



# Connecting demand and supply: The role of intermediation in public procurement of innovation



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## ABSTRACT

Intermediation in innovation serves to establish or improve the link between different actors with complementary skill sets or interests in order to support the generation and diffusion of innovation. This article conceptualises and analyses intermediation between supply and demand using the example of public procurement of innovation. It defines specific intermediation needs and functions in different procurement situations and outlines the pre-condition for effective intermediation. The paper combines and contributes to the growing literature on innovation intermediation and public procurement of innovation.

As the paper looks at the *demand* for innovation it adopts a broad understanding of innovation, defined as a product, service or process that is *novel to the buying organisation*. In order to develop the conceptualisation of intermediation in the process of demanding innovation, it builds on the existing, rather rudimentary conceptualisation of intermediation in the innovation and management literature. It presents an in-depth analysis of two very different procurement processes in two cases in a complex public sector setting, the English NHS, case of a public buying organisation triggering the generation of an innovation, and another in which an organisation sought to respond to an innovation offered in the marketplace. In both cases, the solution bought necessitated strong adaptation processes with considerable learning costs within the buying organisation. The paper shows how intelligent and tailored intermediation can tackle some of the well-known procedural and capability failures in the process of public procurement of innovation. In terms of policy implications, the article makes the claim for an increased effort to build up effective intermediation across procurement systems to support agencies in concrete procurement and, in doing so, to build up capacity for more intelligent public buying. While the focus on intermediation responds to an existing gap in the literature on public procurement of innovation, the paper has implication for demand-supply intermediation more generally.

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## 1. Introduction

*Intermediation in innovation* serves to establish or enable the link between different actors with complementary skill sets or interests in order to support the generation and diffusion of innovation. Our understanding of the distributed nature of innovation generation has led to a focus on the need to create linkages and support actors in their ability to link. Consequently, the need for linkages is a building block in all variants of the innovation systems literature (Edquist, 1997; Freeman, 1995; Lundvall, 1988; Nelson and Winter, 1982), the literature on innovation networks and clusters (Chapain et al., 2010; Uyarra and Ramlogan, 2012), and the highly diverse streams of literature on different modes of knowledge and innovation generation (Chesbrough, 2003; Gibbons et al., 1994; Kline and Rosenberg, 1986).

The different functions and modes of intermediation in innovation have become a linchpin of our understanding of interaction in innovation systems (Howells, 2006; Klerkx and Leeuwis, 2008; van Lente et al., 2003). With this paper we want to make a conceptual contribution to this growing literature by focusing on specific aspects of the link between the demand and supply of innovation. This focus is triggered by an empirical observation and a policy problem. In recent years we have seen a growing concern with the conditions of demand for innovation and how demand shapes, spurs, or hinders the direction and speed of innovation. The focus has shifted somewhat to the problems of demanding and adopting innovative solutions. Most prominently, public procurement of innovation (PPI) has climbed up the ladder of policy and academic attention considerably in the last 5–10 years (Aschhoff and Sofka, 2009; Edler and Georghiou, 2007; Edquist et al., 2015; Edquist and Zabala-Iturriagoitia, 2012; Rolfstam et al., 2009). As recent policy reviews have shown, public procurement of innovation is at the heart of many innovation policy initiatives across the OECD

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and at EU level (Izsak and Edler, 2011; OECD, 2011; Rigby et al., 2012; Uyarra, 2016). While public procurement as a “tool for innovation policy” (Geroski, 1990) has had a comeback, the adoption of external innovation to make public services more efficient and effective has always been part of the public sector modernisation and improvement agenda.

To focus on PPI as an *innovation policy tool* is to support and stimulate the demand for and adoption of innovation for the sake of generating economic benefit for suppliers and supply chains, on top of the social benefit generated by the public sector organisation. Consequently, a range of additional policy measures and changes in regulations have been introduced or are being discussed to support PPI (Georghiou et al., 2013; Uyarra, 2016). While there is a plethora of policy initiatives, there is still a range of shortcomings in the actual conduct of public procurement of innovation. A number of reviews (Aschhoff and Sofka, 2009; Bonaccorsi and Molinari, 2011; Edquist and Hommen, 1998; Lember et al., 2007; Rolfstam, 2005; Rolfstam et al., 2011; Uyarra, 2010, 2016) and a recent survey (Uyarra et al., 2014) indicate that some of the reasons for that are a lack of organisational capabilities of all kinds (e.g. technological, managerial), counter-productive incentive and organisational structures and a lack of transparency and appropriate interaction between demand and supply (Uyarra et al., 2014).

