

GUEST EDITORIAL PREFACE

Special Issue on Seeking Higher Effectiveness in Innovation and Knowledge Management

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Both executives and academics have suggested that the key role of the firm consist in creating, storing, and applying knowledge (e.g. Kogut & Zander, 1992; Conner & Prahalad, 1996; Grant, 1996). In particular, many contributions have focused on knowledge as a source of organizational innovation (e.g. Mueller, 1962; Von Hippel, 1988; Nishiguchi, 1994), being innovation recognized as a primary mean for organizational renewal (Dougherty, 1992) and a key lever for a sustainable competitive advantage (Brown & Eisenhardt, 1995).

Research has emphasized the combination of diverse knowledge assets and skills and, more recently, the collision between technological opportunities and user needs (Lundwall, 2009; Von Hippel, 1988) as essential elements for innovation. Recent studies (e.g. Chesbrough, 2003, 2007; Chesbrough & Crowther, 2006) outline the benefits of opening the innovation process to external knowledge sources, suggesting that the ability to combine internal and external information and knowledge inputs can improve the in-house activities (Cassiman & Veugelers, 2006). Von Hippel (2005), in par-

ticular, highlights a specific knowledge which is crucial in innovation processes: the knowledge held by users. In order to explore and exploit knowledge coming from inside and outside firm's boundaries, firms can adopt more open and 'user-lead' approaches, developing, at the same time, adequate organizational settings. To achieve these goals a firm should effectively manage knowledge transfer coming from both inside and outside its boundaries. Effective knowledge management can facilitate the innovation process and improve performances (Nonaka & Takeuchi, 1995; Von Krogh, 1998). Knowledge management capacity plays a pivotal role in supporting and fostering innovation.

Following these topics of growing interest, the overall goal of this special issue is to contribute to a coherent body of research in the specific area of collaboration and knowledge transfer and sharing among actors (firms, customers, Web users, etc.) for innovation purposes. This special issue focuses on the development of inflows of knowledge to support innovation. We have collected three complementary papers that differ in how they approach knowledge

management for innovative purposes. At the same time, all authors focus on the knowledge transfer inside and outside firm's boundaries and on the key role of knowledge management to sustain innovation aims.

In the first paper Hausberg, Sabini & Valentino provide a fresh perspective and an original contribution by focusing on knowledge transfer among actors represented by the subsidiaries in a Multi-National Corporation (MNC). The MNC can be understood in terms of a network in which various organizational units (the subsidiaries) can be more or less inclined to share knowledge among each other (Bartlett & Ghoshal, 1990). The willingness to share knowledge is mediated by the fact that subsidiaries in MNCs compete with each other on resources, power, autonomy and/or headquarters' attention. The MNC is considered as a 'knowledge based entity', where the subsidiaries seek to transmit, transfer, integrate and leverage knowledge across national boundaries (Foss & Pedersen, 2004). Therefore, MNC subsidiaries have been recognized not only as mere exploiters of knowledge that is centrally held by the MNC, but also as generators of knowledge and a way to exploit locally the internationally distributed knowledge (Kuemmerle, 1997).

Drawing from open innovation literature, the authors develop the notion of Internal Open Innovation of MNCs' (IOI). IOI is defined as the behaviour of subsidiaries to actively search for innovation partners amongst their peer subsidiaries in other divisions and countries throughout the entire MNCs.

The authors argue that the opening of subsidiaries' innovation process towards their peers within the MNC network might not be positive per se, but highly contingent on the environmental uncertainty. Thus, the authors consider environmental uncertainty as a major contingency co-determining the efficacy of various approaches to innovation (Eisenhardt & Tabrizi, 1995). However, while environmental uncertainty has been studied broadly with regard to its impact on both innovation and firm performance, in literature remains unclear how its two major constituencies – complexity and

dynamism – do individually and jointly affect the appropriateness of intra-MNC knowledge transfer or IOI.

The authors approach this research gap by means of an agent-based computer simulation model, using the classical NK model (Kauffman, 1993). The model analyses the interactions between the effectiveness of IOI and the two environmental contingencies, complexity and dynamism.

Furthermore, they test whether a different degrees of differences between local markets determines how the internal openness of subsidiaries in a MNC-network structure impacts innovation performance. In other words, it is checked whether the MNC is incumbent in an international industry, characterized by very different demands in different countries, or in a global industry, characterized by rather homogeneous demand worldwide. The fact that in international industries local context may differ widely can be deemed one of the principal reasons behind the significant impact of distance on the success of knowledge transfer (Davenport, 2005).

Main results are that environmental complexity substantially alters the effect of environmental dynamism on the generally positive effect of IOI. Furthermore, the analysis suggests that there are fundamental differences between international and global industries and that the impact of IOI on innovation performance is indeed not always linearly positive, but differs in several combinations of levels of environmental complexity and dynamism.

