



Search mechanisms and innovation: An analysis across multiple perspectives



ARTICLE INFO

Keywords:

Search mechanisms
Innovation
Multiple perspectives

ABSTRACT

In this paper, we introduce the themes addressed and the approaches used in this special issue to investigate the relationship between search mechanisms and innovation across multiple level of analysis. We start by briefly discussing the state of the art related to the complex relationship between search and innovation, revealing an important gap as the lack of attention about the great variety and diversity of search mechanisms agents may adopt when facing different degrees of innovativeness. Taking the lens of the multiple perspectives, we try to shed new light on this gap, and thus deploy a comprehensive understanding of this complex relationship. We briefly discuss how the articles in the collection each contribute to such an understanding across multiple perspectives. We conclude that, together, the various contributions specify that searching for innovation may require the enactment of complementary approaches. This special issue paves the way towards an important agenda for the future study of search mechanisms and innovation.

1. Introduction

In a world of increased complexity and dynamism in the range of technologies that firms must absorb in their product/service and organizational processes, innovation originates from complex search processes, where knowledge is added, deleted, transformed, modified, recombined or simply reinterpreted in multiple ways.

Traditionally, the innovation literature focused on the *'where'* to search, entailing choices mainly dealing with spatial and temporal dimensions. Different spaces and times mean different challenges: organizational routines may be quickly readapted; organizational roles should be accustomed to recognize and value novelty and originality; finally, the maturity of specific technological and scientific trajectories along their life-cycles should be carefully considered.

Specifically, searching across different spaces may call for searching at the intersection of distant technological and functional domains (e.g., Arts and Veugelers, 2014; Callaert et al., 2014; Capaldo et al., 2017; Corradini and De Propriis, 2017; Wu and Wu, 2014), different industries (e.g., Köhler et al., 2012; Mina et al., 2014; Xu, 2014), or along the different phases of the innovation process (Aloini and Martini, 2013; Cantarello et al., 2012; Van Den Ende et al., 2015) such as the fuzzy front end, new product development, and commercialization. It may also mean involving heterogeneous partners along the value chains (Chiang and Hung, 2010; Ren et al., 2015) through co-creation practices (Greer and Lei, 2012) and tools including social media (Appio et al., 2016; Martini et al., 2013), or even leveraging on different geographical locations (Sidhu et al., 2007) through regional clusters.

Searching for knowledge over time may also lead organizations to (re)discover old concepts or principles recombining and translating them into new contexts (e.g., Messeni Petruzzelli and Savino, 2014; Nerkar, 2003; Salge, 2012; Savino et al., 2015; Schulz, 2001).

Differently, a second literature stream focused on the *'how'* to search, hence investigating the internal integration and development practices needed to translate knowledge into innovative solutions. Indeed, external search remains ineffective without the ability of the firm to communicate and share internally what has been absorbed from the external environment (West and Bogers, 2014). To this end, the deployment of internal integration mechanisms may play a key role in supporting employees' effort in sharing and articulating external knowledge by strengthening their social ties. Then, internal integration and development practices may enable coordination (e.g., Cillo and Verona, 2008; Criscuolo et al., 2017; Foss et al., 2013; Laursen and Salter, 2014; Roper et al., 2017), absorption (Fabrizio, 2009; Ferrares-Méndez et al., 2015), complementarity (Cassiman and Veugelers, 2006; Grimpe and Sofka, 2016), decentralization and institutionalization (e.g., Fiet et al., 2007; Kim et al., 2013; McKelvey, 2016; Poetz and Prüggl, 2010; Xie et al., 2016) of acquired knowledge. All these mechanisms can force organizations to pursue a variety of approaches simultaneously (backward vs forward looking, trial and error search, rational vs heuristic search), rather than relying upon a single one. In a different vein, the how to search may include the use of innovation or knowledge intermediaries (Zhang and Li, 2010) that may help firms like SMEs, who usually have limited technology scouting capabilities, in technological exploration.

Yet, a third research stream has stressed the presence of different knowledge *'loci'* of search dynamics, that may exist at networks/R & D alliances (Capaldo and Messeni Petruzzelli, 2015; Vanhaverbeke et al., 2014), communities including incubators and industrial parks (Afuah and Tucci, 2012;

<http://dx.doi.org/10.1016/j.techfore.2017.04.008>

Available online 24 April 2017

0040-1625/ © 2017 Elsevier Inc. All rights reserved.

Christensen et al., 2016; Langer and Seidel, 2015), organizations from startups to incumbents (Han et al., 2012; Spender et al., 2017), group/team (Eriksson et al., 2016; Salge et al., 2013), and individual (Dahlander et al., 2016; Salter et al., 2014) levels. This stream adds to the ‘where’ and ‘how’ dimensions a characterization of the actor engaged in the process of knowledge search and innovation. Each locus requires a different ‘architecture of attention’ (Nielsen, 2011), since agents differently behave and interpret knowledge while searching across various and multiple dimensions.

2. Multiple lenses for a complex phenomenon

Relying on a single perspective as outlined before would have several limitations. For instance, it would not allow for consistent comparisons, generalizations, or formulation of hypotheses testable through large-scale analyses, for example leveraging upon the emerging methods related to big data investigation (Gerard et al., 2016). On the contrary, a multiple level analysis may allow to better understanding how to escape local search behaviors. It can also shed new light on how organizations may leverage on distant knowledge in a more explorative way or with less commitment of resources. Finally, the interface between internal routines and external environment may be better characterized and investigated.

