

AMBIDEXTROUS INNOVATION IN SMES: THE ROLE OF ABSORPTIVE CAPACITY AND CEO'S ENGAGEMENT IN THE STRATEGY PROCESS

ROY BROERSMA

School of Business and Economics

Maastricht University

P.O. Box 616, 6200 MD Maastricht, the Netherlands

ANITA VAN GILS

CeFEO, Jönköping University, Sweden and Maastricht University, the Netherlands

ANDRIES DE GRIP

Maastricht University, the Netherlands

INTRODUCTION

In small and medium sized enterprises (SMEs), innovation facilitates long term success in both product and service markets (Clark, Staunton, & Rogers, 1993; Rosenbusch, Brinckmann, & Bausch, 2011). However, in order to achieve a sustainable competitive advantage, SMEs need the capabilities to create new innovations (exploration) and to capitalize on these innovations (exploitation) (Benner & Tushman, 2003; Eisenhardt & Martin, 2000; Jansen, 2005; Prajogo & McDermott, 2013; Volberda, 1996). Consistent with earlier research, this paper labels the combination of explorative and exploitative innovation activities as 'ambidexterity' (Gibson & Birkinshaw, 2004; Jansen, Tempelaar, Van den Bosch, & Volberda, 2009).

Whereas researchers have illustrated that smaller companies benefit from an ambidextrous innovation approach (Gedajlovic, Cao, & Zhang, 2012; Kammerlander, Burger, Fust, & Fueglistaller, 2015), most research on ambidexterity has examined large, multi-unit firms simultaneously or sequentially pursuing both explorative and exploitative innovation (Jansen, 2005; Jansen, Van Den Bosch, & Volberda, 2006; O'Reilly & Tushman, 2013). Nevertheless, it is important to understand how ambidexterity is achieved in SMEs (Chang & Hughes, 2012; Kammerlander et al., 2015; Lubatkin, Simsek, Ling, & Veiga, 2006), as differences exist in the development of their innovation strategies (Chang, Hughes, & Hotho, 2011) as well as in the knowledge processes they face (Lubatkin, Simsek, Ling, & Veiga, 2006). Moreover, whereas SMEs experience similar competitive pressures to combine both exploration and exploitation (Chang et al., 2011; Lubatkin et al., 2006), they have a significant resource disadvantage (Rothaermel & Alexandre, 2009; Voss & Voss, 2013). Examining the way specific knowledge is managed in these businesses in order to attain ambidexterity has largely been neglected in the literature. More research is needed, as the divergent knowledge demands and utilization processes resulting from the combination of exploration and exploitation are an important challenge for SMEs in achieving ambidexterity (March, 1991; Thornhill, 2006).

Starting from a knowledge-based perspective of the firm, this study examines antecedents of ambidexterity in SMEs. More specifically, we argue that an SME's absorptive capacity (ACAP) acts as a predictor for its ability to combine explorative and exploitative innovation (Jansen, 2005). ACAP has been discussed in different organizational theories in the fields of learning, innovation, dynamic capabilities, managerial cognition and co-evolution (Flatten, Greve, & Brettel, 2011; Volberda, Foss, & Lyles, 2010) and is often considered a key dynamic capability in the pursuit of innovation of a firm. Building on earlier research (Liao, Welsch, & Stoica, 2003; Jansen, 2005; Rothaermel & Alexandre, 2009; Zahra

& George, 2002), we hypothesize that a first ACAP component “Potential Absorptive Capacity (PACAP)”, referring to the knowledge gathering process, i.e., the acquisition and assimilation of external knowledge, positively influences innovation ambidexterity. The second ACAP component “Realized Absorptive Capacity (RACAP)”, or the knowledge utilization process, i.e., the transformation and integration of knowledge, will have the same effect. Moreover, given the existing evidence on the positive relation between PACAP and RACAP (Liao, Welsch, & Stoica, 2003; Zahra & George, 2002), we hypothesize that RACAP partially mediates the relationship between PACAP and innovation ambidexterity. Finally, building on the strategic intent concept (Hamel & Prahalad, 1994), we suggest that the CEOs engagement in the SMEs’ strategy positively influences the knowledge gathering and utilization process. More specifically, we argue that PACAP increases, and the knowledge gathering–utilization–ambidexterity relationship is positively moderated.

