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Product innovation rumors as forms of open innovation

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ABSTRACT

Prior studies of open innovation have highlighted the effects of different flows of knowledge between firms and external partners—such as flows of software code, technical solutions, or new product ideas—and how firms face a "paradox of openness" about how open to be to external sources while also appropriating value. There are increasingly flows of more provisional knowledge as well, in the form of product innovation rumors exchanged within online technology blogs. Our study objective was to understand how product innovation rumors are used by firms as both inflows and outflows of provisional knowledge and their effect on the innovation process. Using interview data within a high-technology firm whose forthcoming products were the subject of rumor within technology blogs, we develop propositions regarding how inflows of product innovation rumors affect innovation decisions (while addressing concerns about appropriability and intrafirm knowledge flows) and how outflows from firms may affect stakeholders outside the firm (through selective revealing and influence of technology blog editors). Product innovation rumors in part address the paradox of openness by forming an informal means of open innovation alongside formal processes, and we suggest further research opportunities in this domain.

1. Introduction

Prior studies of open innovation processes have highlighted the choices firms need to make regarding knowledge flows between firms and external sources and the implications of such choices (Dahlander and Gann, 2010; Felin and Zenger, 2014). The knowledge that circulates may include inflows to the firm, outflows from the firm, or a "coupled" approach (West et al., 2014; Sims and Seidel, 2017; Tucci et al., 2016). Prior focus has been on the flows of knowledge such as software code (e.g. von Hippel and von Krogh, 2003; Dahlander and Wallin, 2006), technical solutions (e.g., Bogers and Lhuillery, 2011; Egger et al., 2016), or novel ideas (e.g., Fabrizio and Di Minin, 2008; Du et al., 2014). All of these sources of knowledge are validated as coming from legitimate sources, such as from other firms or from identified members of crowdsourcing communities. However, despite rapidly growing interest in knowledge flows from online sources (Afuah and Tucci, 2012; Bogers et al., 2017), some online knowledge flows, specifically product innovation rumors from technology blogs, have received little research attention. This may be in part due to the fact that product innovation rumors come from a source of debated legitimacy (Deephouse et al., 2017), and they represent what can be called "provisional knowledge" rather than "validated knowledge" (Mulkay, 1979). Our study objective was to understand how product innovation rumors were used within firms as both inflows and outflows of provisional knowledge and their effect on the innovation process.

The study of product innovation rumors is a neglected yet important domain for scholars of open innovation and of innovation processes more generally for three reasons. First, if we only attend to the flows of validated knowledge in open innovation processes, we risk neglecting a significant parallel stream of provisional knowledge that may also serve to influence the trajectory of innovation in organizations. Second, the study of product innovation rumors can help to further address and expand our understanding of the "paradox of openness" with regard to how open to be with knowledge (Arora et al., 2016; Laursen and Salter, 2014). And third, from a practice point of view for organizations, internet technologies have made the availability of product innovation rumors widespread in technology blogs as "rumor sites", and the reach and impact of product innovation rumors can be expected to increase over time.

In our study, we drew on qualitative interviews with members of a

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large electronic-communication consumer electronics firm to inform our development of propositions for how product innovation rumors are used within firms as both inflows and outflows of provisional knowledge. The focal firm was one for which there were many external sources of product innovation rumors on different technology blogs, and so we were able to gain understanding of how members of the firm make use of product innovation rumors for their own forthcoming products. We used interview data from our informants to develop empirically grounded propositions for how product innovation rumors were used as a form of open innovation.

We propose that product innovation rumors can serve as both inflows and outflows of provisional knowledge to firms, augmenting formal models of open innovation. In an inbound mode, product innovation rumors can work in tandem with legitimate sources of knowledge as sources of insight under concerns regarding appropriability and internal knowledge flows. In an outbound mode, product innovation rumors augment the "selective revealing" (Henkel, 2006) processes of validated knowledge from legitimate sources, as a way to spur on further contributions. These propositions developed from our unique empirical focus on product innovation rumors can serve as the basis for further enrichment of models of open innovation.

In providing empirically grounded propositions related to product innovation rumors as forms of open innovation, we make three main contributions with this study. First, we provide a new way to address the "paradox of openness" in which individuals in firms can turn to product innovation rumors as sources of insight to augment legitimate knowledge sources that may not be freely available. Second, by describing how firms can themselves influence external sources in the process of seeding product innovation rumors, we build on models of "selective revealing" as extended to the realm of provisional knowledge. And finally, we contribute a model of one form of open innovation—in the use of product innovation rumors—that serves to expand the empirical domain for future studies of how external sources influence the innovation process.

