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Bulding ambidexterity through creativity mechanisms: Contextual drivers of innovation success

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ABSTRACT

Do creativity methods consistently produce a significant net effect on innovation? Are the impacts of creativity methods related to operating context? Based on an ambidexterity perspective, we examine the effectiveness of different creativity methods on overcoming the tensions of the innovation process at individual and team levels. Drawing on European Union Community Innovation Survey (CIS2010) data collected from 23,537 firms, we estimate causal effects of creativity on innovation through a multivalued treatment effect methodology. Our results show that implementing ambidexterity in creativity methods increases the firm's propensity to innovate and to introduce a market novelty. However, the effect on firm turnover is not always clear. Also, we detect that ambidexterity is more effective in firms that are large in size, have high levels of R&D investment and operate in manufacturing sectors. We discuss the implications of these findings for practice and for future research.

1. Introduction

Current research on innovation puts creativity at the heart of business (Amabile and Khaire, 2008; Sarooghi et al., 2015). The success of new product development efforts, for example, depends to a great extent on the creativity of the underlying ideas (Scanlon and Jana, 2007). Creativity is commonly defined as the production of ideas that are both original and useful (Amabile, 1996; Runco, 1997; Smith et al., 1995; Sternberg, 1999), and innovation is the implementation of these ideas into new products and processes (Sarooghi et al., 2015). Hence, creativity is viewed as the first stage of an innovation process, followed by implementation.

Previous research has consistently documented that the production of ideas is a positive predictor of idea implementation (Axtell et al., 2000, 2006). However, the correlation between creativity and innovation needs clarification (Baer, 2012) because it is characterized by tensions (Lewis et al., 2002), paradoxes (Miron et al., 2004), contradictions (King et al., 1991), and dilemmas (Benner and Tushman, 2003). Basically, idea generation emphasizes exploration and divergent thinking. Idea implementation does the opposite, emphasizing exploitation and convergent thinking. In light of the need to deal with generating new ideas (exploration) and implementing those ideas (exploitation) during the innovation process, scholars suggest that creativity and innovation could be complementary activities (Bledow et al., 2009). From this integrative perspective, creativity does not act only as

an input (independent process) for innovation; instead, creative ideas interact with implementation through an intertwined and mutually dependent process (Bledow et al., 2009). Accordingly some authors (Bledow et al., 2009; Sarooghi et al., 2015) emphasize the need to adopt an ambidexterity perspective, arguing that organizations should be able to overcome conflict and maintain a balance between exploration and exploitation as key to the success of an innovation process.

Additional research suggests that aspects which facilitate exploration are likely to inhibit exploitation (He and Wong, 2004) but this tension may be exacerbated or mitigated by mechanisms to encourage creativity. Some of these methods, like job rotation and team work, focus on promoting convergent thinking and the ability to discuss conflicting ideas (idea implementation); other methods, like brainstorming and creativity training, might do the same with divergent thinking (idea generation). Consider, for example, the use of brainstorming as a creative method for innovation. An individual may produce multiple new ideas when the barriers to idea generation are removed (Gobble, 2014). However, it is precisely the ability to discuss conflicting ideas within a cross-functional team that leads to innovation (Lovell et al., 2001). Thus, we recognize the importance of balancing the conflicting effects of creativity methods and extending focus from creativity to the creativity-innovation relationship.

Our study aims to explain the heterogeneity of relationships that creativity mechanisms have with innovation. Based on the ambidexterity literature (Bledow et al., 2009; Rosing et al., 2011; Sarooghi

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et al., 2015), we make two main points. First, we argue that the traditionally studied mechanisms to promote creativity are too broad in nature, as they might either foster or hinder innovation. Second, given the complexity of the innovation process, we propose that a combination of different creativity mechanisms is more effective to promote innovation than a single creativity method. This challenge spans all levels of an organization and is likely affected by contingent organizational, environmental, and cultural factors (Sarooghi et al., 2015).

Our research directly answers two different research questions. First, do creativity methods consistently produce a significant net effect on innovation? Idea generation and idea implementation remain doggedly disconnected (Anderson et al., 2014), but by applying an ambidexterity perspective to creativity mechanisms, we integrate two phenomena that have clear overlaps. This study advances comprehensive understanding of the creativity-innovation link and also reveals tension, because the creative method that facilitates idea generation may undermine idea implementation. We discuss how conflicting forces can be managed by combining different creativity methods. Furthermore, this important issue is addressed at two levels of analysis: the individual and the team. At the individual level, creativity is influenced by expertise (Taylor and Greve, 2006; Weisberg, 2006), abilities (Plucker and Renzulli, 1999), and motivation (Amabile, 1996). At the group level, creativity is facilitated by suspending judgment (Gobble, 2014) but also through interactive and collaborative processes (Harvey and Kou, 2013; Im et al., 2013; Reiter-Palmon et al., 2008; Sethi et al., 2001). By examining individual and team levels, we illustrate how phenomena existing at different levels of analysis may influence methods for achieving creative thought. Research in team creativity and innovation is especially relevant as firms have moved to more team-based structures, and innovation projects often rely upon teams (Andersen et al., 2014).

