Special Issue on Knowledge Integration and Innovation Processes

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The issue of knowledge integration has been explored and described in the literature in many different ways and perspectives and by a significant number of authors. Knowledge integration can be seen as a process of distributed knowledge linking (Dougherty, 1992; Okhuysen & Eisenhardt, 2002) which is able to generate new value for organizations. In this vision a central activity of knowledge integration is to identify knowledge and move it from one location to another (Carlile & Rebentisch, 2003; Okhuysen & Eisenhardt, 2002). But this is not an easy task: when trying to integrate knowledge, knowledge "keepers" must overcome the barriers "to the flow and transfer of knowledge"(Scarbrough et al., 2004). This is to say that they must be able to communicate in a manner that is meaningful. Moreover, they must be able to create new knowledge.

In a slightly different perspective, Carlile & Rebentisch (2003:1182-1183) suggest that knowledge integration is mainly an issue of creating new knowledge by combining knowledge from different sources and changing available knowledge "to accommodate the creation of solutions across specialised domains". This idea of knowledge integration as "new combination" of knowledge suggests that knowledge integration could be looked at as the task of identifying how new and prior knowledge interacts and produces something new. This suggests that knowledge integration requires the construction of new knowledge by individuals relying on real-time experience, improvisation, flexibility and iterative problem-solving as a response to the situation as it emerges and unfolds (Eisenhardt & Tabrizi, 1995). In this way, the outcome of knowledge integration consists of "both the shared knowledge of

individuals and the combined knowledge that emerges from their interaction" (Okhuysen & Eisenhardt, 2002:371).

To state this in a different manner, knowledge integration is a process of fitting distributed knowledge together into a coherent structure and it requires different critical activities to be facilitated. This special issue aims to investigate whether and how specific knowledge integration activities can contribute to the development of organizational changes and open innovation. In particular the four articles bring light to the concept of knowledge integration by looking at the acquisition of knowledge from external sources (article 1), the application, coordination and adaptation of existing knowledge (article 2), as well as the creation of new knowledge (article 3) within processes of organizational change and innovation, as well as the assessment of the knowledge value (article 4).

In the following we provide a synopsis of the articles and describe how they advance the state of the art on knowledge management and open innovation by providing answers to the following research questions:

How to identify relevant knowledge to be integrated in innovation processes? In the first article the integration of internal and external knowledge as a key for open innovation is discussed by Belantuono, Scozzi & Pontrandolfo; they propose a model for analysing the structure of knowledge collaboration as a base for capturing the networks that provide knowledge (knowledge supply chains) in processes of new product development. In this model external knowledge is assessed in terms of its relevance to innovation and therefore, indirectly, to its integration with the knowledge already existing in the firm and involved in the new product development.

What kind of collaborative knowledge management and representation can conduct to successful knowledge integration? The second article discusses how online conversations and argument mapping can support knowledge integration in distributed decision-making processes. A Debate Dashboard to support and improve the collaborative integration of

shared knowledge representations is presented by Iandoli, Quinto, De Liddo & Buckingham Shum. The Debate Dashboard aims to improve common ground and mutual understanding of online conversations by augmenting argument-mapping processes with visual conversational feedback, thus supporting online collaboration and co-creation of new knowledge assets within the organization.

What are the drivers to knowledge integration processes? In the third article argumentation is proposed as a key driver of knowledge integration within the framework of organizational strategic change. Adamides & Karacapilidis look argumentation as shaping the actors and knowledge networking within the process of organizational change and related strategy making. The article proposes a conceptual framework to better understand and assess the usefulness and effectiveness of computer-supported argumentation systems in organizational setting undergoing strategic change. The proposed framework is based on a view of strategic change as actor-network (re) formation, and it uses a system dynamics model to demonstrate how the effects of computer-supported argumentation systems on the process of strategic change can be appreciated over time. Moreover the article provides an interesting theoretical analysis of the role of computer-supported argumentation in the wider context of strategic change in organizational settings specifically tackling problems of power within the organization.

How can knowledge integration be supported and assessed in different organizational environments? In the fourth article knowledge integration is investigated by studying the link between innovation and knowledge value. Zeleny's article, proposes a highly pragmatic and actionable definition of knowledge, which is process and product oriented. In the approach proposed by the author, knowledge manifests itself only in relation to a process or product and it is defined as the purposeful coordination of action which produce the output of the process (product). Based on this definition knowledge can therefore be easily measured. The article

proposes a method to measure knowledge and presents three business scenarios as example applications. Moreover Zeleny's contribution presents a novel pragmatic and process oriented definition of knowledge which helps clarifying the difference between knowledge and information, identifies knowledge with action and suggests that knowledge integration and its role in innovation can only be clearly explicated in action.

In the attempt to provide an organic interpretation we can summarize that the four contributions to this special issue explore the link between innovation and the concept and role of knowledge integration within different perspectives of knowledge management practices: from the "object" perspective (article 1), through the "relational" one (article 2 and 3), up to the action based perspective (article 4). In Belantuono et al., knowledge is perceived as an object that can be codified and distributed; which implies that knowledge can be transferred from one place to another place, from one person to another person. This first perspective is also referred to as "content perspective" (Hayes & Walsham, 2003) or "engineering perspective" (Swan, 2003).

At the same time, in the contributions of Iandoli et al. and Adamides & Karacapilidis, knowledge is conceptualized as a social construct in which social relationships can be seen as knowledge development structures. Therefore in this second perspective, known as "community perspective" (Swan, 2003), knowledge cannot be objectified, since it is intended as a situated and relational resource. Finally, the action based perspective, already announced in the Adamides & Karacapilidis's article, is clearly introduced and developed by Zeleny. Zeleny's manuscript argues that the link between knowledge and innovation is practical, and it is only revealed and can be only assessed in action.

As in a *crescendo*, these three different perspectives seem to emerge as key to scaffold the role of knowledge integration in knowledge management practices (Maaninen-Olsson et al., 2008) and seem to suggest that knowledge

is inherently a distributed resource whose *activation* appears strategic for any kind of innovation process.

The concept of knowledge integration emerges as key to the development of successful innovation processes since it allows distributed knowledge to fit together into a coherent structure and relevant knowledge for open innovation to be selected, combined, exchanged and collectively assessed by organizations.

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