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Conceptual paper

Open innovation and knowledge for fostering business ecosystems

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ABSTRACT

The purpose of this special issue is to assemble high quality papers that deepen and boost understanding the role of open innovation and knowledge on business ecosystems development.

This special issue includes ten papers specific related to the special issue topic: Open Innovation and Knowledge for Fostering Business Ecosystems. Jointly, the papers scrutinize and explore this subject using different theoretical backgrounds and methodologies. Individually, each paper provides interesting insights concerning the singularities they explore.

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Theoretical background

The purpose of this special issue is to assemble high quality papers that deepen and boost understanding the role of open innovation and knowledge on business ecosystems development. The paradigm of open innovation has received substantial attention from academics and practitioners since it was first popularized by Chesbrough (2003) as a counterpoint to the traditional 'closed innovation' view. Open innovation is based on a strong of antecedent knowledge developed in the innovation management literature, including approaches related to R&D externalization, outsourcing, inter-firm collaboration and organization-environmental interaction (Huizingh, 2011; Lazzarotti, Manzini, Nosella, & Pellegrini, 2017).

In essence, open innovation approaches suggest that the generation of innovative outputs is facilitated by more openness towards external sources of knowledge. This openness encourages the fluidity of knowledge and information flows between firms (Chesbrough, 2006; Crescenzi, Nathan, & Rodríguez-Pose, 2016; Shearmur & Doloreux, 2016).

More particularly, research should shed new light on how open innovation and knowledge may stimulate the performance of business ecosystems. In this Special Issue a synergistic portfolio of papers will be selected to illuminate new research opportunities and challenges for open innovation and knowledge management academics and decision makers. Innovation is traditionally considered to be the primary driving force of progress and prosperity.

Within innovation management research and practice there is some significant understanding of this standing but less is known about how open innovation and knowledge (spillovers) interact with business ecosystems.

Networks enable partners to create and share knowledge. Some literature on the knowledge transfer (Battistella, De Toni, & Pillon, 2016; Ferreira, Raposo, Rutten, & Varga, 2013; Ferreira, Ratten, & Dana, 2016; Ferreira, Dana, & Ratten, 2017; Giudice, Carayannis, & Maggioni, 2016) provide insight in how firms interact with their environment to benefit from open innovation: interorganizational networks as locus of innovation (Powell, Koput, & Smith-Doerr, 1996), explorative and exploitative network ties (March, 1991; Vanhaverbeke, 2006). Open innovation benefits from building connections that are wide and deep and from finding the right balance between these connections.

Empirical evidence shows that firms implementing open innovation need a number of open networking capabilities (absorptive capacity, multiplicative capacity and relational capacity), with suppliers, customers, higher education institutions, competitors, and others (Gassmann, Enkel, & Chesbrough, 2010; Huston & Sakkab, 2006; Perkmann & Walsh, 2007).

The emergence of the open innovation approach has been deeply influenced by changes in our thinking about the essential importance of firms' internal and external knowledge environments. More mobility of skilled workforces and more ready transmission of knowledge by information technology enlarged the occurrence of spillovers between firms and their external environments.

University-industry cooperation and the growth of Triple Helix relationships involving firms, universities, and government have gradually become the standard (Crescenzi et al., 2016; D'Este &

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Iammarino, 2010; Leydesdorff & Etzkowitz, 1998). By cooperating regionally, nationally and internationally, business ecosystems can to improve their strengths, combine skills, and create diverse applications for newly discovered solutions (creativity) sharing their resources and knowledge capabilities with other regions in joint R&D partnerships, promoting entrepreneurial and innovative systems, developing smart solutions and promoting the renewal and growth of business.

Contents of this special issue

This special issue includes ten papers specific related to the special issue topic: *Open Innovation and Knowledge for Fostering Business Ecosystems*. Jointly, the papers scrutinize and explore this subject using different theoretical backgrounds and methodologies. Individually, each paper provides interesting insights concerning the singularities they explore.

For instance, Jessica Giusti, Fernando Alberti and Federica Belfanti analyze the role of Makers in open innovation networks by focusing on whether and how knowledge leaks occur in open innovation networks with Makers. The authors used social network analysis methods and techniques on a sample of 147 organizations operating in the Cluster of Brianza (Italy) to find out practices of open innovation and the specific role of makers. They confirm multiplexity and heteromorphism in knowledge exchanges and argue that open innovation networks are the effect of the exchange of multiple types of knowledge by a diversity of actors that play heterogeneous roles vis-à-vis diverse kinds of knowledge.

