Should SMEs pursue public procurement to improve innovative performance?

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ABSTRACT

While public procurement is an efficient demand-side policy instrument, resource constraints impede small and medium-sized enterprises from accessing innovation procurement contracts. As a remedy, inter-organizational networks are seen as a means to extend SMEs' resources. This paper examines the relationship between inter-organizational networks and SMEs' innovative performance. It investigates how this relationship is mediated by both the public or private sector customer's demand for new or significantly improved products. We find that networks involving other firms are associated with SMEs' innovative performance, and that this is mediated by both customer types. Furthermore, the public procurement of innovations is associated with greater returns in the case of the new products or services. For significantly improved products or services, networks involving other firms may improve performance when the demand originates from private sector customers. Our results suggest that SMEs should emphasize networks with other firms rather than public or private research and development actors when they develop new products for the public sector. These innovations can be further developed, providing opportunities for further leverage in private sector markets.

1. Introduction

The use of demand from the public sector to trigger private sector innovation is becoming increasingly important and relevant to innovation policy and as a means to support SME innovations (Geroski, 1990; Aho et al., 2006; Edler and Georgiou, 2007; Uyarra et al., 2014). It has also been acknowledged that suppliers' inter-organizational networks may be necessary to facilitate innovations in the context of public procurement (van Meerweld et al., 2015). This paper investigates how these inter-organizational networks and the public sector customer's demand for innovations are associated with SMEs' innovative performance. To our knowledge, this remains an unexplored subject in the literature.

Public procurement may lead to innovation in two ways: as a by-product of 'regular' public procurement, or as a desired outcome of public innovation procurement, in which the public sector places an order for a product or service which does not yet exist but can be developed (Aschhoff and Sofka, 2009; Edquist and Zabala-Iturriagagotita, 2012). The latter, in particular, has been argued to be an efficient innovation policy instrument (Lichtenberg, 1988; Aschhoff and Sofka, 2009). In regard to small and medium-sized enterprises (SMEs), public procurement could be a valuable tool in promoting their innovations (Love and Roper, 2015). Conversely, SMEs could improve the innovation potential of public procurement (Georgiou et al., 2014), because small firms are often characterized as being innovative (Kosti-Laakso et al., 2012). However, firms with greater resources have a better capability of bringing innovations to the market and reaping greater rewards from them (Sorouscu et al., 2003). Public procurement is not different in this respect: although innovative SMEs are actively involved in public procurement (Reijonen et al., 2016), small firms lack resources to compete for public tenders (Flynn et al., 2015). Furthermore, since public procurement of innovations is often characterized by large contracts (Uyarra et al., 2014), this may impede SMEs' capability to respond to this instrument.

As a potential remedy to this problematic interplay of limited resources and large tenders, it has been suggested that developing cooperation and partnerships could be a key to success in innovation for SMEs (Goes and Park, 1997; Laforet and Tann, 2006). In the development of major innovations, networks are important because they provide access to diverse and situation-specific knowledge which may be required in an innovation project (Kelley et al., 2009). New product development and market introduction are often costly and time consuming processes with uncertain outcomes, and thus, firms may wish to engage in strategic alliances to obtain knowledge and capabilities needed for these processes (Haeussler et al., 2012). Consequently, networks reduce the risk failure and increase chances of success by...
of the innovation process is emphasized in the sense that a new innovation is followed by improved innovations (Garcia and Calantone, 2002). This also justifies the use of different typologies in describing the degree of ‘newness’ in an innovation (ibid.).

The most elementary categorization, which we also adopt in this paper, is a dichotomous division into incremental and radical innovations. An incremental innovation involves making changes to existing products or services, whereas a radical innovation occurs when an entirely new product or service is introduced to the market. The ‘degree of newness’ is connected to a micro perspective – viz., the ‘degree of newness’ seen from the viewpoint of the firm or the firm’s customer (Garcia and Calantone, 2002; also Freeman, 1994). A prevailing understanding is that compared to an incremental innovation, the development and selling of a radical innovation requires more time, resources and information (Dewar and Dutton, 1986; McDermot and O’Connor, 2002). However, there are differences in information gathering benefits in pre-design versus commercialization phases (which will be further elaborated in Section 2.3.) (Song and Thieme, 2009).

The public innovation procurement literature also addressed these qualities of innovation. Concerning the ‘degree of newness’ of a procured innovation, (Edquist and Zabala-Ithurriagagotia, 2012; Edquist et al., 2015) distinguish between direct and adaptive innovation procurement: adaptive innovation procurement is a product or service that is new only to the end-user (public agency, firm, or territory); respectively, a direct innovation procurement occurs if a product or service is ‘new-to-the-world’. Adaptive innovation procurement often results in an incremental innovation. This distinction is closely related to the degree of cooperation in public innovation procurement in respect to how much cooperation (communication, collaboration and learning) there is between the procurer and potential suppliers (Edquist and Zabala-Ithurriagagotia, 2012; see also Rolfsam, 2012). The cooperation between the procurer and the suppliers has its counterpart in the cooperation between the suppliers and their network partners. There is empirical evidence concerning the importance of cooperation of the first kind (Uyarra et al., 2014; Loader, 2013; Edler et al., 2015) but not of the second kind. That is, the role of networks in public innovation procurement.

In a narrow sense, public procurement of innovation means the procurement of products or services and/or their characteristics that do not exist but can be developed (Edquist and Hommen, 2000). Another type of public procurement involving innovation, but being not public procurement for innovation, is pre-commercial procurement, which refers to the procurement of research results rather than actual product or service (Edquist and Zabala-Ithurriagagotia, 2012). In a broader sense, however, all public procurement may impact innovation through changes in demand and firm behaviour (Uyarra et al., 2014; Loader, 2013; Edler et al., 2015) but not of the second kind. That is, the role of networks in public innovation procurement.

Public procurement of innovation is also an innovation policy instrument. Aschhoff and Sofka (2009) list four types of innovation policy instruments – viz. public procurement, regulation, research institutions and universities and public R & D subsidies. Public procurement and regulation are demand-side instruments, whose purpose and impacts on firms differ. Procurement seeks to satisfy the public sector’s demand or policy targets and rewards firms with money (e.g. sales), whereas regulation seeks to influence firm behaviour by mandatory means. Their common feature is a reduction in market risk, because procurement contracts improve the predictability of demand and regulation provides industry-wide standards. Research institutions and universities, and R & D subsidies are supply-side instruments. The former instrument seeks to increase knowledge, and access to this knowledge is
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