focus on creating memory and shared context, engaged stage focus on learning, and adaptive stage focus on innovation. Garavan, Carbery and Murphy [13] who studied the strategies used by leaders in four intentionally created CoPs in Ireland found that negotiation of shared meaning and building trust and enabling collaboration in a CoP is critical to its development. Some of the strategies used to facilitate the negotiation of a shared meaning in a CoP included formal and informal interaction with Cop members, helping the members to interpret the situation and context, preparing a CoP report, facilitating learning by doing, and articulating the vision/goal of the CoP to its members. Some of the strategies used to build trust and enable collaboration in a CoP included, identifying individual skills of the CoP members, focusing on intrinsically motivating the members, setting individual challenges and developing relational resources. Kranendonk and Kersten [7] in their case study of a government-driven CoP investigated the steering conditions and characteristics of intentionally created CoPs. They concluded that engagement in form of alignment, belonging, and intimacy are very powerful parameters of a CoP. Breu and Hemingway [24] primary findings suggest that individual motivation serves as a key condition for the foundation of a CoP, and that people, by nature are motivated by a broad range of factors to share knowledge. These factors may include need for achievement affiliation, autonomy, power and learning. Raz [25] described and analyzed the formation of CoPs in three call centers of cellular communication operating companies in Israel. Their primary finding is that in all three call centers employees talked to each other to produce situated knowledge and that the CoPs were formed during training, on-the-job learning, and off-the-job informal social activities. Unfortunately, the resentment of CoP members related to their HRM policies was the primary driver of engagement and connectedness among the CoPs members.

3.3 Epistemic Entailments of Communities of Practice
In this section we discuss the paper that address Issues and factors that deals with the knowledge management aspect of CoPs.

3.3.1. Epistemic Pressures. The presence of epistemic pressures is a necessary condition for the emergence and survival of CoPs [11]. CoPs generally surface to satisfy some epistemic needs experienced within an organization. The epistemic needs motivate participants to willingly share their knowledge and collectively engage in the creation of new knowledge [11]. The knowledge ambiguity, task complexity can serve as a key epistemic contributor to the creation of CoPs [26]. Jurado and Gustafsson [26] found that communities of practice emerged by themselves because of the complexity of the task at hand, and they termed such communities as the “emergent communities of practice.” Van Buuren and Edelenbos [27] suggest that a common sense of urgency united the CoP members together. Common sense of urgency here refers to urgent need for solving a shared problem. Kranendonk and Kersten [7] found that rapid change in the object domain is the main reason for participating in the CoP. The sense of urgency to keep up with changes and the wish to influence events is translated into participant actions.

3.3.2. Factors Enabling and Constraining KM Activities of CoPs. In this section we enumerate the epistemic activities that community members engage in acquiring, creating, and sharing knowledge surrounding its practice. Van Buuren and Edelenbos [27] found that a process of joint knowledge creation occurs through intensive interaction and frequent debates between the community members. Kranendonk
plays a crucial role in facilitating this socialization. That informal interaction among the CoP members in a CoP creates a tension between the core members and peripheral members (who usually consume the information) of a CoP, which eventually hampers knowledge sharing with the community. Their findings suggest that core members usually happily share their knowledge with the community. They also suggest that competence shadows (a form of apprenticeship) can be used to transfer key tacit knowledge within the community. Soekijad et al. [28] study the learning and knowledge sharing process within CoPs in an inter-organizational context. Their findings suggest that simulating problems is a good way of learning and knowledge sharing in CoPs. Simulation helps in the learning process as there is no risk involved in simulating, which gives CoP members an opportunity to explore new and different things. Their findings also suggest that activities like going on excursions (short trip or outing to some place), and attending workshops significantly helps the CoP members to acquire tacit knowledge about their work. Kasper et al. [42] studied the process of knowledge sharing between the different sites of a multinational company (MNCs) to examine how organizational structure influence knowledge sharing across the single sites of MNCs. They primarily focused on analyzing the organizational context of structure (the degree of decentralization of knowledge management and the existence of communities of practice) and how it impacted the technical and personal knowledge flows in a CoP. Their key finding was that decentralized knowledge management structures are better for knowledge sharing in CoPs than centralized structures. Geiger and Turley [29] use grounded theory method to investigate the knowledge sharing about customer’s likes and dislike and their requirements in the CoPs of sales personnel. Their main finding suggest that knowledge sharing is inseparable from the social environment in which it is created and put to use, and that informal interaction among the CoP members plays a crucial role in facilitating this socialization.