2. Product innovation rumors in the context of open innovation

2.1. Knowledge flows in open innovation

Early definitions of open innovation focused on out-licensing of intellectual property (Chesbrough, 2003) and this led to an association of open innovation with knowledge that is most suitable to strong appropriability (West et al., 2014). As the literature developed, interest shifted to the use of both purposive inflows and outflows of knowledge to accelerate internal innovation and expand markets of external use of innovation (Chesbrough, 2006). In the context of technology firms, West and Gallagher (2006: 1), in line with the former definition, defined open innovation as "systematically encouraging and exploring a wide range of internal and external sources of innovation opportunities, consciously integrating that exploration with firm capabilities and resources, and broadly exploiting those opportunities through multiple channels".

Through open innovation, firms can manage the inflows of external knowledge that can be harnessed in their own innovation efforts (Chesbrough and Bogers, 2014). Inbound knowledge flows can focus on both pecuniary and non-pecuniary aspects (Dahlander and Gann, 2010), such as acquiring new knowledge through prize awards in online innovation contests or sourcing knowledge from external collaborators through ongoing relationships (Cassiman and Veugelers, 2006). In both cases, the inbound knowledge that flows into the firm is from sources that are well-defined, such as specific members of a crowdsourcing contest or a specific university partner (Laursen and Salter, 2006). Outbound innovation can also contain both pecuniary and non-pecuniary aspects (Dahlander and Gann, 2010), such as selling intellectual property or the revealing of code (Gambardella and Giarratana, 2013). Aside from the inside-out and outside-in approaches, some firms are fully coupled with external partners (Chesbrough and Bogers, 2014; Sims and Seidel, 2017), with simultaneous inflows and outflows of knowledge.

Knowledge flows help organizations gain access to resources they need for developing new innovations as well as to improve on existing products (e.g., Chesbrough, 2003), enhancing firm performance by increasing the productivity of the innovation process (e.g., Arora et al., 2001; Laursen and Salter, 2006). Following the research focused on performance-related outcomes, a contemporary focus within the open innovation literature has been how the flows of knowledge are compatible with appropriating returns from knowledge (Cohen and Levinthal, 1990). The "paradox of openness" was coined to describe how increasing openness as a strategy needs to work in tandem with the need to protect intellectual property (Laursen and Salter, 2014; Arora et al., 2016).

To date, research on the paradox of openness has focused on the control of knowledge that takes the form of code or other well-defined intellectual property (e.g. Laursen and Salter, 2014). Recently, West and Bogers (2017) reiterate that openness can indeed pose a paradox for organizations by drawing attention to empirical research findings that find no complementarity between inbound and outbound knowledge. In one such example using a large sample of European firms, Cassiman and Valentini (2016) find that inbound and outbound knowledge flows not only increase their sales of new products but also increase R&D costs more than proportionally. While empirical studies of the effects of knowledge flow are at times mixed, we will next consider whether we have been considering all types of knowledge in prior research, with a focus on the difference between validated and provisional knowledge.

2.2. Organizational legitimacy and implications for validated versus provisional knowledge

The focus of prior open innovation research has been on how organizations exchange knowledge among partners that typically view each other as having well-established legitimacy. For example, the crowdsourcing innovation platform "Innocentive" establishes its legitimacy in a relational manner (Deephouse et al., 2017) through sponsorship by well-known names in technology, such as Eli Lilly and Procter & Gamble, and the individuals who provide solutions are identifiable and non-anonymous to the firms (Jeppesen and Lakhani, 2010). In many respects, the open innovation literature has always assumed the importance of legitimacy as a background construct, going back to the classic concern of an organization's "not-invented-here syndrome" (Antons and Piller, 2015; Chesbrough, 2003). However, despite the importance of the legitimacy construct in laying the foundations of open innovation, the literature has not explicitly dealt with it in detail. As a result, past research may be blind to variations in legitimacy among partners in open innovation. This may be reflected in the recently recognized need for open innovation to be better integrated into the wider management literature (Chesbrough et al., 2014).

In one state-of-the-art review in management, Deephouse et al. (2017) defines *organizational legitimacy* as, "the perceived appropriateness of an organization to a social system in terms of rules, values, norms and definitions". This work describes that organizations are perceived by audiences in various states of legitimacy. Of note is the distinct variation in legitimacy: *appropriate* organizations are either *accepted* as those that are passively taken-for-granted or *proper* ones as those that are actively monitored by audiences (ie. restaurants that are granted a passing grade by health inspectors), and *debated* organizations as those that are challenged by some stakeholders but not others. These are contrasted to the illegitimate state, where audiences perceive an organization to be inappropriate and should thus be "radically reformed or cease to exist" (Deephouse et al., 2017: 10). Our focus will be on contrasting those that have acquired "appropriate" legitimacy versus those of "debated" legitimacy.