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## Promoting Open Innovation in the Public Sector Through Social Media Monitoring

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### ABSTRACT

Motivated by the multiple 'success stories' of the open innovation paradigm in the private sector, and also by the increasing complexity of social problems and needs, the public sector has started moving in this direction, attempting to exploit the extensive knowledge of citizens for the development of innovations in public policies and services. As the direct transfer of open innovation methods from the private sector to the public sector is not possible, it is necessary to develop effective 'citizen-sourcing' methods, which address the specific needs of the public sector, and then analyze and evaluate them from various political and management sciences' perspectives. This paper makes a two-fold contribution in this direction: i) It evaluates a novel method of monitoring relevant social media (e.g. political blogs, news websites, and also Facebook, Twitter, etc. accounts) by government agencies, by retrieving and making advanced processing of their content, and extracting from it external knowledge about specific domains of government activity or public policies of interest, in order to promote and support open innovation; ii) For this purpose it develops a multi-perspective evaluation framework, based on sound theoretical foundations from the political and management sciences, which can be of wide applicability; it includes three evaluation perspectives: a political perspective (based on the 'wicked' social problems theory from the political sciences), a crowd-sourcing perspective (based on previous management sciences research on crowd-sourcing) and a diffusion perspective (based on Roger's diffusion of innovation theory from management sciences). The above evaluation provides interesting insights into this novel method of promoting and supporting open innovation in the public sector through social media monitoring, revealing its capabilities and strengths, and at the same time its problems and weaknesses as well, and also ways/interventions for addressing the latter.

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### 1. Introduction

Motivated by the multiple 'success stories' of the open innovation paradigm in the private sector, and also by the increasing complexity of social problems and needs, the public sector has started moving in this direction, attempting to exploit the extensive knowledge of citizens ('citizen-sourcing'), in order to develop innovations in public policies and services: new public policies and services, or improvements of existing ones (Ferro, Loukis, Charalabidis, & Osella, 2013; Linders, 2012; Nam, 2012; Mergel & Desouza, 2013; Prpić, Taeihagh, & Melton, 2015). The exponentially growing use of the Internet, and especially the social media, by citizens for publishing public policy related content, and exchanging relevant political opinions, creates big opportunities in this direction, exploiting the wealth of knowledge hidden in them in order to support and promote open innovation in the public sector.

Open innovation was initially developed and applied in the private sector, as firms started shifting from the established 'closed innovation' paradigm, which is based on their internal knowledge resources, towards the 'open innovation' paradigm (Chesbrough, 2003a, 2003b, 2006; Huizingh, 2011; West, Salter, Vanhaverbeke, & Chesbrough, 2014), which exploits to a significant degree external knowledge resources as well, possessed by other organizations (e.g. suppliers, customers, business partners, research centers, universities, etc.), and also by 'crowds' of individuals (the latter dimension of open innovation being referred to as 'crowd-sourcing'). Open innovation is defined by its pioneer Henry Chesbrough as 'the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and to expand the markets for external use of innovation, respectively' (Chesbrough, 2006). Extensive research has been conducted for the identification and development of open innovation methods and practices in the private sector, the assessment of their effectiveness and also the discovery of the specific contexts for which each of them is more appropriate (see Section 2.1), which has led to higher levels of maturity in this area. Recently there has been growing interest, among both researchers and practitioners, in the crowds of individuals' oriented dimension of open

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innovation, crowd-sourcing, defined as ‘a new web-based business model that harnesses the creative solutions of a distributed network of individuals, in order to exploit ‘collective wisdom’ and mine fresh ideas from large numbers of individuals’ (Brabham, 2008) (see Section 2.2).

Government agencies made some first steps towards the application of these ideas in their particular context, initially by adopting ‘active citizen-sourcing’ approaches, in which they played an active and directive role: they posed a specific social problem or public policy (existing or under development) in a government website or social media account, and asked citizens to provide their knowledge and opinions about it. Subsequently some government agencies started experimenting with a new ‘passive citizen-sourcing’ approach, in which they have a less active role: they monitor passively relevant ‘external’ (= not owned and controlled by government) social media (e.g. political blogs, news websites, and also Twitter, Facebook, etc. accounts), retrieving from them and analyzing content on a specific topic or public policy (existing or under development), which has been freely generated by citizens, without any government direction or stimulation, in order to extract from it relevant knowledge and opinions of citizens (Bekkers, Edwards, & de Kool, 2013; Charalabidis, Loukis, Androutopoulou, Karkaletsis, & Triantafillou, 2014; Loukis & Charalabidis, 2015). Social media monitoring (SMM) has been initially adopted by private sector firms in order to collect external knowledge and opinions from various social media about their products and services, and also the ones of their competitors, which are then exploited for the development of product and service innovations, and for the design of communication strategies (Croll & Power, 2009; Kasper & Kett, 2011; Sen, 2011; Zhang & Vos, 2014) (see Section 2.3). Recently government agencies started experimenting with SMM as well, but there is still limited knowledge concerning the use of it in government for promoting and supporting open innovation, its potential, its strengths and weaknesses. Also, there is a lack of effective methods for performing SMM in the government context, which would allow an intensive and systematic exploitation of the extensive policy related content generated by citizens in numerous social media freely, without any direction or stimulation by government, in order to extract knowledge useful for innovation (e.g. on problems and needs perceived by various groups of the society, advantages and disadvantages of existing public policies and services, or proposals for new policies and services, etc.). It should be emphasized that this externally and freely generated content is quite valuable for the development of innovations, as it is much more extensive, rich and politically diverse than the content generated in government websites and social media under government direction or stimulation (exploited by the ‘active citizen-sourcing’ approaches). As the direct transfer of SMM methods from the private sector to the public sector is not possible, it is necessary to develop effective SMM methods in the public sector for promoting and supporting open innovation, and then analyze and evaluate them from various perspectives, based on sound theoretical foundations from the political and management sciences.

