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Innovation intermediaries and collaboration: Knowledge–based practices and internal value creation

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ABSTRACT

This paper analyses how knowledge-based practices adopted by innovation intermediaries enable them to generate value for themselves when collaborating with their clients. While the literature focuses on value creation for their client organisations, little is known about how innovation intermediaries create internal value even though this is essential for ensuring their long-term survival and sustaining their key facilitating role in the innovation system. This understudied issue is explored using empirical evidence from a sub-set of innovation intermediaries, Research and Technology Organisations (RTOs). The results indicate that by capitalising on existing knowledge vested in employees and collaborators as well as understanding and shaping the knowledge base of the innovation ecosystem, innovation intermediaries generate internal value from their involvement in collaborative innovation, which range from different financial to non-financial types of value. Implications for intermediaries, their collaborators and for policymakers are then discussed.

1. Introduction

This paper investigates how knowledge-based practices adopted by innovation intermediaries enable them to generate internal value for themselves when collaborating with their clients. Innovation has long been seen as a major factor in economic growth and development. In turn, innovation intermediaries have become recognised as key actors in the innovation landscape, improving firms' innovative speed and performance (Knockaert et al., 2014; Lin et al., 2016). Innovation intermediaries, broadly defined as "organisations that provide a supportive role for collaboration between two or more parties during various stages of the innovation process" (Howells, 2006, 721), are therefore seen to be central to creating and maintaining a successful innovation ecosystem (Sieg et al., 2010). The role of innovation intermediaries extends from linking parties for collaboration, to setting up and mediating relationships and bridging a wide array of knowledge, competency and capability gaps (Smedlund, 2006; Klerkx and Leeuwis, 2008a; Klerkx and Leeuwis, 2008b; Edler and Yeow, 2016). Among the varied types of engagement by innovation intermediaries (Howells, 2006) their interaction in collaborative projects represents one of their more complex, enriched and involved roles as they (in addition to developing and supporting the partnership) engage in co-creative innovative activity with collaborators, in a process of wider co-creation and co-development (Boon et al., 2011).

Whilst past research has extensively discussed the role of innovation intermediaries and how they generate value for their clients (Sawhney et al., 2003; Howells, 2006; Verona et al., 2006; Sapsed et al., 2007; Nambisan and Sawhney, 2007; Arnold et al., 2010; Tran et al., 2011; Landry et al., 2013; Knockaert and Spithoven, 2014), there is a lack of understanding on what enables intermediaries to generate value for themselves in the context of their engagement in collaborative innovation. This is a non-trivial issue as business and innovation move towards more open and networked environments. 'Who gets what' in terms of value creation is a crucial issue in modern business dynamics with actors operating in a system in which 'we move from single-firm revenue generation towards multi-firm control and interface issues' (Ballon, 2007, 7). How to efficiently capture value for each actor within dispersed networks remains a daunting task, but is essential for the long-term survival of not only businesses (Johnson et al., 2008), but also innovation intermediaries (del Águila-Obra et al., 2007; Lopez and Vanhaverbeke, 2009).

It is this aspect of the *internal value creation* by innovation

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intermediaries, which the literature has not yet been able to adequately address (Krenz et al., 2014), that is the focus of this paper. The *internal value* could be multidimensional comprising both financial and non-financial values. The immediate gain for innovation intermediaries from client engagement can be expected to be from *financial* benefits in terms of: (a) revenues generated by services they provide for clients, or (b) funding secured from research grants. Apart from these financial gains, intermediaries also generate *non-financial* value that consists of *knowledge*, *market* and *network* based benefits. In collaborative projects intermediaries with other partners may develop new knowledge (Mowery et al., 1996; Gulati, 1999; Kale et al., 2000), capabilities required to deploy such knowledge (Hardy et al., 2003; Cepeda and Vera, 2007; Martín-de Castro, 2015), intellectual property (Martín-de Castro 2015), new forms of innovation (Earl, 2001) and useful networks (Nagaoka and Kwon, 2006). Although this, taken to the extreme, might be seen as parasitic or exploitative of their clients, innovation intermediaries need to generate sufficient gains for their long-term survival, without which the generation of value to their clients and their wider systemic benefits would not be possible.

In the ability of innovation intermediaries to generate internal value, the effective development and utilisation of knowledge is a critical component (Wenger and Snyder, 2000; Teece, 2004; Alavi et al., 2005; Knockaert et al., 2014), especially in the context of collaborative innovation (Pisano and Teece 2007; Lichtenthaler and Lichtenthaler, 2009). The knowledge-based view of the firm (Kogut and Zander, 1996; Spender, 1996) as well as the open innovation literature (Chesbrough, 2003; Chesbrough, 2006; Dahlander and Gann, 2010) highlight that valuable knowledge exists not only within organisational boundaries, but also outside the firm. As such, firms' ability to explore, acquire, retain, integrate and exploit knowledge (Grant, 1996), is central to firm value creation (Gold et al., 2001; Klerkx and Leeuwis, 2008c; Lichtenthaler and Lichtenthaler, 2009; Knockaert and Spithoven, 2014).