In this vein, and despite the well-recognized relevance of search practices and mechanisms to innovate, few contributions exist where authors empirically analyze the simultaneous influence of search at multiple levels. Lopez-Vega et al. (2016) combine two knowledge search dimensions like search space and search heuristics in order to come up with four search paths: situated paths, analogical paths, sophisticated paths, and scientific paths; such an effort goes into the direction to join the ‘where’ and the ‘how’ perspectives. A similar effort has been undertaken by Martini et al. (2017) who argue that in order for external search practices to be effective, firms need to deploy internal integration mechanisms and idea management systems. Instead, Hohberger (2014), by looking at searching practices within collaborative contexts (i.e. alliances) characterized by geographical proximity, undertakes a similar effort by contributing to the link between the ‘where’ and the ‘loci’ dimensions.

Time has come to provide insights concerning from studies integrating the ‘where’ (spaces and times), ‘how’ (modes), and ‘loci’ (actors) perspectives of search. Therefore, the aim of this Special Issue is to bring together high quality research that furthers the understanding of search innovation dynamics following a multiple perspective. With this Special Issue scholars disentangle the peculiar relationships between search and innovation in order to unveil how knowledge is recombined following various rules and schemes in the attempt to originate different types of innovations. Therefore, the present Special Issue serves as a forum for researchers to discuss their works and recent advances, hence offering original and novel insights on the interplay between search mechanisms and innovation.

The contributions in this Special Issue make use of rich conceptual backgrounds, and bring new value to bear on the study of relationships between search mechanisms and innovation. Together, the different contributions create empirically grounded theoretical insights into how investigating a number of search mechanisms from different perspective can pave the way to a new understanding. By means of text mining¹ (Van Eck and Waltman, 2011), clustering, and visualization routines of the software VOSviewer v1.6.5² applied to the abstracts of the selected papers, we were able to identify four core themes in the background of the topic under question:

- Cluster 1: Exploration/Exploitation and Search (4 papers, see Fig. 1)
- Cluster 2: Social Media and Search (2 papers, see Fig. 2)
- Cluster 3: Open Innovation and Search (6 papers, see Fig. 3)
- Cluster 4: Inter-organizational relationships and Search (7 papers, see Fig. 4)

Putting them against the three main search mechanisms (where, how, and loci), we summarize the different perspectives on the where, how, and loci described into the papers (Table 1):

All contributions take into account at least two Search mechanisms, whereas four entail all of them simultaneously. A number of reasons make each emerging cluster, in the background of the Special Issue main topic, relevant for the audience of *Technological Forecasting & Social Change*. The domains of knowledge search mechanisms covered in the Special Issue are multiple and include the technological domain, the market domain related to customer needs and preferences in B2B and B2C relationships or competitors' products, industries like aerospace, healthcare, biotechnology, and organizational contexts like the world of medical professions, sales departments, academic inventors, multinational enterprises, SMEs, startups and technology spinoffs or the one of emerging industrial nations (for which read China). The spaces where innovative knowledge is searched are also represented in terms of organizational, geographical and knowledge distance. The modalities of search discussed are explored at both the micro level of how individuals search new knowledge and at the level of organizations and involve tools like social media or inter-organizational relationships like the ones of firms with universities or with innovation intermediaries. The “how” new knowledge is searched also refers to the role played by attributes of inter-organizational relationships like trust or commitment or to firms' internal organizational mechanisms—like their IT infrastructure, their organizational practices like the decentralization and the employee involvement in innovation processes, and their strategies like the imitation from partners or industry leaders, the acquisitions of firms and the related knowledge integration processes.

Concerning Cluster 1 (‘Exploration/Exploitation and Search’), it expands upon—and opens new paths alongside—existing research. Indeed, recent contributions (Heracleous et al., 2016; Paliokaite and Pačesa, 2015) highlight the need to further focus on the challenges arising from the implementation of exploration, exploitation, or ambidextrous practices, especially when it comes to develop capabilities along the cognitive, behavioral, and organizational dimensions to get different types of innovations (e.g., radical vs incremental). Also, Fernández-Esquinas et al. (2015) calls for a better understanding of the latent dimensions underlying the use of exploitation and exploration mechanisms when university-industry interactions are deployed in order to search for innovations in specific innovation systems.

Cluster 2 (‘Social Media and Search’) adds some interesting perspectives to what Raford (2015) argues about the developments of social media,

¹ To create a term map based on a corpus of documents, VOSviewer distinguishes four different steps: identification of noun phrases (Van Eck et al., 2010a,b) by using different filters; selection of the most relevant noun phrases; mapping and clustering of the terms by using a unified framework (Van Eck et al., 2010a,b; Waltman et al., 2010); visualization of the mapping and clustering results.

² <http://www.vosviewer.com/>

Download English Version:

<https://daneshyari.com/en/article/5036773>

Download Persian Version:

<https://daneshyari.com/article/5036773>

[Daneshyari.com](https://daneshyari.com)