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Editorial

Open innovation in the public sector: A research agenda

1. Introduction

Innovation has been pursued by organizations as a crucial activity for ages. In the erstwhile closed model of innovation, organizations themselves create ideas and take care of the development and distribution of these innovations on their own (Chesbrough, Vanhaverbeke, & West, 2014), e.g., the discovery and commercialization of Nylon at Dupont's Research Lab. Although the closed innovation model worked well for most of the 20th century, several developments at the end of this century made it more and more difficult for firms to control the creation and flow of their ideas and expertise. These developments include the growing number and mobility of knowledge workers, as well as the significant increase in the availability of private venture capital (Chesbrough, 2006). Further, knowledge monopolies started to disappear as the quality of university scientific research improved and the means for this research and its outcomes to be distributed became widespread (Chesbrough, 2003). These changes have supported the creation of new companies and the commercialization of ideas, spilling outside the bounds of company research labs.

The aforementioned developments have led to a new model of innovation, referred to by the term "open innovation" in the literature (Chesbrough et al., 2014; Gassmann, Enkel, & Chesbrough, 2010). In the open innovation model, companies do not adhere to the philosophy that successful innovation requires control, but recognize that internal ideas can be commercialized by deploying them outside (and external ideas deployed in-house) as pathways to the market (Chesbrough, 2006). On one hand, business value can be created by commercializing internal ideas through channels outside of the organization's current businesses. On the other hand, the knowledge and expertise of smart individuals from outside the company could be tapped for innovation. This has resulted in innovations being generated from sources that were earlier unlikely to contribute towards innovation e.g., customers in online innovation communities (Li, Kankanhalli, & Kim, 2016), and solvers in crowdsourcing sites (Ye & Kankanhalli, 2015). A number of companies have successfully employed open innovation practices such as, Procter & Gamble, and Dell (Frey, Lüthje, & Haag, 2011).

2. Issues of open innovation in the public sector

Other than the rise of open innovation in private businesses as mentioned above (Gassmann et al., 2010; Ye & Kankanhalli, 2013), a growing number of public sector organizations are also undertaking open innovation initiatives (Bommert, 2010). Particularly, the closed innovation model does not sufficiently address emerging policy challenges that governmental organizations need to deal with, thus driving the need for open innovation in the public sector (Bommert, 2010). For example, the United States Government has made important commitments to the

Open Government Initiative (Obama, 2009, 2012), allowing members of the public to access government data, and contribute ideas and expertise to government policy making and services innovation (Lee, Hwang, & Choi, 2012). Another example is that of De Publieke Zaak (www.depubliekezaak.nl) in the Netherlands, a combination of projects that allow government agencies to innovate using insights from citizens. One of these projects is the "21 days of debate" effort where citizens could ask questions to (changing) panels of participating politicians during the last 21 days before an election. In other parts of the world, too, open innovation initiatives are gaining ground. For example, the Singapore Government has implemented an open data portal to make datasets from a large number of agencies available to the public (Yang & Kankanhalli, 2013).

However, public sector organizations are mostly in the early stages of adoption of open innovation (Ham, Lee, Kim, & Choi, 2015). Particularly, open innovation in the public sector requires governments to listen more to their citizens than they did before, and to involve users of public services more. However, the means and methods for citizens involvement in public sector innovation are still not mature (Bekkers, Tummers, & Voorberg, 2013). Furthermore, there is a lack of understanding of how open innovation strategies should be formulated in public sector organizations (Christos et al., 2013). These hurdles result in low levels of citizen satisfaction and trust in these services. Moreover, government organizations must comply with existing rules and regulations that may limit their freedom to innovate, and that too in collaboration with external sources (Mergel & Desouza, 2013). In general, the public sector has been criticized for being inhospitable to innovation due to asymmetric incentives, lack of an innovation culture, absence of funding (such as venture capital) for innovation, and various other barriers (Bekkers et al., 2013). These barriers and the limited understanding of such phenomena in the public sector have led to calls for further research on open innovation in the public sector (e.g., Mergel, 2014). This gap is further aggravated by the differences between the two sectors (as discussed next), whereby findings about open innovation in the private sector may not be directly applicable to the public sector.

3. Open innovation in the public versus private sector

While open innovation has gained research attention and popularity in private companies it can also lead to benefits when applied to the public sector, though of a different nature (Konsti-Laakso, Hennala, & Uotila, 2008). Indeed, beyond fundamental differences in ownership, funding, and control, and even as they import practices from the private sector, public sector organizations continue to retain distinctive characteristics. Table 1 provides a comparison of open innovation in the private vs. public sector in terms of its focus, aim, value and external

Table 1
Differences between Open Innovation in the Private and Public sectors (adapted from Bommert, 2010 and Lee et al., 2012).

