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## **Introduction: Inter-organisational knowledge networks**

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### **1 Inter-organisational KM: the new frontier**

Until recently, the elective field of application of knowledge management (KM) has been the internal environment of organisations and companies. Since the earliest studies (Grant, 1996; Spender, 1996), the strategic centrality of knowledge as economic and competitive resource of firms, and the need for its effective management have been clearly underlined. Both in research and practice, an emphasis has been put on the organisational arrangements and technological solutions for KM: for instance, on the internal processes of knowledge creation, storage, retrieval, reuse, or sharing (Alavi and Leidner, 2001; Holsapple and Singh, 2001); on the components of knowledge that are employed in the different parts of an organisation (Nonaka and Takeuchi, 1995); on the practical techniques and organisational roles that are appropriate to manage knowledge (Holsapple, 2003), etc. Clearly, this approach has rational explanations. Firstly, the internal side of companies is the place where the needs for KM practices arise more evidently, and where the earliest distinctive KM solutions have been developed and experimented. Secondly, an organisation provides the opportunity of a 'controlled environment' where it is possible to plan resources, investments and programs of KM, to formulate and implement KM strategies, to design and test technological and organisational KM solutions.

On the other side, the processes of specialisation and globalisation of economies have progressively led companies to build networks of collaboration with many external partners, with which not merely market transactions are carried out, but intense and complex business relationships are established. These relationships imply, per se, exchanges of knowledge and processes of mutual learning. The importance of networking and knowledge sharing has been fully recognised by executives, policy makers and scholars of various disciplines. In economics and business management, there is increasing awareness that it may be difficult, both for large and small firms, to compete and formulate innovation strategies autonomously (Bolisani et al., 2013; Quintas et al., 1997). This requires a global vision and presence, as well as the capability to elaborate, integrate and exploit multiple knowledge sources (Todeva, 2006), which are heterogeneous and difficult to access especially for single players operating on a local

level (Håkansson and Ford, 2002; Zeng et al., 2009). In policy making, there is a particular attention to 'improving' local expertise and 'connecting' regional communities, supporting collective learning, boosting fruitful partnerships among companies, universities, and local/national governments (Kitaoka et al., 2012). All this requires new management capabilities and policy making approaches to enable networking of companies and organisations. Specifically, it becomes necessary to reinforce the mechanisms by which single organisations, specialising in complementary activities, can connect and exchange knowledge.

The combination of these two needs (on the one hand, controlling knowledge as an internal resource of the single organisations, and on the other hand, planning and governing knowledge exchanges with external partners) is a new frontier of KM, and represents both a challenge and an opportunity for researchers and practitioners. It is a challenge because it calls for a development of the traditional KM models and practices that have been designed to apply to internal organisational contexts. It is an opportunity, because the conceptual schemes and practical arrangements of KM can be fruitfully integrated and hybridised with the theories and managerial schemes built around the notion of 'business networks' by economists and sociologists. Of course, all this implies new reflections on what conceptual models and practical approaches are more appropriate to address the question of managing knowledge in inter-organisational contexts.

## **2 Knowledge networks**

With the purpose to provide a contribution on the issue mentioned before, this special issue focuses on knowledge networks. This term denotes formal or informal inter-organisational relationships established with suppliers, customers, retailers, business partners, institutions, and even competitors to share knowledge, explore innovations, and exploit new ideas (Millar et al., 1997; Pyka, 1997, 2002; Warkentin et al., 2001; Peña, 2002; Phelps et al., 2012). By joining in a knowledge network, companies can have access to a broader pool of complementary knowledge and, by this way, can innovate, explore new markets, gain flexibility and focus on some core competencies. Despite the interest in knowledge networks, both in theoretical and empirical terms, studies of this phenomenon are still insufficient. Hence, there is the need to better clarify definitions, models and characteristics of knowledge networks, as well as to identify the managerial implications of this organisational setting.

To join in knowledge networks, company executives must be able to focus their strategies not only on the 'internal' organisation but also on the web of actual and potential relationships with external partners. This raises new questions e.g., how can knowledge networks be designed and built? How can the processes of knowledge exchange between networked organisations be managed? What mechanisms can be implemented to govern a knowledge network and make this structure sustainable? Similarly, the implementation of knowledge networks as new structures that can favour economic development requires new approaches in terms of policy making: is knowledge network development a useful and feasible goal of policy making? How can knowledge networks be supported? What changes in policy making does this imply?

By following different ways and adopting varied approaches, the papers of this special issue represent an attempt to provide some answers to the above mentioned

questions. The special issue is opened by a review of the literature that addresses a fundamental question: what can be the pros and cons of networking? In 'Risks and benefits of knowledge sharing in co-opetitive knowledge networks', Ilona Ilvonen and Vilma Vuori adopt the lenses of KM and analyse benefits and risks related to knowledge sharing in networks where cooperation and competition co-exist, which is usual in the business case. The neologism 'co-opetition' well represents this case: companies network to create synergistic benefits with other partners, but in doing that, they can also be exposed to competition by the same partners, that can take advantage of and can learn from the inter-organisational knowledge exchanges that occur. The authors observe that there is still insufficient research about the practical approaches that companies should use to reach a good balance between the benefits and risks of knowledge sharing. By means of a systematic review of the literature, they identify and discuss pros and cons of networking, and highlight the specific risks that sharing knowledge with networked business partners may raise. The analysis provides useful managerial recommendations for better identifying the kind of knowledge that best yields benefits when shared, and the knowledge that is risky to share. In addition, possible mechanisms for protecting knowledge in co-opetition environments are illustrated.