In particular, this paper makes a two-fold contribution in this direction:

- I) It evaluates a novel method of monitoring relevant social media (e.g. political blogs, news websites, and also Facebook, Twitter, etc. accounts) by government agencies, by retrieving and making advanced processing of their content, and extracting from it external knowledge about specific domains of government activity or public policies (existing or under formulation) of interest, in order to promote and support open innovation; this evaluation has been based on three pilot applications of this method, followed by relevant focus group discussions with involved individuals, from which our evaluation data have been collected (as described in the ‘Research Method’ Section 4, while the results from the analysis of these data are presented in Section 6). It should be noted that the development and the detailed description of this method are beyond the scope of

this paper, which focuses on its evaluation, however for the sake of completeness of the paper in Section 5 there is an outline of the method, while more details are provided in Charalabidis et al. (2014) and Loukis and Charalabidis (2015).

- II) For this purpose it develops a multi-perspective framework for evaluating the use of SMM in government for promoting and supporting open innovation, which can be of wide applicability, using sound theoretical foundations from the political and management sciences. It includes three evaluation perspectives: a political evaluation perspective (based on the ‘wicked’ social problems theory from the political sciences – see Section 2.4), a crowd-sourcing evaluation perspective (based on previous management sciences research on crowd-sourcing – see Section 2.2) and a diffusion potential evaluation perspective (based on Roger’s diffusion of innovation theory from management sciences – see Section 2.5).

The research presented in this paper has been conducted as part of the European research project NOMAD (“Policy Formulation and Validation through Non-moderated Crowdsourcing” – for more details see [www.nomad-project.eu/](http://www.nomad-project.eu/)), partially funded by the “ICT for Governance and Policy Modeling” research initiative of the European Commission. The paper is structured in seven sections. In the following Section 2 the background of our study is presented. The proposed multi-perspective evaluation framework is presented in Section 3, followed by the research method in Section 4. The abovementioned novel method of SMM in government for promoting and supporting open innovation is outlined in Section 5. Then the results are presented and discussed in Section 6. Finally, in Section 7 the conclusions are summarized and future research directions are proposed.

## 2. Background

In this section we outline the background of our study concerning its main topics, open innovation (in 2.1), and the particular dimension of it we focus on, crowd-sourcing (in 2.2), and also SMM (in 2.3); then we provide some background on two of the theoretical foundations of our evaluation methodology: the wicked social problems theory (in 2.4) and the diffusion of innovation theory (in 2.5) (while our third theoretical foundation concerning crowd-sourcing is discussed in 2.2).

### 2.1. Open Innovation

As mentioned in the Introduction, extensive research has been conducted for the identification and the development of open innovation methods and practices in the private sector, for their analysis and evaluation, and also for discovering the contexts and types of problems for which each of them is more appropriate (Arvanitis, Lokshin, Mohnen, & Woerter, 2015; Bellantuono, Pontrandolfo, & Scozzi, 2013; Felin & Zenger, 2014; Huizingh, 2011; Laursen & Salter, 2006; Mina, Bascavusoglu-Moreau, & Hughes, 2014; Pisano & Verganti, 2008). A typical study in this direction is the one of Felin and Zenger (2014) that identifies six main types of innovation practices used in the private sector: four types of open innovation practices (partnerships/alliances, markets/contracts, contests/platforms and user/ community innovation), and also two types of closed innovation practices (authority-based hierarchy and consensus-based hierarchy). Also, they determine for what kind of innovation problems each of them is appropriate for. They conclude that as innovation problems become more complex, firms should adopt practices that facilitate extensive external knowledge sharing; on the contrary as innovation problems become simpler, the firm adopts practices that motivate more autonomous trial and error search of solutions based on internal knowledge. Furthermore, for innovation problems that require hidden knowledge (i.e. whose source is not known to the firm), firms should adopt practices that broadcast problems widely, so that relevant knowledge can be ‘self-

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