



Beyond free software: An exploration of the business value of strategic open source



Lorraine Morgan ^{a,*}, Patrick Finnegan ^b

^a National University of Ireland, Galway, Ireland

^b UNSW Australia Business School, Sydney, Australia

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ABSTRACT

The phenomenon of open source software (OSS) has been well studied from the software development perspective, but it has received much less attention from the perspective of business value. Nevertheless, OSS, when viewed as a value creation process rather than 'free' software, provides businesses with value through access to knowledge and innovation capacity resident in online communities. This conceptualisation, which we label 'strategic open source' requires firms to rethink their strategy and processes as there is a shift in focus from ownership to openness and collaboration with external parties. Nonetheless, the emergence of OSS poses a puzzle for conceptions of organisational theory. Therefore, a theorising process is needed in order to develop a deeper understanding of how value is created and captured with OSS. Using a field study of eleven European firms, this paper explores the creation and capture of business value from strategic open source. The findings reveal that while decision makers look to open innovation initiatives like OSS for value creation and capture, there is still a desire to remain self reliant, resulting in collaborative design (of external innovations) rather than collaborative decision making with value network partners in relation to how such innovations would help create and capture value within firms.

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Introduction

The use of Web-based communities to develop open source software (OSS) for business environments is widespread (Garriga et al., 2011; Spaeth et al., 2010; West and Lakhani, 2008; Fitzgerald, 2006). The economic and organisational benefits of leveraging such communities to access knowledge and innovation capacity have been well articulated (see Chesbrough, 2012, 2003, 2006). Open source software (OSS) is viewed as one of the most well-established examples of both open innovation (Morgan et al., 2013; West, 2007; Gassmann and Enkel, 2004) and commons-based peer production (Feller et al., 2008; Benkler, 2002); resulting in changing views of the OSS phenomenon from a low cost software artefact, 'i.e. operational open source' to a driver of strategic business value. We define the use of open source software and processes in a manner that leverages both the peer-produced and open innovation qualities of such software and processes in order to create business value as 'strategic open source'.

The benefits of open source alternatives for significant operational software are cited widely in the existing literature. These include high quality, in terms of reliability and stability, (Forge, 2006; Varian and Shapiro, 2003); lower costs, as

* Corresponding author.

E-mail addresses: Lorraine.morgan@nuigalway.ie (L. Morgan), p.finnegan@unsw.edu.au (P. Finnegan).

the software is often made available free or at a low purchase cost (Shaikh and Cornford, 2011; Morgan and Finnegan, 2007; Fanini, 2005); escape from vendor lock-in (Shaikh and Cornford, 2011; IDA, 2004; Johnson, 2003); user support from experts in the online community (Williams et al., 2005; Krishnamurthy, 2003); and flexibility of use in that the software can be customized or modified to specific needs (Varian and Shapiro, 2003; Krishnamurthy, 2003). Nonetheless, how these benefits translate into strategic business value – in particular how they impact a firm's value creation and capture processes – are less well known.

Traditional business strategy has led firms to develop defensible positions against the forces of competition and power in the value chain, rather than promote openness (Chesbrough and Appleyard, 2007). However, the concept of open innovation challenges traditional business strategy, specifically its dominant view that experts 'within' a company design innovative new products to meet customer needs (i.e. closed innovation). Recently, shorter innovation cycles, the rising costs of research and development, and a lack of resources have motivated a change in innovation strategies, inciting some organizations to adopt a more open approach (Van de Vrande et al., 2010; Gassmann and Enkel, 2004). It has been argued that "open strategy balances the tenets of traditional business strategy with the promise of open innovation" as "it embraces the benefits of openness as a means of expanding value creation and capture for organisations" (Chesbrough and Appleyard, 2007). In formulating an open strategy, Gassmann and Enkel (2004) identify three core open innovation processes: (1) the outside-in process, where a company's innovativeness can increase through the integration of suppliers, customers, and external knowledge sourcing, (2) the inside-out process, where companies can earn profits by bringing ideas to market and transferring ideas to the outside environment, and (3) the coupled process where companies can combine the outside-in and inside-out processes by working in alliance with complimentary partners. Gassmann and Enkel found that while companies choose one primary process, they often integrate some elements of others.

The OSS phenomenon demonstrates two key elements of the open innovation concept – namely the collaborative development of the technology and shared rights to its use (West and Gallagher, 2006). Indeed, it has been suggested that open source processes are the most prominent example of the revolution of traditional innovation processes (Gassmann and Enkel, 2004). As an open innovation phenomenon, however, strategic open source raises concerns in commercial settings due to worries about the quality and suitability of external ideas, perceived competitive necessities, and issues relating to organisational control (Chesbrough, 2004). In addition, strategic open source challenges business to exploit global networks not currently known to the firm (West et al., 2006; Pereira, 2007), as businesses must not only 'procure' innovation resources (skills and solutions) as they would operational products and services, but must also do so outside their existing supply and distribution chains in order to see the desired impact on innovativeness and competitiveness (Feller et al., 2009).

Peer production, a key aspect of the strategic exploitation of OSS, is a model for organizing production without reliance on markets, managerial hierarchies, property, and contracts. It is characterized by the decentralized accumulation and exchange of information, and is seen as potentially superior to hierarchy and market governance models as a mechanism for discovering/applying human skill and knowledge to the creation of information resources (Benkler, 2002, 2006). In its emergent form, OSS represented a commons-based peer production model where geographically dispersed programmers collaborated to produce software (West and O'Mahony, 2005). While OSS has transitioned into the realm of mainstream business, playing an important role in the business models of firms in technology and other industries (Rajala and Westerlund 2008; Fitzgerald, 2006; Overby et al., 2006), it is still generally peer produced. As a peer produced phenomenon, strategic open source challenges businesses from the perspective of how formal hierarchical processes can seamlessly engage with the community-based processes that characterise OSS development communities (Feller et al., 2008).

We argue that strategic open source raises questions about how businesses can effectively create and capture value not only from using the software artefact, but also from engaging with the open communities and commons-based peer production processes from which the software emerges. Specifically, the emergence of OSS as a form of peer-produced open innovation poses a puzzle for conceptions of organisational theory due to its non-reliance on markets or traditional managerial hierarchies to organise production. We therefore argue that an exploratory study is needed in order to develop a better understanding of how value is created and captured with OSS. As part of this process, this paper draws on a field study of eleven European firms and examines how they create and capture value through the strategic application of open source software and processes. The next section presents the theoretical grounding for the study; critiquing established conceptualizations of value creation and capture as being overly reliant on hierarchies and markets as forms of production. This is followed by a description of the research method and a presentation of the findings. The findings examine the characteristics of OSS that facilitate and impede value creation and capture, and reveal the importance of networks in enabling such value creation and capture. The paper concludes by using the study findings to delineate further the business value of strategic and operational open source.

Theoretical grounding

Traditionally our understanding of an organisation has been that individuals organise their productive activities in two ways; either as employees in firms, following directions of managers, or as individuals in markets responding to market signals (Coase, 1937). Open source software, however, does not rely on markets or traditional managerial hierarchies to organise production (Benkler, 2002). Like other forms of open innovation, OSS involves collaboration between firms, suppliers, customers and makers of related products to pool software R&D (Morgan et al., 2013; West and Gallagher, 2006); this is

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