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From Open Source to Open Innovation practices: A case in the Greek context in light of the debt crisis

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ABSTRACT

"Open" practices have been at the forefront of research, business and political agendas for some time. Traditionally, research has focused on analysing critical factors for the deployment of Open Source (OS) Software and has highlighted the roles of "Collective Intelligence" and "participation in voluntary communities" in facilitating OS development. Nevertheless, there is little literature examining the role these Open Innovation (OI) practices may play in influencing the private-collective model of innovation and its application in economies-in-crisis to create public-good innovations. To address this gap, this paper uses the case of Greece. Data were gathered from interviews conducted with public policy makers and private sector top executives. The findings underline the importance of using OS as software to deal with cost reduction during debt crisis; but more importantly reveal a shift from OS to utilising the aforementioned OI practices to support the creation of public-good innovations through the private-collective model of innovation, and the difficulties faced in encouraging this initiative due to insufficient national innovation policy, and different philosophies, structures, and cultures followed by the organisations. The study calls for changes in the national policy supported by the private-collective model to leverage innovation.

1. Introduction

Over the last years there has been a focus on the development, implementation, and adoption of Open Source (OS) Software[1] by both researchers and practitioners [1]. The market for OS is growing at an annual rate of 22.4% and is predicted to be worth US$8.1 billion by 2013 [2], whereas the predictions by Gartner [3] suggest that by the end of 2012, at least 80% of all commercial software solutions will include substantive OS components.

The extant literature has illustrated the industry-strength of OS as a software tool [4–7], highlighting the role of Open Innovation (OI) practices of "Collective Intelligence" [8,9] and "participation in voluntary communities" [6,10,11] in facilitating OS development. Furthermore, research has examined the positive impact of these OI practices on the economy and society [12], and the impact of OI on national systems of innovation [12,13] as well as on opportunities presented by OI for countries to enhance and participate in innovation using different models [11,14,15]. Among these models, the private-collective model of innovation [15–17] is based on the creation of a consortium of innovators where public subsidy is absent and private resources are used for the creation of innovations *pro bono publico*. Innovators retain partial ownership of the innovation but do not have the right to sell/control it after it has been released [15–17].

Nevertheless, apart from exceptions discussing the applicability of the private-collective model of innovation [11,17], there is little literature examining the role of these OI practices in influencing the private-collective model of innovation and

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[1] We acknowledge the differences between various types of software, such as Open source, free software, and Free (libre) Open Source Software (FOSS/FLOSS). However, in this research we use these terms interchangeably as "Open Source (OS)" [4,5].

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its application in economies in crisis to create public-good innovations. Harnessing OI practices is becoming a necessity, particularly in periods of national debt crises where triggering innovation is a key to achieving growth and subsequently to dealing with the consequences of financial crises [19–21].

To address this gap, a qualitative case study strategy [22–24] in the Greek context using semi-structured interviews with top executives and top public policy makers in private and public organisations was used. Greece has been at the centre of the European debt crisis for many months and risks defaulting on its public debt and leaving the Eurozone. The debt crisis has had an impact on both the IT/IS expenditure and investments on innovation [25–27], which have been diminished under a government that is struggling to deal with the state finances. However, a more sustainable solution lies in establishing measures and policies that will help stimulate growth in the ailing economy, and build the cornerstones of a strong economy: this solution may rest on innovation policies and good governance, facilitated by collective know-how and participation in voluntary communities to stimulate innovation at a national level [13,14,17].

This paper argues for the importance of utilising OS as a software tool to deal with the insufficient IT investments during the crisis; but more importantly, following the literature on the private-collective model of innovation [11,14–17], it underlines a necessary shift in the current use of OS as a software tool to the utilisation of the OI practices of Collective Intelligence and participation in voluntary communities (consortia) that facilitate innovation and thus promote growth [19–21]. Furthermore, our findings highlight the difficulties in applying such practices and the specific model of innovation due to inadequate national innovation policy, as well as the current philosophy, structure and culture of both public and private organisations. The study calls for changes in the national policy to leverage innovation through the model. To secure the sustainability of such policy, commitment as well as political will and the creation of a roadmap may be needed, which will determine the participation incentives in those communities, the way such a policy will be implemented in Greece, the way these communities will come into being and how they will be led, and who will maintain those initiatives after development. Therefore, policies should be directed towards utilising Collective Intelligence as part of the private-collective innovation model to transform public administration, thereby generating new ideas and innovations which will enable growth. The awareness of the strategic value of OI practices is the key aim of this research.

The paper is structured as follows: after a brief review of the literature regarding OS and OI (Section 2), the research methodology of the paper is presented (Section 3). The findings of the case study are discussed next in comparison to the extant literature (Sections 4 and 5), and the paper concludes (Section 6) by highlighting its contribution to literature and suggesting future research avenues.

2. From Open Source to Open Innovation practices

This section begins with a brief overview of the extant literature on OS Software, and focuses on factors highlighted for its successful implementation. The characteristics of the "Open movement" are then discussed in the context of OI practices.

2.1. Open Source Software

Open Source Software refers to computer software whose source code is publically accessible under OS licences [28–30]. OS Software gives users the right to modify, copy, and distribute software freely [31]. It differs from proprietary software in that it can be fully redistributed [32]. One of the most striking characteristics of OS is the lack of traditional organisational structures, such as conventional hierarchies and rules, as well as the fact that it is based on collaboration that takes place usually within voluntary communities of developers [33,34].

Von Krogh and Spaeth [12] suggest that OS impacts positively both on the economy and society. Being "computer-based" and "user-driven" innovation [35,36] marked by shared ideologies and values, OS adopts a different business value-creation model, in which value is an outcome of collective intellect [37] to deal with costs and short product lifecycles [38]. Harfoff et al. [19] refer to the benefits accruing to users who free-reveal their innovations, suggesting that creating the conditions for actors to engage jointly in innovation is profitable; but more importantly, is also welfare-improving.

The extant literature on OS (Table 1) has discussed models related to the business and strategic value of OS [14,31,39–41]; the motivations of participants in the OS development process [15,16,19,42,43]; and factors for its successful deployment [44,45]. The striking feature of the OS projects lies in the lack of traditional organisational mechanisms and in particular in the absence of conventional hierarchies, rules, and internal organisational bodies. By becoming "Open", organisations can harness external and internal ideas to jointly advance their technologies: ideas and resources flow collectively in and out of organisations [46, p. 699]. Organisations have recognised the strategic value of being "Open" and realised that this effective process needs to be incorporated in the way they innovate; that is, they need to acquire ideas and resources from both the

Table 1
Factors which influence the adoption of OS.

Context	Factors	Indicative literature
Environmental	Fit with parent/allied organisations' systems	[18,45,49]
	Successful exemplars	[45]
	External support services	[44,50–53]
Organisational	Organisational size	[45,53]
	The availability of resources (financial, human)	[2,44,50–54]
	Presence of boundary spanners	[51,52]
	Top management support	[2,45,52,54]
Technological	Easy to integrate with legacy systems	[45,53,55,56]
	Reliability of the product	[49,53,56]
	Vendor lock-in avoidance	[44,53,55]
Individual	Decision maker processes rich IT knowledge	[2]
	Decision makers' perception of maturity of Open Source	[50,53,56]
	Employee familiarity with the OS	[53,56,57]