This paper starts with the assumption that the process by which public agencies ask for, buy, and adopt an innovative solution is characterised by specific, persistent challenges, and buying organisations need to be enabled and supported systematically to tackle them. In line with our concern about generation and diffusion of innovation, we define innovation from the perspective of the buying organisation. Crucially, this view highlights that public procurement of innovation “is not primarily done to enhance the development of a new product, but to target functions that satisfy a human need or societal problems” (Edquist and Zabala-Iturriagoitia, 2012, p. 1758). We focus on the latter part of this argument, i.e. the needs of a public body providing a public service and responding to a societal need. Thus, in this article we define public procurement of innovation as the purchase of a solution that is novel to the buying organisation in order to serve an organisational need. This purchase can lead to the generation of a new solution (thus *triggering* an innovation) or it can relate to a solution that already exists, but has not been previously adopted by the buying organisation (thus *responding* to an innovation in the marketplace). As we are concerned with generation *as well as* adoption of innovation and the intermediation needs that arise from asking for and adopting something new, this definition goes beyond the understanding of Edquist and Zabala-Iturriagoitia (2012) whose work is limited to procurement that *results in* (i.e. triggers) an innovation.<sup>1</sup>

Public procurement of innovation in our definition poses a range of challenges. Procurement is a complex market transaction with a high level of functional demands and risks involved that necessitates a broad range of capabilities. Markets for innovation are – by definition – not established, needs are often novel and ill-defined, a multitude of different functions within public organisations produce different expectations and incentives to demand innovation, the business case of new solutions offered to organisations is ill-defined at best, and the learning and adaptation costs within the

buying organisation are often high. Further, the generation and adoption of innovation frequently involves iterative interactions and necessitates joint risk management against the background of constraining public procurement regulations. Public organisations are – by and large – overwhelmed by those demands. They lack crucial capabilities, are poor at linking up complementary skills and interest both *within* the organisation and with *external* actors in the process of defining needs, exploring solutions, conducting the procurement and adopting and using innovations. The successful examples we have seen in the literature stress the importance of exactly those capabilities and linkages (Edler and Uyarra, 2013; Lember et al., 2011; Rolfstam et al., 2011; Edquist et al., 2015). This is where intermediation comes in. Procurement of innovation generates a range of intermediation needs, both between and within organisations.

Consequently, the aim of this paper is to develop a conceptualisation of intermediation between public demand and supply, which, we hope, can serve as a basis for a deeper understanding of intermediation between demand and supply more generally. We do so by answering the following questions: What needs for intermediation do public organisations have when they ask for, buy and adopt products and services that are novel to them? How do these needs translate into specific functions of intermediation in different procurement situations and what are the corresponding roles of intermediation?

To answer these questions, the paper first presents and mobilises various existing conceptualisations of intermediation in innovation more generally as a starting point for the empirical analysis (Section 2.1). It then establishes a concept of challenges in public procurement of innovation as defined above as a basis for understanding specific intermediation needs, differentiating between situations in which public procurement triggers an innovation and those in which it responds to an innovation offered. While both situations share some challenges, they have somewhat different functional requirements and therefore different needs for intermediation and support (Section 2.2). The paper then explores two empirical examples of active intermediation (Section 3), both situated within a complex public sector setting – the National Health Service (NHS) in England. We have chosen the English NHS as it is a multi-layered organisation which has long been criticised for not being able to reap the most out of the innovations offered and not being demanding enough in asking for and adopting innovation (Greenhalgh et al., 2004; Phillips et al., 2007; Wanless, 2002). In this complex and challenging setting, we first explore how an intermediary organisation supported a case of public procurement of innovation characterised by a complicated need definition, complex market interaction and the triggering of a novel solution. The second case is an attempt to enable the adoption of an existing technology through intermediation. An in-depth analysis of these two cases allows us to illustrate and explore the breadth of the functions of intermediation. By doing so, we develop a more general concept to understand intermediation in public procurement of innovation (Section 4). Even if limited to public procurement, this concept can, we believe, also be useful to better understand the under-explored issue of private buying of innovation. The conclusions highlight the need for a step-change in our understanding of intermediation in innovation in order to capture the complexity of demand intermediation, and to discuss the concrete implications for the practice of public procurement of innovation and for policy that seeks to mobilise procurement to spur innovation.

## 2. Conceptual background and literature review

To bring some order in the complexity of intermediation needs and functions within the procurement of innovation, we follow a

<sup>1</sup> The more limited definition of public procurement of innovation has its justification when the focus is on innovation *generation* due to public procurement and the specific problems associated with the link of buying and *generating* innovation. While we include this *problematique* in this article, we go beyond this limitation as we are interested in the challenges of buying something new, and the resulting intermediation needs. We regard our contribution as an important extension of the current literature on public procurement of innovation.

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