Where do innovation intermediaries come into this process of knowledge management and coordination? The agency issue and role of cooperation and coordination is complex and not easy to resolve (Holmstrom, 1989), but a number of studies have started to explore the role of intermediaries in the knowledge creation and innovation process. They cover knowledge search, problem solving and connecting and coordinating knowledge between actors (Agogué et al., 2013a; Hargadon and Sutton, 1997) through to commercialising new technologies (Aldrich and von Glinow, 1992). Thus, the successful provision of innovation intermediaries' services involves the handling of complex knowledge (Klerkx and Leeuwis, 2008c; Lichtenthaler and Lichtenthaler, 2009). Innovation intermediaries therefore act as knowledge repositories that introduce new combinations of knowledge and also make knowledge-based contributions when providing solutions to their clients (Hargadon and Sutton, 1997; Howells, 2006). Innovation intermediaries appear to be developing new methods and practices in more unknown knowledge environments where risk and uncertainty are high and where sophisticated management principles have to be developed (Agogué et al., 2013b). Thus, the successful delivery of the intermediation process requires the effective adoption of knowledge-based practices, through which internal value is generated. Even though there is extensive research on investigating how to manage knowledge effectively in collaborative arrangements (Kale et al., 2000; Grant and Baden-Fuller, 2004), the positioning of innovation intermediaries in these studies has been as institutions that help *other* organisations to manage knowledge and extract value (Lee et al., 2010; Spithoven et al., 2010) rather than on the intermediaries *themselves*.

Using data from a survey of Research and Technology Organisations (RTOs), an important form of innovation intermediary (Howells, 2006; Oxford Economics, 2008; Arnold et al., 2010; Landry et al., 2013; Miller, 2014), the paper seeks to contribute in three ways to our knowledge of innovation intermediaries and their clients: (1) for innovation intermediaries to more effectively assess and design knowledge-based practices depending on which type of value they intend to generate; (2) indirectly, by allowing innovation intermediary clients' to better identify and appreciate which aspects of their collaboration intermediaries benefit from the most; and, (3) for policymakers to put in place better measures to support intermediaries as a pathway for wider innovation ecosystem value generation.

The remainder of this paper is organised as follows. The next section outlines a set of hypotheses developed to indicate how different knowledge-based practices may determine an innovation intermediaries' ability to generate both financial and non-financial value. This will be followed by methodology section and the paper then concludes by discussing the results, limitations and future research directions of the study.

2. Background literature

2.1. Internal value generation by innovation intermediaries through collaborative projects

Innovation intermediaries have been characterised as organisations that generate value to other actors within a system of innovation (Sawhney et al., 2003; Verona et al., 2006; Nambisan and Sawhney, 2007; Arnold et al., 2010; Tran et al., 2011). The focus has therefore been on studying how intermediaries enable their clients to leverage external technologies (Howells, 2006), existing design solutions (Hargadon, 2002), the knowledge and experience of customers (Verona et al., 2006), the expertise of external specialists (Tran et al., 2011) and exchange platforms (Lichtenthaler and Ernst, 2008). Nevertheless, in order for innovation intermediaries to successfully perform these tasks they need to generate internal value for themselves from such engagement with clients. 'Internal value' is defined as the sum of both financial and non-financial values generated from their clients by innovation intermediaries. The internal value generated by intermediaries during collaborative projects will be multi-dimensional, comprising both (a) financial and (b) non-financial gains (Huizingh, 2011).

As noted earlier, the immediate gain for innovation intermediaries from client engagement can be expected to be from *financial* benefits, in terms of service revenue generation and funding secured from research grants, but there will also be *non-financial* value generation. Non-financial value, associated with the concept of 'social capital', highlights the central role played by the social network in which actors, such as innovation intermediaries, engage. It is associated with cooperation, reciprocity and information sharing in the value creation process (Tsai and Ghoshal, 1998; Landry et al., 2002; McElroy, 2002; de Felice, 2015). For instance, in collaborative projects intermediaries with other partners may develop new *knowledge* (Mowery et al., 1996; Gulati, 1999; Kale et al., 2000) and technical and operational capabilities required to deploy such knowledge (Hardy et al., 2003; Cepeda and Vera, 2007; Martín-de Castro, 2015). This new knowledge will be important for more effective running of the intermediation process, particularly when new combinations of knowledge are introduced. Innovation intermediaries' engagement in collaborative projects would also enable them to generate 'closer' to *market* benefits. This includes the development and improvement of products, processes (Earl, 2001), services, technologies, equipment and intellectual property (Martín-de Castro, 2015) that provide them with competitive advantage (Gulati et al., 2000b), particularly when bridging technology and market gaps between partners (Lichtenthaler and Ernst, 2008; Nell and Lichtenthaler, 2011; Lichtenthaler, 2013; Melle and Russo-Spena, 2015). Lastly, intermediaries also develop new *networks* of contacts including new markets and distribution channels (Gulati et al., 2000a; Nagaoka and Kwon, 2006; Lichtenthaler, 2007). These are of value when finding partners for collaboration and providing support services, such as introducing new distribution channels to clients and international market access (Arnold et al., 2010).

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