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Comparing internal and external lead users as sources of innovation

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ABSTRACT

External lead users' ideas are valuable to firms but difficult to access due to their location outside organizational boundaries. A potential solution to this problem is to employ lead users *within* organizations, i.e. to use internal/embedded lead users. Due to their ability to link knowledge about needs and solutions, internal lead users can be expected to produce better ideas compared to external lead users or ordinary employees. We test this conjecture in the home appliances industry using a sample of 864 employees (283 ideas) and 239 users (66 ideas). We find that internal lead users' ideas are of higher quality than those of ordinary employees and users, but – unexpectedly – are of lower quality than the ideas of external lead users. These findings contribute to research on internal/embedded users by showing how their ideas differ from ideas from other relevant sources of innovation. Our findings contribute also to research on external users' compared to employees' ideas as inputs to new product development and the literature on individual knowledge recombination for innovation.

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1. Introduction

Innovative ideas generated by external users are valuable because on average, their ideas are of greater novelty and greater user value compared to the ideas generated by employees (Magnusson, 2009; Magnusson et al., 2003; Poetz and Schreier, 2012). However, firms struggle to capture value from external user ideas because they are located outside the organizational boundary (Priem et al., 2012) and firms and users operate under separate thought worlds (Dougherty, 1992). On the one side, firm employees can find it hard to identify user innovators (von Hippel et al., 2009), may misunderstand user ideas (Mahr and Lievens, 2011), or may lack user knowledge or empathy towards users (Homburg et al., 2009). On the other side, user ideas are hard to integrate into firms because users may be unable or unwilling to formulate their ideas (von Hippel, 1994), may have little incentive to share their ideas (de Jong et al., 2015), lack knowledge about organizational processes, or generate ideas that do not fit the organization (Magnusson et al., 2003; Poetz and Schreier, 2012).

One solution to these problems may be internal or embedded lead users, i.e. firm employees who are lead users of their employer's products or services (Schweisfurth and Raasch, 2015). Internal lead users facilitate organizational innovation by processing external user ideas (Wadell et al., 2013), shaping the corporate culture (Harrison and Corley, 2011), testing prototypes

(Schweisfurth and Herstatt, 2016), being highly customer-oriented (Schweisfurth and Raasch, 2015), and acting as catalysts for product diffusion (Schweisfurth and Herstatt, 2015). Internal lead users profit from their simultaneous role of user and employee. On the one hand, due to their lead user status, they operate within a need knowledge structure: they experience needs and problems during product use, they speak the language of other users, and they have access to user networks outside the organization. On the other hand, due to their position within the organization, they operate within a solution-based and organizational knowledge structure which external users lack: they have technological knowledge which they can apply to satisfying user needs, they know how to convert ideas into products, and they are aware of the organization's internal implementation procedures. Thus, internal lead users are expected to produce better ideas than other employees and users based on their ability to combine knowledge structures from their lead user position and their location within the firm: the ability to address diverse knowledge domains generally (Hunter et al., 2008; Koestler, 1969) and from the need knowledge and solution knowledge domain specifically (Lüthje et al., 2005; Poetz and Schreier, 2012; von Hippel, 1994) is positively related to creativity and innovation.

Research so far has not investigated how the ideas generated by internal lead users and external lead users differ. This is an important research gap because external user ideas can be very valuable but difficult for the organization to obtain and implement; internal lead users may be the solution to this problem.

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To fill this gap, we build on a recombinant view of creativity (Fleming, 2001; Hargadon, 2006; Schilling and Green, 2011) and argue that internal lead users combine unique domain-relevant knowledge structures stemming from their lead user status and their location within the organization. We explore whether ideas produced by internal lead users differ in quality from those of external lead users, ordinary users, and ordinary employees. By modeling interaction effects between lead user status and location inside/outside the organization we also investigate whether lead user status operates differently inside and outside the organization. We exploit a combined sample of 1103 users and employees (239 users and 864 employees) who provided 349 product ideas (66 user ideas and 283 employee ideas).

Our findings contribute to research in three ways. First, we add to the growing stream of research on internal lead users (Schweisfurth and Raasch, 2015; Wadell et al., 2013) and link it to existing research on external lead users (Franke et al., 2006; Schreier and Prügl, 2008; von Hippel, 1986). We show that internal lead users produce better ideas than ordinary employees and users, but that their ideas are less original and of lower value to users than external lead users' ideas. Our findings help to explain not only what internal lead users are capable of but also their limits compared to other relevant sources of innovation. We provide a rationale for our findings, and argue that internal lead users' entrenchment in organization-specific knowledge reduces their creative output.

Second, we contribute to research which compares users' and employees' ideas, and shows that on average, user ideas are more original than employee ideas (e.g. Kristensson et al., 2004; Magnusson, 2009; Magnusson et al., 2003; Poetz and Schreier, 2012). We discuss the limits to this finding and produce a more nuanced comparison of users and employees. We argue that conditional on their lead user status, employees might have more original and higher user value ideas than ordinary users do.