Moretti Federico and Biancardi Daniele seek to contribute to the extant literature by proposing an empirical analysis of the effects of openness on firm performance. This empirical study is based on a sample of 328 firms listed on stock market exchanges of five large European countries (France, Germany, Italy, Spain, UK). They found that the effects of both development and acquisition are positive and significant across different dimensions, but their output varies in terms of magnitude and distribution.

Irene Christensen and Christer Karlsson examine the emerging organizational concept of Crowdsourcing where new idea submissions from outside the firm's boundaries are obtained, selected, evaluated, coded, and integrated into the organization. Based on a case study of a large European pharmaceutical firm, they analyze the process of the interactions between the host company and its collaborators and found that the broadness of the ideation challenge allowed greater overall participation, which resulted in comparable greater access solution diversity.

Mário da Silva attempts to explain the analytics of a particular type of mechanism of open innovation and addresses the relationship between intellectual property rights and open innovation using a static game-theoretic setting of research and development competition. He shows that a rise in the strength of patent protection induces the free sharing and dissemination of technological information and other contributions to the open innovation development of innovations.

The focus of Mário Franco and Cláudia Pinho is on the benefits and obstacles of cooperation between university research centres. A qualitative approach was adopted, and the data were obtained from various in-depth interviews, and documentary analysis, involving 11 entities, six of which firms located in five countries (Cyprus, France, Portugal, Romania, Spain). They conclude that knowledge transfer, choice of partners and finance stimulate the cooperation, and that cultural differences between researchers and research centres are an asset for this cooperation.

Nuno Caseiro and Arnaldo Coelho propose a model to analyze the direct effects of business intelligence on performance, and the indirect effects, through network learning and innovativeness.

Based on a sample of 228 startups from different European countries, and resorting to structural equation modelling, the authors demonstrate that business intelligence capabilities have an impact on network learning, innovativeness and performance.

Also resorting to structural equation modelling, Romana Rauter, Dietfried Globocnik, Elke Perl-Vorbach, and Rupert Baumgartner investigate the roles different open innovation partners played in improving economic innovation performance and sustainability innovation performance. Empirical evidence for the proposed relationships is provided by drawing on empirical field survey data of a cross-sectional sample of 85 Austrian firms and applying a benchmarking approach. They found that is essential to involve partners directly associated with the firm, such as customers or universities, and other stakeholders in the broader ecosystem. Furthermore, they suggest that their involvement could help firms overcome market failures and provide specific information and knowledge beneficial for the innovation activities.

Áron Török, József Tóth, and Jeremiás Máté Balogh apply Schmookler's demand pull innovation model to explore how external impetuses and internal knowledge resources influence the innovation development in the Hungarian agrifood industry. They show that tacit knowledge is more prominent than an explicit one, and the use of internal tacit knowledge is relevant in the innovation production process. Furthermore, they find that R&D spending has a negative influence on innovation's success among the 302 food SME.

Muhammad Shafiq, Rosmaini Tasmin, Josu Takala, Mehwish Rashid and Muhammad Qureshi analyze an empirical relationship of blue ocean strategy and organizational performance mediating the role of open innovation. They argue that in Malaysian industries blue ocean strategy is positively correlated to organizational performance, although open innovation partially reinforces that relationship.

Finally, Maria Queirós, Vítor Braga, and Aldina Correia explore the determinants of high growth firms, using multivariate analyses on three databases: OECD database; EUROSTAT database, and HOFSTEDE database. They conclude that high growth firms prevail in countries influenced by power distance, uncertainty avoidance, and individualism. They argue that there is a certain cultural environment that is conducive to growth, and in cultures where these conditions are met it seems to exist a higher prevalence for high-growth business.

Conclusion and future agenda

The objective of this special journal issue was to compile high quality papers that deepen and boost understanding the role of open innovation and knowledge on business ecosystems development. This can help advance research about open innovation and knowledge, which is a complex and multidimensional research area.

More attention needs to be paid in the future to this research area. The contributions included in this special issue have highlighted some research gaps found in the previous literature about open innovation and knowledge and will encourage the research debate among academics, policy makers and in the society in general.

The relationships between open innovation and knowledge for fostering business ecosystems are still unexplored in the literature, and consequently new opportunities for this research topic remain.

This special issue provides a valuable contribution in this research field and contributes for stimulating the discussion among professionals about how they can benefit from business ecosystems based on knowledge and open innovation foundations.

The guest editors expectation is that the articles included in this special issue will further encourage research, as there exists considerable scope for academic work that scrutinizes the processes of open innovation as a driver of entrepreneurial ecosystems.

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