Anand et al. [18] identified the presence of differentiated expertise as critical to innovation for structures such as CoPs. Gibson and Meacheam [9] studied a health service CoP where knowledge-sharing was achieved through various methods: coaching/mentoring; providing reports of meetings and educational forums to non-attending members; and through formal and informal communication mediums, such as team meetings and phone conversations. Thompson [11] found that facilitating ongoing creative activities such as within team competitions and playing interesting games related to their work help the CoP members to actively engage in their shared practice. Juriado and Gustafsson [26] found that expertise can also be shared through the storytelling process about previous events and happening in the CoP. They also suggest that competence shadows (a form of apprenticeship) can be used to transfer key tacit knowledge within the community. Soekijad et al. [28] study the learning and knowledge sharing process within CoPs in an inter-organizational context. Their findings suggest that simulating problems is a good way of learning and knowledge sharing in CoPs. Simulation helps in the learning process as there is no risk involved in simulating, which gives CoP members an opportunity to explore new and different things. Their findings also suggest that activities like going on excursions (short trip or outing to some place), and attending workshops significantly helps the CoP members to acquire tacit knowledge about their work. Kasper et al. [42] studied the process of knowledge sharing between the different sites of a multinational company (MNCs) to examine how organizational structure influence knowledge sharing across the single sites of MNCs. They primarily focused on analyzing the organizational context of structure (the degree of decentralization of knowledge management and the existence of communities of practice) and how it impacted the technical and personal knowledge flows in a CoP. Their key finding was that decentralized knowledge management structures are better for knowledge sharing in CoPs than centralized structures. Geiger and Turley [29] use grounded theory method to investigate the knowledge sharing about customer’s likes and dislike and their requirements in the CoPs of sales personnel. Their main finding suggest that knowledge sharing is inseparable from the social environment in which it is created and put to use, and that informal interaction among the CoP members plays a crucial role in facilitating this socialization.

Ropes [43] studied inter-organizational CoPs to understand how the inter-organizational CoPs can be used as rich environments to generate knowledge alliances between members of different organizations. Ropes [43] believe that CoPs can help in overcoming cognitive and motivational barriers to knowledge exchange, among people of different organizations, by raising the social capital among them. They studied all three dimensions of social capital – 1) structural capital, 2) relational capital, and 3) cognitive capital. Their findings suggest that structural capital can be