	Open innovation in the private sector	Open innovation in the public sector
Focus	Both on new product and service development	Usually not for a physical artifact
Aim	Initiated primarily to achieve competitive advantage	Driven by the objective of improving service performance
Value	Add value in terms of higher revenues	Add value in terms of public benefit
External stakeholders	Suppliers, customers, competitors, partners, research institutions, organizations in other industries	Citizens, online intermediaries, academia and higher education, other governmental organizations (e.g. legislators), non-governmental agencies (including the private sector) and non-profit organizations

stakeholders. First, the focus of open innovation in the private sector is on both new product and service development, whereas open innovation in the public sector is typically not targeted at creating a physical artifact (Lee et al., 2012). For instance, Procter & Gamble developed its Tide Plus product collection using external inputs from its open innovation website. However, open innovation in the public sector focuses on changes in the form and content of services by transforming the underlying problem understanding, policy objectiveness, and program implementations (Sørensen & Torfing, 2011). Examples of open innovation in the public sector include garnering citizen inputs for improving city plans, such as the Future Melbourne program¹ in Australia. Second, in contrast to the private sector, where innovations are aimed at achieving competitive advantage, public agencies primarily engage in innovation in order to enhance service performance and public value (Konsti-Laakso et al., 2008). Particularly, open innovation in the private sector could enhance competitive advantage through access to external expertise, shorter time-to-market, and reduced failure rates of innovations (Guertler & Lindemann, 2016). On the other hand, open innovation in the public sector could lead to an improved awareness of social problems, more effective services deriving from broad citizen inputs, and increased trust between governments and citizens (Mergel & Desouza, 2013).

Third, not only are there differences in the focus and aims of open innovation in the public and private sectors, the types of value created through open innovation may also differ. The open innovation paradigm in the private sector is used to generate value in terms of higher revenues (Bommert, 2010), i.e., the company itself should benefit from the innovation. Conversely, public sector open innovation goes beyond serving the focal organization, and more importantly involves the generation of public value (Bommert, 2010).

Fourth, the aims of open innovation in the public and private sectors also implicate the stakeholders that are involved in the innovation process. The role of stakeholders in open innovation is mostly defined by the match between innovation resources and the problem at hand (Bommert, 2010). In the private sector, open innovation involves external stakeholders such as suppliers, customers, competitors and partners, academic and research institutions (Huizingh, 2011; Lee et al., 2012). In the public sector, open innovation involves other kinds of external stakeholders, including citizen networks, online intermediaries, academia and higher education, other governmental organizations (e.g., legislators), non-governmental organizations (including the private sector) and non-profits (Lee et al., 2012). Indeed, with the complexity and variety of stakeholders in the public sector, prior research suggests that public sector innovation should involve dispute resolution (Cunningham & Kempling, 2009) and a continuous process of interaction and negotiation among various stakeholders (Lee et al.,

2012). The differences between the two sectors discussed above suggest that findings about open innovation in the private sector may not be directly applicable to the public sector, and thus public sector open innovation must be researched in its own right.

At the same time, while emphasizing the need for open innovation in the public sector, researchers (e.g., Criado, Sandoval-Almazan, & Gil-Garcia, 2013) have also highlighted the important role of information technology (IT) to generate and deliver innovative public services.

4. The role of IT in open innovation in the public sector

Over the past two decades or so, public agencies and departments at all levels have been taking advantage of the advancements in IT to formulate e-government initiatives that: 1) develop official websites for efficient dissemination of government information to citizens and other stakeholders, 2) improve flows of information within and around government, and 3) enhance the efficacy of service delivery to citizens. These initiatives were undertaken with a view that speeding up the process of information provisioning is, by itself, "opening up" government (Chadwick & May, 2003). However, these efforts mainly focused on processing raw data and passively presenting information to citizens and businesses. They were designed without the knowledge of how the presented data would be used, and hence the form and variety of data being presented was, in most cases, perceived to be of low value. Furthermore, many citizen groups may want to gain access to the original data captured by government agencies so they could analyze and interpret it on their own and draw inferences to support their goals (Janssen, Charalabidis, & Zuiderwijk, 2012). Also the industry and internet communities, given their advanced IT and managerial capabilities, could potentially be more innovative than public agencies in developing creative commercial and public welfare applications using the raw data available in the government repositories. Thus, over the past several years, public sector organizations have started efforts to leverage IT for making raw data and records available, mostly with machine-readable interfaces, so as to facilitate open innovation through open data initiatives (Zuiderwijk & Janssen, 2014).

As governments at all levels move into the digital age, these initiatives of public sector organizations to promote and enable open innovation pose several challenges (Attard, Orlandi, Scerri, & Auer, 2015; Pardo & Tayi, 2007). Foremost, agencies have to identify data sets that could be potentially valuable to user communities. This requires developing internal mechanisms that could be used to vet and process data sets by all relevant parties within the agency before release. Next, steps have to be taken to assure that the data sets being released are technically accurate as well as interpretable (Ham et al., 2015). The data sets may have to be masked (in some instances) to ensure that privacy requirements are satisfied, while issues concerning legal liability are covered. For ongoing effectiveness of their open data initiatives, agencies may need to develop feedback mechanisms and measures to assess how the released data has been used by different stakeholders and the value, both economic and social, such use has generated (Zuiderwijk & Janssen, 2014). Indeed, while the use of IT has helped to support the shift towards more open and collaborative innovation practices in the public sector, this also spurs a need for robust (theoretically-grounded, empirically validated) research on the challenges and effectiveness of its use as discussed below.

5. Towards a research agenda

In this section we describe directions for future research on open innovation in the public sector deriving from trends and gaps in the literature, including the papers that were submitted to this special issue. Specifically, our suggestions for future research in this area include conducting domain-specific studies, examining the use of tools beyond social media, and expanding the existing set of research methods and theoretical foundations. However, the gaps could also indicate limited instances of domain-specific open innovation and limited use of other

¹ <http://www.futuremelbourne.com.au/wiki/view/FMPlan/WebHome>.

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