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# Connections count: How relational embeddedness and relational empowerment foster absorptive capacity

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## ABSTRACT

While research has produced ample evidence showing that absorptive capacity affects innovation and organizational performance outcomes, we still know little about why some organizations possess greater absorptive capacity than others. This study extends previous research by showing how absorptive capacity emerges as an unintended consequence from organizational boundary spanners' external and internal relational embeddedness and their relational empowerment. Drawing upon survey data from 218 inter-organizational projects in the German engineering industry, we propose and find empirically that potential and realized absorptive capacity have partially distinct antecedents. Moreover, we show that the two components of absorptive capacity unfold not only separate but also complementary effects on innovation, implying that the whole of absorptive capacity is greater than its parts. In examining how different components of absorptive capacity emerge and unfold their effects, this study addresses critical limitations of the literature on absorptive capacity.

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## 1. Introduction

Research has shown that an organization's ability to acquire and exploit external knowledge in alliances, joint ventures, R&D collaborations, and supply chains – i.e. its absorptive capacity (Cohen and Levinthal, 1990) – has direct positive effects on firm performance outcomes, especially innovation in terms of new products, technologies or processes (Bierly et al., 2009; Gilsing et al., 2008; Jiang and Li, 2009; Lichtenthaler, 2009). While the management literature has widely invoked the notion of absorptive capacity as an important driver of competitive advantage (see Lane et al., 2006), our understanding of how absorptive capacity contributes to performance outcomes is still limited. One reason is that most empirical studies have considered absorptive capacity as an independent variable (Volberda et al., 2010). However, if variations in organizations' absorptive capacity can help explain differences in performance outcomes, it seems important to understand how organizations develop greater or lesser absorptive capacity. Nevertheless, research to date has mainly neglected to study the micro-foundations of organizations' absorptive capacity so that we still know little about how an organization's absorptive

capacity arises from the actions and interactions of lower-level actors, such as individuals, teams, or organization units (Lane et al., 2006; Volberda et al., 2010).

The present paper addresses this gap in the literature. We theorize and demonstrate empirically that absorptive capacity emerges as the unintended consequence of organizational boundary spanners' external and internal relational embeddedness (Granovetter, 1985) as well as their relational empowerment (Spreitzer, 2008). An analysis of a large sample of inter-organizational projects managed by German mechanical engineering and plant engineering firms shows that both project members' external relational embeddedness (measured via project members' inter-organizational tie strength and trust with external project partners) and the amount of training they receive enhance the capacity of these organizational boundary spanners to acquire and assimilate external knowledge, that is potential absorptive capacity (Zahra and George, 2002). Whereas the capacity to transform and exploit the externally acquired knowledge, that is realized absorptive capacity (Zahra and George, 2002), positively depends on project members' internal relational embeddedness (measured via project members' intra-organizational tie strength and trust with colleagues inside their home organization) and their relational empowerment in terms of the amount of training they receive and the discretion they have over project-level decision-making. Results further reveal that project members' external and internal relational embeddedness are positively associated exerting mutual indirect effects on realized and potential absorptive capacity, respectively. This

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finding suggests that project members can develop social skills and relational capabilities that transcend their internal and external relationships and may thus be important micro-factors from which absorptive capacity emerges.

As its main contribution to the literature, this study argues theoretically and shows empirically how boundary spanners' external and internal relational embeddedness and relational empowerment affect their capacity to acquire, assimilate, transform, and exploit external knowledge and thus enhance their organizations' absorptive capacity. Furthermore, by focusing on cases where innovation is not a main goal, the study also demonstrates that an organization's ability to integrate and exploit external knowledge for innovative outcomes can be the unintended consequence of social micro-processes at inter- and intra-organizational interfaces. Finally, this study adds to the extant literature by showing that potential and realized absorptive capacities emerge from partially distinct antecedents and unfold not only separate but also complementary effects on innovation, implying that the whole of absorptive capacity is greater than its parts. Together, these findings contribute to mitigating the reification of the absorptive capacity construct (Lane et al., 2006).