The second paper, 'Benefits and challenges of knowledge creation in concurrent virtual professional organisation formation and operation' by Erno Salmela and Kyllikki Taipale-Eräväla, treats a similar issue – i.e., benefits and challenges of inter-organisational knowledge exchanges – but in a specific although significant case. The paper examines the process of knowledge creation that occurs when a virtual professional organisation – i.e., a network of independent partners – is formed with the goal to prepare an application for public research funding. Indeed, this virtual organisation can be regarded as a temporary and dynamic inter-organisational knowledge network, composed by different players that possess different pieces of knowledge that are all necessary for submitting a successful research funding application. It is both a temporary network, since it can be dismantled when the activity of project preparation ends, and a dynamic one, since it involves different actors in the different phases of the preparation process. Especially, the dynamism of the network offers opportunities but also raises obstacles to the creation and exploitation of all the knowledge required. The main finding of the study is that the simultaneous formation and operation of the network allow agile reaction to new skills and knowledge requirements in a dynamic and uncertain environment. The other side of the coin is that the continuous involvement of new partners and participants during the operation phase makes network leadership and coordination harder.

In their paper 'Managing knowledge in smart networks', Marco Bettiol, Valentina De Marchi, Eleonora Di Maria and Roberto Grandinetti observe that a primary reason for the companies to get involved in business networks is the attempt to facilitate innovations in an 'open innovation' environment, as defined by Chesbrough (2003). This process is facilitated by ICT applications – that enable worldwide connections and knowledge exchanges – and by the increasing convergence of manufacturing and service activities – that lead to a progressive de-materialisation of economic activities. All this requires new managerial structures, and the authors particularly focus on the so-called 'smart networks', i.e., networks of networks that build around a small business that plays a role of 'orchestrator'. The leading firm uses multiple active nodes to create new knowledge and manage innovation in a novel, unconventional framework. By examining

two case studies, the authors highlight that companies with diverse competences and expertise can develop new entrepreneurial initiatives and take advantage of the promising scenario offered by emerging ICT applications. In addition, the analysis provides insights into the elements that the leading firms may take into account in designing a smart network, along with the associated implications for KM and, especially, the promotion of co-production and the interaction at a distance.

As mentioned, the achievement of a better understanding of how inter-organisational networks work, requires the combination of different levels of analysis. This is what is attempted in 'Characterisation of knowledge-based networking strategies: Insights from the KIBS sector', by Marco Paiola, Ettore Bolisani and Enrico Scarso. The paper aims to analyse the relationship between a company's knowledge strategy (i.e., the goals and plans to improve the exploitation of the knowledge it possesses) and its networking strategy (i.e., the approach to connecting with external partners). The assumption is that companies with different knowledge strategies may tend to adopt and implement different networking strategies. This is examined in relation to the case of a particular knowledge-intensive business service sector, i.e., that of ERP software providers. By developing and combining classifications previously proposed in the literature, the study proposes a new strategic taxonomy and examines the way companies set their networking strategies based on their capability and necessity to share knowledge with specific business partners (clients, suppliers, service providers, etc.). The findings of the analysis provides some empirical support to the assumption that knowledge and networking strategies are associated to one another: in particular, it shows that the development of the knowledge pool of a company, which is necessary to reinforce its business strategy, may require the connection to specific sources of knowledge.

Do formation and management of inter-organisational knowledge exchanges depend on the particular kind of knowledge that companies need to exchange? Are networks influenced by the social and cultural environments where these knowledge exchanges occur? The last article of our selection, 'International inter-organisational religious knowledge transfer' by Julio Araujo Carneiro-da-Cunha, Flavio Romero Macau and Nawfal Assa Mossa Alssabak, proposes a peculiar but intriguing perspective on this issue by examining a particular form of knowledge, i.e., religious knowledge, and the implications that this may have for the management of inter-organisational knowledge exchanges. The assumption is that exchanging knowledge is not only a question of technical-procedural aspects, but can be facilitated or influenced by shared values between members of different organisations. The paper describes a case-study of a 'Halal food' international inter-organisational network, and highlights how religious values play an important role in knowledge interactions, a role that should not be underestimated. Beyond the specific case, the paper has the merit of putting an emphasis on the importance of the social and cultural environment that acts as a catalyst of knowledge exchanges.

### **3 Conclusions: what now?**

This special issue, as any collection of articles, proposes the particular perspective of its contributors. Nevertheless, we think that the papers provide food for thought and can give novel inspiration to researchers and practitioners well beyond the specific topics treated by the authors.

It is confirmed that the study of inter-organisational knowledge networks lies in the intersection of different areas: this is of course a challenge, because it implies to pick up and integrate different approaches and models. However, this hybridisation of perspectives can be fruitful. On the one hand, the awareness that managing knowledge exchanges in networked environments may be even more important than managing knowledge inside a single organisation opens new perspectives for KM. On the other hand, the concepts and models developed in KM can shed new light onto the issues of managing inter-organisational relationships and business networks.

The collected papers have the merit to raise and address some key questions of knowledge network management. Nevertheless, they also highlight that a shared and consistent framework for understanding a phenomenon, whose importance is unquestionable, is still missing. Here, new exciting opportunities of study and experimentation are given to researchers and practitioners: there is still much to learn and much to say about inter-organisational knowledge networks.

Finally, let us just conclude by thanking all the contributors and reviewers for their efforts, the Editor-in-Chief for her warm welcome to our project and for her guidance, and to all the editorial staff that assisted us along the way in the production of this special issue.

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