The Impact of Network Capabilities on Organizational Learning: A Study of Distributed Networks of Practice

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Abstract – This paper focuses on one type of social networking structure termed distributed networks of practice (DNoPs). We define this network as a dynamic relationship of geographically dispersed participants who share and create knowledge related to daily work practices and business problems. These kinds of networks have several characteristics in common with communities of practice (CoPs). This research seeks to identify key capabilities embedded in DNoPs that are the most important organizational learning enablers. The paper develops the concept of network capability as a means to understand boundary spanning and organizational learning mechanisms supported by ICT.

Keywords – Boundary Spanning, Distributed Network of Practice, Network Capability, Organizational Learning.

I. INTRODUCTION

According to the knowledge-based view of the firm, the most critical resources in organizations are knowledge and the people who create knowledge [1, 2]. Moreover, an organization’s capability to integrate various sources of expertise across geographical and organizational boundaries constitutes a key competence for obtaining and sustaining competitive advantages.

One body of the research literature focusing on organizational capabilities, view an organization as a network of networks [3], and particularly informal social networking structures seem to have a significant role for organizational learning and innovation [4, 5].

In this paper, we recognize learning as a social process that takes place in situ and through participation in communities of practice (CoPs) and networks of practice [6]. In order to acquire and utilize knowledge more effectively organizations need to understand how learning capabilities of networks how learning capabilities of networks may leverage organizational learning processes. Informal networks may create communication lines independently of the formal organizational hierarchy structure through knowledge sharing and creation activities.

In this paper we focus on one type of social networking structure termed Distributed Network of Practice (DNoP), which is a dynamic relationship of geographically dispersed participants who share and create knowledge related to daily work practices and business problems [7]. The interaction within or across these networks is facilitated by information and communication technology (ICT). DNoPs share the same characteristics of CoPs as being emergent and self-organizing in which participants create communication linkages inside and between organizations representing a kind of “invisible” net which is non-existent on any organizational chart.

In this research we seek to investigate how capabilities embedded in DNoPs may accelerate and stimulate learning processes in organizations. Through an illustrative case study, we report on three different categories
of DNoPs which operate in the marine insurance industry. The purpose is to understand how the networks’ knowledge sharing and creation activities may enable transfer of knowledge across the organization and thereby enhance learning processes. By utilizing electronic means such as emails, intranet, document management systems and wikis, the networks develop new capabilities of ICT which support the learning processes within the organization. The networks under study develop best practices for upcoming business problems beneficially for the organization. The paper develops the concept of Network Capability as a means to understand organizational learning mechanisms supported by ICT.

The second part of the paper will outline relevant literature related to networks of practice. The third part presents the case study and the key findings. Finally, part four defines a framework to explain the relations between network capabilities, ICT and organizational learning mechanisms.

II. CHARACTERISTICS OF DISTRIBUTED NETWORKS OF PRACTICE

In this section we define situated learning and related concepts of CoPs and DNoPs and elaborate on their characteristics in terms of structural dimensions and practice properties.

A. The Concepts of CoP and DNoP

Lave and Wenger [8] propose a model of learning which builds upon informal and situated social interactions between newcomers who learn from experienced employees through a form of apprenticeship. Situated learning in CoPs represents a practice-based approach to organizational learning in which social structure and meaning are continually negotiated through participation, and where learning, meaning and identity are all aspects of the same participative act. Learning is in itself an evolving form of membership.

A DNoP comprises subsets of different co-located CoPs [4]. In this inter-community structure participants belong to a co-located community as well as the distributed network. DNoPs represent an extension of the concept of CoP. A CoP consists of a group of members involved in a shared practice who have tight connections, know each other and work together typically at the same business unit, meet face-to-face, and continually negotiate, communicate, and coordinate directly with each other [4]. In comparison, a DNoP consists of larger, geographically dispersed group of participants engaged in shared practice [9].

B. Structural Characteristics of DNoPs

Knowledge sharing in DNoPs occurs between dispersed participants crossing boundaries of different practices, and geographical locations. Due to the physically distributed nature of DNoPs, members are linked together through weak ties [10]. Thus, DNoPs are likely to have less redundant knowledge since they are exposed to and influenced by different organizational and geographical contexts, and they have a more extensive network of both internal and external contacts. Moreover, structural and cultural diversity among dispersed participants are likely to be higher than within a co-located community of practice. Indeed, sustainability in DNoPs are challenging since participants need to share and create knowledge despite of existing boundaries [11]. Firstly, the geographical distance is a boundary likely to hinder the participants to interact on a more frequent and spontaneous basis [12]. Therefore, it may be difficult for participants in the networks to develop turst, confidence, support and respect, which are necessary to enhance learning [13]. Secondly, participants may belong to different business functions and divisions; each location probably has its own culture of business traditions and work practices. Thirdly, DNoPs are likely to consist of members with different professional backgrounds and education which increase the diversity of knowledge disciplines and practices. Altogether, the boundaries may hamper the development of a common body of knowledge.