In the second paper Francesconi, Bonazzi & Dossena adopt a different perspective in knowledge management that goes beyond traditional firm's boundaries. The authors focus on online communities as knowledge sources to nourish inbound innovation approaches. The nature of online communities, with permeable boundaries, weak ties and self-organization, makes them a powerful locus of collective creativity and innovation (Lee & Cole, 2003). Nevertheless, firms have to develop or strengthen the competencies to understand, decode and utilize this external knowledge. The absorptive

capacity (ACAP) represents the link between a firm's internal capability and the external base of knowledge. ACAP is most commonly defined as the ability of a firm to recognize the value of new, external knowledge, assimilate it, and apply it to commercial ends (Cohen & Levinthal, 1990). Despite several subsequent theoretical and empirical studies (e.g. Zahra & George, 2002; Jansen et al., 2005; Lane et al., 2006; Todorova & Durisin, 2007), this field is still under-investigated as well as the emerging role played by online communities and IT (e.g. software tools) to support ACAP. The originality of this work relies in an attempt to give a first contribution in this research field.

Taking a pragmatic approach, the authors aim at lighting up part of the process that starts with innovation inputs from an online community and ends with the related outcomes (e.g. an improved or innovative service). The authors focus mainly on the time an idea, shared within an online community, takes to be transformed from a 'potential' into a 'realized' innovation by a firm. Doing this, they explore the role played by a software tool to speed-up and improve the overall process. In particular, conceiving knowledge as a trajectory across pole of attraction rather than a linear process, the authors develop an explorative model, empirically tested through a case study, inspired by the solar system metaphor. According to Morgan view (1986), the authors use the explicative power of metaphors to evocate an image in the reader's mind of the process through which an online community's innovative idea is 'attracted' by a firm to be exploited for innovation purposes. The empirical results suggest that a software tool is able to reduce the time required by an idea, shared within a community online, to be transformed by a 'potential' innovation into a 'realized' one.

The role of IT in supporting knowledge management is explored also in the third paper. Ardimento, Convertini and Visaggio offer an interesting and concrete framework to support the visibility, the search ability and the 'evaluability' of knowledge so that it can be transferred and used for innovative purposes.

The framework is applied to the context of software development, where knowledge management is a critical factor. The framework is based on PROMETHEUS (Practices Process and Methods Evolution Through Experience Unfolded Systematically), a conceptual model implemented exploiting a knowledge platform. The platform collects experimental knowledge in a repository Knowledge Experience Base (KEB) in the form of Knowledge Experience Packages (KEPs). A KEP is an organized set of: knowledge contents, teaching units for the demonstration prototypes or tools and all other information that may strengthen package ability to achieve the proposed goal. The authors describe the structure of the KEP, intended as the vehicle aimed at knowledge transfer, and the characteristics of the KEP which ensure the extraction of tacit knowledge and its formalization.

The proposed model supports the formalization and packaging of knowledge and experience of innovation stakeholders, supporting knowledge codification and knowledge transfer. In brief, PROMETHEUS integrates a Knowledge Management System (Alavi & Leidner, 2001) and a Learning Management System (Szabo, & Flesherm, 2001), allowing navigation among all its components, structured in knowledge packages. The KEP has 5 components:

- **Art and Practices Knowledge Content:** The core component, contains the knowledge package expressed in a hypermedia form;
- **Tools Component:** That contains all available e-learning tools associated to an educational course;
- **Skills Component:** That contains a list of people who has a specific knowledge of the contents of both a KEP and a Tool;
- **Evidence:** That contains the description of all the empirical investigations, which validate the cause-effect relationship between research results the innovations proposed and the answers to the problems. It describes data used, mechanisms to carry

them out and controls carried out on them to assure their accuracy, the experimental design, statistical analysis and results obtained;

- **Project:** That contains all information useful for project characterization, such as, project description (aims, results, invested resources, and so on.) project contest description and events occurred during the project execution.

The paper contains a detailed description of the attributes of each component.

As highlighted by the three papers presented in the special issue, there is an intense interest of researchers in exploring and exploiting knowledge coming from both inside and outside traditional organizational boundaries for innovative purposes. This special issue contributes to these fields with studies on knowledge transfer and sharing and on the role that IT can assume in supporting knowledge management. Moreover, the issue contributes with a set of challenging research questions:

- How can complexity and dynamism influence knowledge transfer?
- How can a firm make use of a software tool to manage the inflow of ideas and knowledge from an online community for innovation purposes?
- What framework could a firm adopt to support knowledge transfer for facilitating innovation?

The present special issue seeks to take one step forward in advancing understanding of innovation in management and knowledge creation and transfer by unraveling the complexities involved in contexts where knowledge has different sources: Hausberg, Sabini and Valentino focus on knowledge transfer among subsidiaries in a Multi-National Corporation. Francesconi, Bonazzi and Dossena adopt a different perspective in knowledge management that goes beyond firm's boundaries (i.e. online communities). Finally, Ardimento, Convertini

and Visaggio focus on Knowledge Experience Packages that can be transferred and used for innovative purposes in software development.

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