Third, we contribute to individual level research on knowledge recombination for innovation (Lettl et al., 2009; Lüthje et al., 2005). This stream of work investigates how knowledge from different technological domains is exploited for innovation (Audia and Goncalo, 2007; Fleming, 2001; Lettl et al., 2009) but does not investigate how combining different types of knowledge, i.e. need knowledge and solution knowledge, facilitates innovation (cf. Franke et al., 2013; von Hippel, 1994). We show that individuals recombining need and solution knowledge produce highly creative output unless they are constrained by the organization.

2. Theoretical background

2.1. Users and employees as sources of ideas

User innovations are an important and prolific source of innovation (Bogers et al., 2010; von Hippel, 1976) and a main source of ideas for firms (Cohen et al., 2002; Poetz and Schreier, 2012). For example, 6.1% of consumers in the UK innovate, and taken as whole invest more in developing innovations than all UK firms combined spend on research and development (von Hippel et al., 2012). Users' ideation efforts are driven by the motivation to use an invention (von Hippel, 2005). Not all users are equally likely to innovate but innovative activity occurs especially among lead users (von Hippel, 1986). Lead user status is a continuous and domain-specific individual characteristic (Morrison et al., 2004) with two components (von Hippel, 1986). First, lead users are at the forefront of trends in the marketplace, and thus experience needs ahead of other users; second, lead users gain greater benefit from obtaining solutions to their needs. Lead users are more likely to innovate and also more likely

to develop more commercially attractive innovations than other users (Franke et al., 2006).

Another key source for innovative ideas for firms is their employees (Poetz and Schreier, 2012), and internal ideas often represent the starting point of the innovation process (Van de Ven, 1986). Employees' creativity is the outcome of the interplay between individual and contextual factors (Woodman et al., 1993). In a recent review of employee creativity in organizations, Anderson et al. (2014) offer a comprehensive list of individual (e.g., traits and motivation), task context (e.g., job complexity and job requirements), and social context (e.g., leadership and social networks) related factors which affect individual creativity in organizations.

User ideas and employee ideas differ with respect to their quantity and their quality (Franke and Shah, 2003; Franke et al., 2006; Kristensson et al., 2004; Lilien et al., 2002; Magnusson, 2009; Magnusson et al., 2003; Poetz and Schreier, 2012). Some studies show that employee-generated ideas score higher than user-generated ideas on criteria such as realizability within the organization (Kristensson et al., 2004; Magnusson, 2009; Poetz and Schreier, 2012). In other words, it may be more difficult to develop users' ideas into commercial products, most probably because employees, in contrast to users, have knowledge about the technology in place and which ideas are implementable by the firm (Magnusson, 2009).

However, employees' ideas score lower than external users' ideas for use-related criteria such as originality, user value, and market potential (Kristensson et al., 2004; Magnusson, 2009; Magnusson et al., 2003; Poetz and Schreier, 2012). This argument is rooted in user innovation research which claims that it is users not producers who face problems during use, which in turn results in users generating more innovative ideas (Lüthje and Herstatt, 2004).

Absorbing ideas originating from users outside the organization can be difficult for firms (cf. Priem et al., 2012). Innovative users outside the firm can be hard to locate (von Hippel et al., 2009) and organizations may lack mental schemes to understand user knowledge (Dougherty, 1992; Mahr and Lievens, 2011). One way for firms to obtain user ideas without crossing organizational boundaries is to look for ideas from employees who are also users of the firm's products (Harrison and Corley, 2011; Hyysalo, 2009; Schweisfurth and Raasch, 2015; Wadell et al., 2013).

Such internal lead users are a very common phenomenon in consumer industries such as sports, healthcare, and the leisure industry. But they also exist in B2B settings, in which one organization contains a manufacturing unit and a user unit, e.g. in the construction industry (Block et al., 2016) or in the robotics industry (Roy and Sarkar, 2015). Internal lead users can assume various key roles in the new product development process which foster innovation in the firm, ranging from idea generators through product testers to opinion leaders in markets (Wadell et al., 2013). Firms often try to leverage these employees' use expertise by integrating them into new product development or by supplying them with prototypes for informal testing during their leisure time (Schweisfurth and Herstatt, 2016). Internal users span the two thought worlds (Dougherty, 1992) of users and the firm, and link user knowledge with organizational knowledge. Due to their dual embeddedness in the use and organizational contexts, we can expect them to combine knowledge from both domains, and to differ in their creative output from ordinary employees and external users.

2.2. Hypotheses

To develop our hypotheses we rely on a recombinant view of creativity (Fleming, 2001; Hargadon, 2006; Schilling and Green, 2011). In this view, individuals with access to diverse domains

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