Our second research question is: are the impacts of creative methods related to operating context? As the adoption of techniques dedicated to creativity has grown to include a wider scope of businesses, researchers have begun to question the applicability and effectiveness of creativity in certain contexts. Although an extensive review of literature shows a variety of factors that individually affect creativity (Chua et al., 2015) or innovation (Camisón-Zornoza et al., 2004), there is a need for more research analyzing the factors that shape the creativity-innovation link (Baer, 2012; Sarooghi et al., 2015; Perry-Smith and Mannucci, 2017). This research contributes to the literature by identifying conditions under which creativity methods may be more or less effective in terms of innovation. Our examination of these factors suggests how to capitalize on creative efforts.

Using European Union Community Innovation Survey (CIS2010) data collected from 23,537 firms, we address the foregoing questions, estimating causal effects of creativity on innovation success through a multivalued treatment effect methodology. This methodology rethinks usual causal relations in a counterfactual stance and corrects the bias of traditional regression models to address causal inference in observational studies (Nichols, 2007). More precisely, treatment effects methodology focuses the analysis on the parameters of the distribution that the outcome variable (innovation success) would have had under each level of treatment (creative method) (Cattaneo et al., 2013).

In the next section, we formulate hypotheses relating methods of stimulating creativity to innovation performance, by drawing upon the literature on innovation in general and creativity in particular. This is followed by a description of the sample data and the estimation method used in the empirical analysis. Afterwards, we present the results and discuss their implications for theory and managerial practice. The piece concludes with study limitations and opportunities for future research.

2. Conceptual background and hypothesis

Creativity—the production of ideas that are simultaneously novel and useful (Amabile, 1983, 1996)—is intimately linked to innovation,

which entails the conversion of ideas into new products, services, or ways of doing things (e.g. Kanter, 1988; West, 2002). Most studies on innovation differentiate at least two activities in the innovation process: idea generation and idea implementation (e.g. Amabile, 1988; Bledow et al., 2009; Sarooghi et al., 2015). These two activities are potentially conflicting and put inconsistent psychological demands on individuals, teams, and organizations (Smith and Tushman, 2005). For instance, the creation of new ideas engages firms in divergent thinking aimed at moving away from current organizational routines and knowledge bases (March, 1991). In contrast, idea implementation emphasizes convergent thinking through goal-oriented, disciplined problem solving and reduction of variability (Smith and Tushman, 2005). Idea generation is exploratory in nature, but idea implementation is exploitative (March, 1991). In his seminal work, March (1991) acknowledged the inherent trade-off between exploration and exploitation, noting that exploration involves “search, variation, risk-taking, experimentation, play, flexibility, discovery, and innovation” and exploitation involves “refinement, choice, production, efficiency, selection, implementation and execution” (p. 71). Based on these definitions, we highlight how exploration helps renew and expand a firm’s knowledge base and how exploitation enables firms to convert existing knowledge into new products or services.

Traditionally, researchers have focused on the tensions between the opposing natures of idea generation (an exploratory activity) and idea implementation (an exploitative activity) (March, 1991; Abernathy, 1978; Tushman and O’Reilly, 1996) with a firm’s choices based on three facts: resource-allocation constraints, discrepancies in organizational adaptation, and divergent organizational outputs (Lavie et al., 2010). The first tension appears in the trade-off between short-term productivity and long-term viability. By allocating resources, organizations make a conscious choice to emphasize new possibilities and experimentation—to shift away from a firm’s existing knowledge or short-term productivity and to leverage currently available knowledge to address immediate needs. A second tension shows up in the distinction between flexibility and stability. Experimenting with new ideas requires flexibility and is associated with uncertainty and change. Implementing new ideas requires adaptation to things already known and is associated with stability and inertia (Lewin et al., 1999; March, 1991). A third tension arises because idea generation and idea implementation produce different outputs. Returns from idea generation are less certain and more remote in time, but also potentially greater, compared with returns from idea implementation that are more certain, easier to achieve, and closer in time (March, 1991).

Idea generation and idea implementation are very different in nature, but some scholars have suggested that these conflicting forces can be handled and integrated into successful innovation (Smith and Tushman, 2005; Bledow et al., 2009). For instance, at the beginning of the innovation process, an initial idea of product development is contrary to the existing knowledge base. The idea is subject to incremental improvements because new ideas emerge or details do not work well when incorporated into the existing knowledge base. Successful innovation may not be identical to the initial idea; instead, it resolves tension between that idea and the existing knowledge base. Thus, idea generation and idea implementation cannot be separated easily but have clear overlaps that need to be integrated to successfully innovate (Bledow et al., 2009).

Scholars suggest that ambidexterity theory is useful for managing conflicting demands at multiple organizational levels in the context of innovation in organizations (He and Wong, 2004; O’Reilly and Tushman, 2008; Bledow et al., 2009). Ambidexterity is the ability to manage tasks that imply some form of trade-off. It means that an organization should devote sufficient attention to manage and reduce the tensions that arise between exploration to ensure future viability (e.g., idea generation) and exploitation to ensure current viability (idea implementation) (Levinthal and March, 1993). In other words, ambidexterity requires a firm to overcome conflict and maintain a balance

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