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Fast-connecting search practices: On the role of open innovation intermediary to accelerate the absorptive capacity

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ABSTRACT

Firms that engage in distant search activities seek to leverage on external knowledge to innovate. The firms' ability to acquire new knowledge depends on strong search practices and the corresponding absorptive capacity where the latter predefine firms' ability to span out of its core competences area, to follow the open innovation processes. Absorptive capacity is often seen as a precondition for the open innovation success. This research focuses on the cases of open innovation when the absorptive capacity is absent internally and is taken in charge by an open innovation intermediary that is capable to develop the potential absorptive capacity for the firm. Based on an exploratory case study of an intermediary platform that proposes novelty driven search practices – ideXlab, our results demonstrate how intermediary can accelerate the absorptive capacity value recognition function and therefore, potentially facilitate further diffusion of knowledge. Implications for open innovation in the distant search contexts are discussed.

1. Introduction

Companies engage today in open innovation activities to leverage expertise and gain access to heterogeneous knowledge (Benbya and Van Alstyne, 2010, Schulze and Hoegl, 2008). The firms' ability to acquire new knowledge depends on strong search practices (Savino et al., 2017) and the corresponding absorptive capacity where the latter predefine firms' ability to span out of its core competences area, to follow the open innovation processes (Chesbrough, 2006, Terwiesch and Xu, 2008).

Search activities commonly start when problem is identified and formulated for solving. Firms that encounter problems are often called seekers and any individual that proposes a solution to an identified problem is considered to be solver. The problem solving processes consists in finding an optimal solution to that problem. Seekers often use the help of third party companies that provide an open marketplace for ideas, talent and technologies (Ollila and Elmquist, 2011). The intermediaries are defined as organizations that bridge the gap between organizers that seek solution to an innovation problem and innovators that can provide a solution to the problem (Hallerstede, 2013). Prior literature demonstrated that problem formulation can be problematic (Tyre and Von Hippel, 1997) and the inflexible problem formulation phase is hard to manage in case seekers and solvers are separated by organizational barriers (Sieg et al., 2010). (Von Hippel and Von Krogh, 2015) challenged the initial view of problem formulation activity and proposed an approach for problem solving where costs of problem formulation can removed. The authors argue that simultaneous need-solution pairs discovery reduces constraints associated to eliminating potentially interesting solutions when problem is too rigid.

Let's take an example. In 2014, a French based railway company that manages the rail traffic decided to explore ideas related to Unmanned aerial vehicle (UAV) for the railway system. Since it is a distant expertise area for a company, they decided to use a help of an innovation intermediary to identify relevant solutions and find scientific and technical experts in the world to deal with this area. A company in this case did not have any particular problem to solve and since this was a new area of expertise for them, they could not judge the potential of any particular problem to solve. An innovation intermediary (IdexLab) helped the company to formulate the problem and launched a search based on a set of keywords related to the exploration area. At the end of the challenge, the existing projects that propose potentially relevant solutions and list of potential solvers were submitted to the company.

The search came out with a list of suggestions related to cooperative UAV, path planning algorithms, small fixed wing UAV, situation awareness, Kalman filter, etc. The company selected the solvers whose competence was quite general and easier to evaluate as relevant for the seeker. Though, most of the ideas that the intermediary search

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identified were not considered as relevant and were not even familiar to the experts. Was it an error? How should one evaluate the potential of the solutions coming from the distant to the seeker expertise?

Let's look at this problem differently. When company specialists were dealing with the concept internally, they explored areas relevant to their area of expertise e.g., maintenance, types of interventions, etc. They operated in the area of initial absorptive capacity (AC) where their capability to recognize potential value and assimilate external knowledge are critical. Firms that open up their innovation process and expand their internal knowledge base are able to increase their AC significantly (Vanhaverbeke et al., 2008). Though, the process of acquiring AC internally can be costly and requires additional investment from the company side. So what happens when the seeker wants to engage in the OI practice but does not have internal AC related to the exploration area? When the AC level is really low, how company can recognize the value of propositions that appear to be out of the scope, e.g., Kalman filter in the example?

The paper is organized as follows. In Section 2, we briefly review core assumptions related to distant search, open innovation practices and the role of AC. In Section 3, we present the research method we used to collect and analyze the data for our case study. Sections 4–5 establish our main findings by demonstrating how intermediary can help companies to recognize potential of the solutions by accelerating the value recognition part of the AC. This research introduces a new dimension of the AC that is external to the company.

2. Relevant literature

2.1. The role of absorptive capacity on assimilating and exploiting additional information internally

Knowledge integration has been mostly studied from the absorptive capacity (AC) perspective (Bogers and West, 2012, West and Bogers, 2014).

To assimilate and internalize external knowledge firms require an internal effort to be able to recognize, assimilate and use external expertise, which imply the organization of AC (Fabrizio, 2009, Spithoven et al., 2011). Cohen and Levinthal (1989) consider that this capability "is largely a function of the firm's level of prior related knowledge".

