



Understanding innovation mechanism through the lens of communities of practice (COP)☆



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ABSTRACT

A community of practice (COP) is an efficient and low cost route to promote innovation performance. However, there are few papers talking about the mechanism of the relationship between COP and innovation performance. Based on social capital theory, this paper analyzes the impacts that three dimensions of COP separately have on innovative performance through intermediary variables. We find relational capital and cognitive capital of COP have significant impact on innovation performance fully mediated by intellectual capital and psychological safety. Also structural capital of COP has positive influence on innovation performance partially mediated by intellectual capital and psychological safety. Finally, implications for companies are presented based on the findings.

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1. Introduction

In the rapidly changing and competitive worldwide market environment, enterprises need to promote innovation and improve creative capacity to gain competitive advantage, which requires these companies absorb and integrate various knowledge and skills. Thus, they need to build a comprehensive knowledge platform. However, for companies, especially small and medium ones, the main restriction is the enormous fixed cost of establishing a complicated and continuously updated knowledge platform. We suggest that enterprises should not ignore an effective but low cost platform of knowledge—communities of practice, under the circumstances that most enterprises are not able to afford their own knowledge exchange platform or manage knowledge effectively.

In simple terms, communities of practice can be understood as professional informal cooperation and communication networks. This organization phenomenon was first mentioned by Orr (1990). He found the Xerox customer service representatives' tips and tricks exchanged over breakfast or lunch can improve their professional working ability and performance significantly (Orr, 1990). Communities of practice spread individual tacit knowledge and transform it into organizational knowledge. They can also be called professional communities, as COP members tend to have a similar background and share professional experiences, skills, information, knowledge, and opinions together. Typical communities of practice include playwright community, game designers community, artist community, etc.

Communities of practice can bear most of the fixed costs incurred by production and accumulation of professional knowledge. In

communities of practice, members share experiences, skills, and explanations etc., all of which are the prerequisites to learn and create new knowledge. This kind of knowledge is not always covered by a traditional company's hierarchy and education. When enterprise requires constant innovation or creation of new knowledge, this system could make up for the drawbacks of traditional enterprise learning.

Till now, the researches on the function of communities of practice have reached consensus mainly in two aspects: (1) Communities of practice promotes knowledge sharing. It provides knowledge database and builds norms, trust and assessment in favor of knowledge sharing (Boland and Tenkasi, 1995; Pattinson and Preece, 2014 etc.); (2) Communities of practice improve the performance of individuals or organizations. It helps to promote the performance on the level of individual, group, and organization by reducing the learning curve, avoiding overlapping investment on new products and services, improving employees' working experience, and accumulating professional talents for the organization (Rongo, 2013; Chu et al., 2012, etc.).

The available literatures don't deny the positive role of communities of practice for innovation performance; for example, one reason for the performance improvement could be the COP's contribution on an enterprise's innovation. However, few studies have researched relations of COP and innovation. Thus this paper would mainly explore the role of COP on innovation and its operation mechanism.

2. Literature review and hypotheses

2.1. Communities of practice (COP) and social capital

The internal mechanism of communities of practice (COP) is the first thing to be settled. Members of COP contribute their explicit and implicit knowledge, put forward their own creative ideas in mutual

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communication, which may lead to losing their own competitive advantage especially in a knowledge concentrated industry. So the question is why members of COP don't refuse the knowledge sharing? Coleman (1990) suggests that the phenomenon of not taking a free ride in group is due to social capital (Coleman, 1990). It suggests that COP may help members to set up the social capital. Nahapiet and Ghoshal (1998) propose that social capital is easily to be built in the kind of group where members have common background and interacts frequently. Communities of practice exactly have these characteristics (Nahapiet and Ghoshal, 1998).

Lesser and Prusak (1999) further points out the three dimensions of the social capital in COP. (1) Structural dimension. Communities of practice improve the social network for personnel having the same interest. Communities of practice provide the opportunity for individuals to develop a network of individuals who have similar interests. It helps identifying those with relevant knowledge and helps individuals within the community make connections with one another. (2) Relational dimension. Communities of practice foster the sense of trust and obligations critical to building social capital through the interpersonal interactions. (3) Cognitive dimension. Communities of practice help shape the terminology, norms and values used by members and allow the development of a community memory in daily conversations.