However, a boundary interaction is usually an experience of being exposed to
foreign competence, which enhances learning. Conversely, a potential boundary represents both a source of and a barrier to learning and innovation [14]. Boundaries can enhance creativity where new insights arise from different perspectives. The dark side of boundaries is that they can cause breakdowns of group relations. DNoPs are dependent upon active boundary processes because of their inter-community structures. Boundary objects and boundary spanners provide critical functions and roles for translation between communities and integration of practices [15].

C. Practice Properties of DNoPs

Wenger [16] emphasizes three important practice properties in a CoP: 1) mutual engagement 2) a joint enterprise 3) a shared repertoire. Membership in a community is dependent on mutual engagement organized around daily work practice. Due to geographical distribution across locations, the members of a DNoP are expected to have a different set of cultural values influenced by the institutional context in which they are working [17].

Creating a joint enterprise in a community is a result of a collective process of negotiation that reflects the full complexity of mutual engagement. The participants’ daily practice including a mixture of submission and assertion is a complex, collectively negotiated response to what they understand to be their situation. Because a joint enterprise does not require homogeneity, a joint enterprise does not imply agreement in any simple sense. In terms of a distributed network of practice, disagreement caused by diversity can lead to positive outcomes, and avoiding diversity is probably not a solution when conflicts or problems occur.

Over time, a CoP or A DNoP develops a shared repertoire of resources in terms of artifacts for negotiating meaning. These elements of the repertoire can be quite heterogeneous including routines, words, tools, stories, symbols or concepts and ways of doing things that both the network has produced or adopted during interaction, and which have become a part of their practice. During the communication process in DNoPs, the members who participate may create knowledge artifacts, which are explicit and codified outcomes from their knowledge activities and learning processes [18]. Additionally, a shared knowledge.

In this sense, “ba” symbolizes a shared space for emerging relationships and knowledge sharing which can be physical (office, dispersed business space), virtual (email, video conference), mental (shared experiences, ideas, ideals), or any combination of these, which provides a shared platform for knowledge creation and organizational learning [19, 20].

In summary, DNoPs are more complex informal social networking structures than CoPs. A DNoP’s capability to handle problems in its daily work practice provoked by structural challenges will influence on its sustainability and development of mutual engagement, a joint enterprise and a shared repertoire. In addition, to establish and develop strong practice properties are dependent upon the contribution from each member and how they leverage an environment of identity and trust that ensures knowledge sharing and learning.

III. CASE ILLUSTRATION

Insure (pseudonym) is a small multinational firm operating in the marine insurance industry. The firm dates back to 1907 when a mutual protection and indemnity (P&I) association division was formed to provide liability insurance for regional sailing ships. After an organizational merger between departments from two other companies, Insure today has three different business divisions that provides claims handling and underwriting activities for ships owners (P & I division), the hull and machinery market (Marine division), and the oil and gas industry (Energy division). Insure has approximately 350 employees working in ten different locations of Europe, Asia and America.

Data collection comprised open-ended interviews, field observations and document...
analysis in five locations of the multinational. The process of data collection and analysis proceeded iteratively in accordance to the interpretive research tradition [21]. Themes emerged gradually for categorizing, and then to be examined more deeply as relevant.

A central objective in *Insure* has been to ensure integration of knowledge across geographically distributed locations of the company. This involved integration and optimal utilization of the overall organizational expertise across distributed locations. Building networks and teams are initiatives with high priority. Inside each business division, certain underwriting teams are responsible for customers in a specific geographical area. In addition, a product development network was established for developing new products and improving existing products of additional insurance covers. Other examples are networks dealing with complex contracts, reinsurance structures, proactive risk assessments (terror, war risks, natural disasters, dangerous diseases) loss prevention issues, and complex claims.

Several DNoPs were indentified during the investigation. These networks were self-organizing and emergent, self-selection and not defined by the organization’s hierarchy [22]. Members of these networks were from different types if divisions, functional areas, geographical location, professional specialties, and project teams. The networks were classified into three categories; 1) problem-solving networks (e.g. professional networks of insurance claims handlers and insurance underwriters) and 3) innovation networks (e.g. production development networks). All networks consisted of members working geographically dispersed from one another where participants from two or more locations were involved.

**IV. NETWORK CAPABILITITES**

In this section, the different categories of DNoPs and their capabilities are presented, and finally network capabilities are summarized into a framework.