In 1989, Cohen and Levinthal (1989) analyzed the role of R&D in this context and distinguished "information generation" from the "ability to assimilate and exploit existing information" for innovation purposes. Different dimensions of AC were suggested by the literature: the ability to identify the market for technology; the ability to absorb the technology acquired (Cassiman and Veugelers, 2000); the ability to acquire, assimilate, transform, and exploit knowledge to produce a dynamic organizational capability (Zahra and George, 2002); the dimension on the identification and valuation of external knowledge (Todorova and Durisin, 2007); as an inter-organizational capacity (Müller-Seitz, 2012). Distinguished potential and realized AC where potential AC refers to the knowledge seeking capacities that a firm has developed and realized AC – to the ability of a form to developed solution based on the knowledge(Zahra and George, 2002).

Generally speaking, literature on AC to date has mostly focused on the ability to make use of existing knowledge, placing emphasis on the capacity to assimilate it including the necessity for a firm to accept external knowledge as a legitimate resource for innovation and firms' capability to appropriate it (Katila and Ahuja, 2002, Laursen and Salter, 2004, Rothaermel and Thursby, 2005, Todorova and Durisin, 2007). AC is also path dependent and the firms' ability to exploit external knowledge can be influenced by individuals' involvement in a firm's innovation projects (Schmidt, 2010).

Firms' ability to acquire new knowledge depends on strong search practices and the corresponding AC functions. Access to the distant knowledge combined with the existing know how of the company can be a source of potential breakthrough (Fleming, 2001, Fleming and Sorenson, 2004). Distant and external knowledge requires a so called conceptual AC that allows to deal with radical innovation by moving from known to out-of-the-box, by overcoming cognitive crises by linking the unknown to multiple cognitive references, by supporting the creation of new knowledge in the milieu (Le Masson et al., 2012). The AC of firms that operate in a closed innovation model is limited since their perception of novelty depends on how distant is their search (Ahuja and Morris Lampert, 2001).

2.2. Absorptive capacity as a pre-condition for the inbound open innovation activity

Open Innovation implies the logic of building on the external sources by sharing risks and resources among different actors (Chesbrough et al., 2008, Chesbrough, 2006, Enkel et al., 2009). Vanhaverbeke et al. (2008) analyzed how the outside-in dimension of open innovation when a firm accesses external knowledge elements and integrates them into its own innovation processes and the AC are linked together. The authors indicate that the firms that "open up their innovation process and expand their internal knowledge base, are able to increase their AC significantly" (Vanhaverbeke et al., 2008). AC capacity is demonstrated to be one of the central factors for the open innovation (OI) success and a precondition for the OI activity (Henry et al., 2013).

OI activities allow firms to gain broader perspective, access distant knowledge. The creation of innovation requires openness but firms still need protection to commercialize these innovation (Laursen and Salter, 2014). Organizations need to ensure capabilities to make use of the external knowledge elements, profit from the distant search (Katila and Ahuja, 2002, Kotha et al., 2013, Laursen and Salter, 2014, Rosenkopf and Nerkar, 2001), which can be challenging in situations of high openness (West and Bogers, 2014). Moreover, broad search processes can be costly and limited in scope (Jeppesen and Lakhani, 2010).

Firms face difficulties in diffusing and integrating abundant ideas in their innovation processes (Alexy et al., 2012). The capacity to integrate and assimilate the external knowledge depends on the firms' internal competences to facilitate the OI (Dahlander and Gann, 2010). Piezunka and Dahlander (2015) revealed the risk of too narrow attention with distant search for the companies. The authors demonstrated that seeker firms could simply filter out relevant ideas that are too distant and unfamiliar for them in terms of content and structure.

The positive effect of external search practices on innovation performance is more evident when internal practices are well suited for integrating and articulating knowledge and for managing and selecting innovative ideas (Martini et al., 2016). It is shown that the internal AC predefines firms' ability to span out of its core competences area.

Actively searching the external environment, however, it is not enough if the firm lacks the competences to screen and select external technology and knowledge as well as to internalize them. As Robertson et al. (2012) argued, AC does not on its own provide an adequate foundation for the discovery and analysis of routines and capabilities needed for innovation processes in open contexts.

In order for the OI to function correctly, the AC should be disposed or easily developed by the company. For this, the initial question should be properly formulated for the company to absorb the external knowledge and develop its AC. Yet, the AC development internally can be costly and long. It requires an investment in the R&D processes. What does happen if the AC is absent? What does happen when the seeker wants to engage in the OI practice but does not have internal AC on the particular issue?

2.3. Dealing with distance search: managing outside-in exploration when absorptive capacity is low

Openness forces firms lacking absorptive capacity to search for alternative ways to engage in open innovation Spithoven et al. (2011). The authors demonstrate that the technology intermediaries can help to build AC within their client firms by engaging in gatekeeping,

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