## 2. Theory and hypotheses

Research has suggested slightly different conceptualizations of absorptive capacity. The classic article by Cohen and Levinthal (1990: p. 128) defines absorptive capacity as “an organization's ability to recognize the value of new, external information, assimilate it, and apply it to commercial ends”. Zahra and George (2002) refine this conceptualization by differentiating between an organization's potential and realized absorptive capacity. Potential absorptive capacity refers to an organization's capability to acquire (i.e. access and import) and assimilate external knowledge (i.e. interpret and understand it). Realized absorptive capacity reflects an organization's capacity to transform the knowledge (i.e. combine the newly acquired with the existing knowledge) and exploit it (i.e. apply it to the organization's operations). In their discussion of Zahra and George's (2002) model, Todorova and Durisin (2007) suggest to enhance it by adding as a fifth component of absorptive capacity the ability to recognize the value of external knowledge. As capabilities are not directly observable, a number of researchers have conceptualized absorptive capacity by means of the underlying processes that constitute the capability. Lane et al. (2006) suggest and Lichtenthaler (2009) empirically corroborates such a process-based view, where absorptive capacity is conceptualized as an organization's ability to utilize external knowledge through the sequential processes of exploratory, transformative, and exploitative learning. Similarly, Lewin et al. (2011) suggest a taxonomy of internal and external meta-routines expressed in the form of practiced routines that underlie an organization's absorptive capacity. The internal meta-routines comprise facilitating variation; managing internal selection regimes; sharing knowledge and superior practices across the organization; reflecting, updating and replicating; managing adaptive tension. Whereas the external meta-routines encompass identifying and recognizing value of externally generated knowledge; learning from and with partners, suppliers, customers, competitors, and consultants; and transferring knowledge back to the organization.

While some overlap exists among the various conceptualizations of absorptive capacity offered in the literature, a common dimensionalization has not emerged. One reason is that the concept has widely been reified in research, as Lane et al. (2006) note in their extensive review of the literature. One indication of this reification is that very few empirical studies actually examined the set of capabilities, learning processes or routines constituting

an organizations absorptive capacity (e.g. Jansen et al., 2005; Lane et al., 2001; Lichtenthaler, 2009). Instead, the majority of empirical studies have used overall proxies (such as R&D expenditures, the number of scientists working in R&D departments or patents) to measure absorptive capacity. This not only raises serious concerns with regard to construct, internal and external validity (Lane et al., 2006) but also implies an important first gap in the literature that we seek to address in this study: We still know very little about how the different proposed components of absorptive capacity individually, together and through their interactions affect relevant outcomes. In a bibliometric analysis of 1213 publications on absorptive capacity that appeared between 1992 and 2005, Volberda et al. (2010) find that studies on knowledge recognition and to a lesser extent assimilation, i.e. on potential absorptive capacity, dominate the field, whereas studies on realized absorptive capacity and innovation outcomes are underrepresented and still receive only limited attention. It is important that research acknowledges the different components of absorptive capacity not only in order to establish the constructs' validity, but also because there is first evidence that the different components do not have uniform effects on innovation outcomes (Lichtenthaler, 2009) and may have different antecedents (Jansen et al., 2005).

As it is the most widely cited conceptualization and captures the dimensions of absorptive capacity that are commonly highlighted in the pertinent literature, for the purposes of the present study we rely on the process-based conceptualization of absorptive capacity suggested by Zahra and George (2002). They define absorptive capacity as “a set of organizational routines and processes by which firms acquire, assimilate, transform, and exploit knowledge to produce a dynamic organizational capability.” (Zahra and George, 2002: p. 186) They further posit that “acquisition and assimilation . . . are dimensions of 'potential' [absorptive] capacity and that transformation and exploitation . . . are dimensions of 'realized' [absorptive] capacity.” (Zahra and George, 2002: p. 190) On the basis of this conceptualization, we seek to contribute to providing a more complete understanding of how the processes that underlie potential and realized absorptive capacity unfold their effects. Specifically, we study Zahra and George's (2002) claim that these dimensions of absorptive capacity play different but complementary roles in explaining how absorptive capacity influences performance outcomes by examining how absorptive capacity affects product and process innovation.

A second important gap in the literature exists with regard to the factors that drive the development of absorptive capacity, as most empirical studies have considered absorptive capacity as an independent variable (Volberda et al., 2010). However, if variations in organizations' absorptive capacity can help explain differences in performance outcomes, it seems important to understand when and how organizations develop greater absorptive capacity. While a number of possible industry- and firm-level influence factors on absorptive capacity have been suggested in the literature (see Cohen and Levinthal, 1989, 1990; Zahra and George, 2002), there has been fairly little empirical research that has examined these or other possible antecedents of absorptive capacity (Volberda et al., 2010). In their seminal article, Cohen and Levinthal (1990) indicate that prior related knowledge could be an important antecedent of absorptive capacity. Later empirical research has confirmed this notion. For instance, Lane et al. (2001) in their study of Hungarian international joint ventures uncover that the extent to which an international joint venture learns from its foreign parent depends on the amount of prior knowledge it received from the parent, its relatedness with the parent, and the amount of training it received from the parent. Lenox and King (2004) show that the information provided by managers to potential knowledge users can augment the application of external knowledge. Van den

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