3.4 Impact of CoPs on Organizations

This section summarizes the papers that examined the impact of CoPs on organizational performance. Ropes [43] studied inter-organizational CoPs to understand how the inter-organizational CoPs can be used as rich environments to generate knowledge alliances between members of different organizations. Ropes [43] believe that CoPs can help in overcoming cognitive and motivational barriers to knowledge exchange, among people of different organizations, by raising the social capital among them. They studied all three dimensions of social capital – 1) structural capital, 2) relational capital, and 3) cognitive capital. Their findings suggest that structural capital can be
built by following CoP practice – 1) professionally coordinated meetings, and 2) professional facilitation. Relational capital can be built by following CoP practice – 1) regular informal contact, and 2) avoiding inter-group hierarchies. Cognitive capital can be built by following CoP practice – 1) fostering different ways of working together and developing new ideas, 2) openly sharing experiences in the group, and 3) focusing on issues from common learning agenda. Chu et al. [34] used the non-additive fuzzy integral to develop a framework to assess the impact of four kinds of CoPs strategies on organizational performance. Lesser and Stock [33] examine how CoPs create organizational value. They propose that the development and creation of social capital among the CoP members is the key driver, which helps CoPs to create organizational value. They identify the following four factors which facilitate the creation of social capital that eventually impacts organizational value – 1) facilitate connections among practitioners who may or may not be collocated, 2) foster relationships that build a sense of trust, 3) foster relationships that build a sense of mutual obligation, and 4) developing a common language and context that can be shared by community members. Their analysis highlighted following four areas of organizational performance which benefited from the ongoing CoP activities – 1) decreased the learning curve of new employees, 2) more rapid responses to customer needs and inquiries, 3) reduced rework and preventing "reinvention of the wheel", and 4) spawning of new ideas for products and services. Millen et al. [35] explored the benefits and costs of CoPs within large, geographically dispersed organizations and discuss the challenges in justifying corporate investment for such communities. They propose the following two approaches to measuring financial benefits of a CoP – 1) first approach suggests that benefits of CoP can be measured based on measurements of the cost savings due to specific community activities, and 2) second approach to estimate the financial benefits of a community of practices is by using a special form of storytelling referred to as a "serious anecdote". A serious anecdote is a story with an easily quantifiable punch line. Multiple studies show a positive link between CoPs and firm innovation [32]. Van Buuren and Edelenbos [27] found that creating diversity facilitates innovation. Hislop [36] examined case study evidence from a number of technological innovation projects to study the relationship between the innovation processes and communities of practice. Their main finding suggests that the relationship between innovation processes and communities of practice is not unidirectional. One interesting point uncovered in this study was that CoP can have a negative impact on the working of companies with autonomous structure. Swan and Scarbrough [37] studied the role of communities of practice in radical innovation.

3.5 CoPs not a Monolithic Concept
Pastoors [12] found that “one-size fits all organizations” approach is not suitable for CoPs, as it does not address the specific and unique knowledge requirements of individual CoPs. This finding is also supported by Gongla and Rizzuto [23], who also suggest that community development is not a "one size fits all" proposition, as each community has its unique "personality," strengths, and challenges. In our review, we found three types of CoPs, Quantum CoPs [5], "emergent" CoPs [26], and E-CoPs [1, 19, 38]. Although, the extant literature acknowledges that different forms of CoPs exist, very little attention is directed towards uncovering the nuances surrounding the creation and sustenance of CoPs. Do the prescriptions discussed earlier uniformly work on all CoPs? Future research needs to address this question more formally.

4. Conclusion and Limitations
This study reviews and synthesizes 43 papers on CoPs within the organizational settings to uncover key findings and emerging themes from the extant literature. Five key themes emerge from this synthesis. First, the extant literature provides evidence which demonstrates that CoPs can be intentionally deployed which is contrary to the common view that CoPs need to emerge naturally. Second, the literature provides guidelines on seeding CoPs structures effectively. Third, the review reveals that CoPs often emerge and flourish in the presence of extensive epistemic pressures. Fourth, KM activities commonly used to achieve CoPs’ epistemic goals are summarized. Fifth, the impact of CoPs on organizations’ performance is mostly positive, but does not provide deep insights on the conditions surrounding the CoPs positive effects on organizational performance. Lastly, the CoP concept has been invoked in diverse organizational settings and for a variety of objectives, but for the most part characterization of CoP is fairly monolithic. Future work needs to compare and contrast different types of CoPs (e.g., Virtual CoPs and F2F CoPs) in various organizational settings to uncover its nuances. This study takes a small but essential step in summarizing the key findings in the extant literature within the scope of this study’s boundaries. It is possible that our search criteria may have omitted some CoP work conducted within the organizational context. As we build on this work, efforts will be taken to include additional relevant papers by including appropriate
conference papers and books and by expanding the search beyond the EBSCO database which focuses on business journals.

5. References