The *problem solving networks* are DNoPs that consist of expert groups that provide resources in terms of help-desk functions where participants of the network support the colleagues by giving special advices related to particular business problems. In addition, participating in this kind of network ensures collaborative learning among the network’s participants. The contract consultancy network in *Insure* is an example of a problem solving network. These networks contribute to the organization by building expertise through the experiences from different problem solving processes. This particular network contributed to strengthen the competence in marine law and ensured a learning outcome in the organization. Other networks were announced on the intranet and employees across the organization became aware of expert networks and whom to contact when complex business problems arose.

Prior research has also identified networks belonging to this kind of category. Andriessen [23] discusses archetypes of communities and mention the “problem solving community” as a community consisting of a larger number of geographically dispersed employees of the same discipline who interact across inter-organizational boundaries. The network’s members exchange questions and answers to solve practical problems. Similar purpose for knowledge sharing was found in the networks identified in this study.

The *business improvement networks* were DNoPs that developed altered or liquidates practices. The networks seek to develop best practices in their daily work activities. The claims handing network and the underwriting networks constitute examples altered the organizational practices (P&I, Marine and Energy) through boundary spanning mechanisms that caused different evolution patterns in the networks. The underwriting networks altered organizational practices where different joint underwriting activities integrated practices and reduced the negative effects of diversity over time.
The claims handling network became a diverse network by combining different practices rapidly just after the organizational merger. These observations are in line with Blackler [24] who argues that creation of new knowledge and innovation occurs at the interstices between established groups. Joint activities altered existing work practices, and the claims handlers and the underwriters have caused incremental changes in organizational practices. New knowledge was generated by recombining the knowledge based across practices of P&I, Marine and Energy claims and underwriting, respectively. The altering of organizational practices exemplifies knowledge sharing and creation processes that utilize the potential of organizational knowledge to enhance learning.

The innovation networks were product development networks in the company. Participants networks in the company. Participants developed new insurance products or refined existing services. Innovation communities are described as communities that intend to foster unexpected ideas and innovations by combining different perspectives across boundaries [25]. Networks within this category enact in innovative processes that cause radical changes in organizational practices or the building of new capabilities through product development.

These networks do often have members from different departments, units or locations of the organization. In Insure, local innovation from one co-located community of practice initiated the emergence of the product development network. The diversity of the network in Insure increased while some of the branch offices and other business divisions became involved. Diversity has proved to be advantageously for enabling innovation in teams and working groups [26]. At the final stage of this longitudinal study, however, innovation of a more incremental character was the outcome of the product development network despite increased diversity. Increased formalization in this networks may have suppressed some of the creativity, thus innovation that was more radical did decrease over time.

Table 1 depicts important characteristics and contextual factors for developing network capabilities in DNoPs. Main categories and concepts in this framework are structural context. Knowledge practices including practice properties, conditions facilitation effective knowledge sharing, and the consequences of the networks’ interactions leading to learning and innovative outcomes that influence the learning processes of the organization.

The study demonstrates that boundary practices were capabilities that the networks developed and used to leverage structural diversity to facilitate effective knowledge sharing and learning. The capability of a network corresponds to the collective skills of the participants to enact in boundary spanning activities facilitated by ICT artifacts to ensure knowledge transfer across the organization. The leaders of the networks enacted in boundary spanner roles by connecting locations, divisions and functions and by motivating and initiating new discussions of important business topics.

This study has implications for other organizations which want to enhance organizational learning through networking. The framework provides guidelines for how networks may be able to develop capabilities in a boundary-intensive ICT context.

**TABLE 1**

<table>
<thead>
<tr>
<th>Framework of Concepts and Conditions</th>
<th>Structural Context</th>
<th>Capability: Building a shared repertoire consisting of boundary objects; ICT artifacts and other unwritten and explicit artifacts related to business skills and experiences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural Context</td>
<td>The networks are structurally diverse: geographically dispersed, cross different business units and functions.</td>
<td></td>
</tr>
<tr>
<td>Capability</td>
<td>Leverage structural diversity which is part of this context</td>
<td></td>
</tr>
<tr>
<td>Knowledge Practices</td>
<td>ICT skills; e.g. utilization of intranet, knowledge management systems (KMS), emails, audio-and video conferences, wikis</td>
<td></td>
</tr>
</tbody>
</table>
Enabling Premises

Appropriate ICT infrastructure that is appropriate for networking

Capability: boundary management skills to manage boundary spanning tasks. Boundary practices consist of boundary objects, cross network proposals. Boundary practices trigger evolution that alters organizational practices.

Consequences of network activities

Learning and innovation are conditional outcomes-dependent upon enabling premises, practices and context

REFERENCES