Based on the above viewpoint, this paper proposes that the essence of COP is social capital. Based on social capital, COP members communicate and innovate effectively. Nahapiet and Ghoshal suggest that social capital can be used as a comprehensive system to understand the innovation problem (Nahapiet and Ghoshal, 1998). Therefore, in the discussion below, we will discuss the mechanism of COP's role on innovation based on the social capital theory.

2.2. COP and innovation

Under the mode of communities of practice, the innovation sources of enterprises mainly include three aspects:

1. Internal COP of enterprise. This process is usually subject to the strategy and requirements of the enterprise. It could be influenced and supervised by the formal procedure of enterprise. Internal COPs generally fall into two categorical types. One is community among professional staff from the same area that is often spontaneous through informal discussion. The other is the interaction of members in different areas. For instance, staffs from different areas take part in one project, build cognitive connections to complete the project and tend to bring the knowledge back to their own professional community through daily interaction. Gradually, members' knowledge is enriched, the gap between different professional communities is narrowed and thus the enterprise innovation and creative potential are increased.
2. COP outside the company (such as professional associations, exhibition, festival, etc.). Members in external COP communicate frequently and informally with members from other enterprises. They could make bold hypotheses, discuss over the rationality of ideas and gradually summarize the experiences of COP and record them. This process is not affected by the supervision of the company's formal procedures, is not necessarily consistent with corporate goals or strategy, and stays away from the pressure of enterprise management; therefore, the process could come up with good ideas due to its unstrained trait.
3. The interaction among diverse COPs. This leads to the innovation of "cross-border" or "industries integrating". In this way, members of the COP will communicate with the experts in other fields, customers, and even with competitors in the relevant areas to create new ideas, which will promote the innovation of the practitioners.

As we mentioned earlier, the operational basis of COP is social capital. Nahapiet and Ghoshal (1998) find that for organizations (such as communities of practice), using social capital to innovate is more

effective than simply relying on market exchange. Their framework, which integrates various facets of social capital into three dimensions—the structural dimension, the relational dimension and the cognitive dimension (Nahapiet and Ghoshal, 1998), is widely used by researchers. Scholars have analyzed and demonstrated the effect of social capital on innovation performance in these three dimensions of social capital. It has become the mainstream view that social capital has positive influence on innovation performance at different levels of team, big firms, SMEs, family-firms, community etc. (Hau and Kang, 2016; Sanchez-Famoso et al., 2014; Akçomak and TerWeel, 2009; Molina-Morales and Martínez-Fernández, 2010). Similarly, we infer the social capital in COP may promote innovation effectively. This leads to the first set of hypotheses.

H1a. Relational capital of COP has a positive effect on practitioner's innovation performance.

H1b. Structural capital of COP has a positive effect on practitioner's innovation performance.

H1c. Cognitive capital of COP has a positive effect on practitioner's innovation performance.

2.3. COP and individual intellectual capital

Intellectual capital is the individual's knowledge and competence that brings competitive advantage to the enterprise (Ramezan, 2011). As for the connotation of the intellectual capital, Mohan and Mark's (2005) three dimensions get the recognition of the majority of scholars. The three dimensions are human capital, relational capital and organization capital, which respectively refer to employee's knowledge and competence, key network relationship with stakeholders such as customers and suppliers, and supportive structures such as enterprise's database, institution, norm and procedure etc.

The participation of communities of practice can improve personal intellectual capital effectively (Ramezan, 2011). Social capital built by COP can significantly promote the integration of knowledge and improve member's personal intellectual capital. Based on internal social capital, COPs make effective knowledge combination and exchange, prompt the formation of new intellectual capital, and develop the mechanism of maximizing the intellectual capital (Nahapiet and Ghoshal, 1998).

By exchanging and integrating experiences, knowledge, and ideas, members of COP enrich and enhance their own ability, knowledge, and experience (human capital); better satisfy stakeholder's demands and improve the relationship between stakeholders (relational capital); and further strengthen enterprise's patent, trademark, copyright, knowledge base (organizational capital). This leads to the second set of hypotheses.

H2a. Relational capital of COP has a positive effect on practitioner's intellectual capital.

H2b. Structural capital of COP has a positive effect on practitioner's intellectual capital.

H2c. Cognitive capital of COP has a positive effect on practitioner's intellectual capital.

2.4. COP and individual psychological safety

Psychological safety refers to a kind of psychological atmosphere of mutual trust and support, that the team members believe the adventure is safe in the organization (Edmondson, 1999). In an environment of psychological safety, members think they won't incur embarrassment,

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