The conclusions of this study contribute to the literature in several ways. First, we add to the entrepreneurship and innovation literature as we illustrate how knowledge gathering and utilization capabilities affect SMEs’ ambidextrous innovation behavior. More specifically, we also extend the growing body of literature on determinants of ambidexterity in innovation (Kammerlander et al., 2015; Lavie, Stettner, & Tushman, 2010). Second, we reiterate the importance of strategic behavior in SMEs (Verreynne, Meyer, & Liesch, 2014; Wang, Walker, & Redmond, 2007). In our study, the engagement of the CEO in the strategic process enhances the knowledge management processes in these businesses. Third, we add to absorptive capacity literature. Using arguments of information overload theory, we illustrate that if CEO’s set a strategic intent, clearer directions for knowledge gathering and utilization processes are established (Lane, Koka, & Pathak, 2006; Volberda et al., 2010). Finally, we not only empirically show the mutually beneficial relation between PACAP and RACAP (see Liao, Welsch, & Stoica, 2003; Zahra & George, 2002), but also illustrate how both variables independently contribute to our outcome variable. This will benefit the debate on the conceptualization of ACAP (Todorova & Durisin, 2007; Volberda et al., 2010; Zahra & George, 2002).

THEORETICAL DEVELOPMENT AND HYPOTHESES BUILDING

Ambidexterity

Since March (1991) first made the distinction between two modes of innovation, ambidexterity has been a widely discussed topic in the academic literature (Jansen, 2005; Jansen et al., 2006, O’Reilly & Tushman, 2013). In the management literature, ambidexterity refers to an organization’s ability to combine contradicting behaviours such as explorative and exploitative innovation (Chang & Hughes, 2012; He & Wong, 2004; Jansen et al., 2006; O’Reilly & Tushman, 2013; Raisch, Birkinshaw, Probst, & Tushman, 2009). The rationale behind the need to combine the two (Cao et al., 2009; Chang & Hughes, 2012; Levinthal & March, 1993; March, 1991) is that merely focusing on exploration might cause an inability to capitalize on all potential benefits of a firm’s investments in innovation. Moreover, such an exploration strategy entails a large risk as innovations are often very costly while success is not guaranteed (Lubatkin et al., 2006). Conversely, focusing solely on exploitation might cause firms to forego long term opportunities by concentrating too much effort into reaping short-term returns on their current innovations (Auh & Menguc, 2005). Firms might then run the risk that a presumed steady income stream evaporates when these products and services or modes of production become obsolete (Lubatkin et al., 2006). As Levinthal and March (1993) state: “Exploration ensures future survival while exploitation ensure a firm’s current survival”.

Knowledge and ambidexterity in SMEs

Within the resource-based view, knowledge has emerged as the key intangible resource a firm can possess, giving rise to the creation of the knowledge based view (KBV). From this perspective, the main determinant of performance differences between firms can be found in a firm's knowledge base (Gassmann & Keupp, 2007; Grant, 1996). The development, integration and transfer of knowledge should be regarded as critical elements in building organizational capabilities in general (Barney, 1991; Felin & Hesterly, 2007; Grant, 1996) and ambidextrous innovation capabilities in particular (Jansen et al., 2006; Volberda et al., 2010).

Achieving contextual ambidexterity in SMEs requires the combination of knowledge on both exploration and exploitation (March, 1991), and therefore an SME's knowledge building capabilities become of utmost importance (Kammerlander et al., 2015; Lubatkin et al., 2006). According to Cohen and Levinthal (1990), knowledge building is fostered by a firm's ability to transfer knowledge internally and learn from its external environment. This ability can be conceptualized as an SME's absorptive capacity (Cohen & Levinthal, 1990; Volberda et al., 2010; Zahra & George, 2002). We build on the argumentation by McKelvie, Wiklund and Short (2007) by unpacking the ACAP construct further, focusing on the individual dimensions of PACAP and RACAP (Zahra and George, 2002), and their effects on organizational innovation ambidexterity. Furthermore, we examine how the different dimensions act as a process instead of only investigating their individual effects (McKelvie et al., 2007; Todorova & Durisin, 2007; Zahra & George, 2002).

Potential absorptive capacity and innovation ambidexterity in SMEs

PACAP focuses on the acquisition and assimilation of knowledge by the organization (Zahra & George, 2002). Acquisition pertains to an SME's ability to identify and acquire new external knowledge that is critical to its operations (Camisón & Forés, 2010; Lane & Lubatkin, 1998; Liao et al., 2003; Zahra & George, 2002), while assimilation refers to an SME's capacity to absorb knowledge. This implies that the new knowledge needs to be processed, interpreted, understood, internalized and classified (Camisón & Forés, 2010; Zahra & George, 2002).

SMEs are prone to fall into the competence trap (Liao et al., 2003) of overemphasizing the existing knowledge base of the firm, and this hampers the organization from exploring other knowledge sources. PACAP provides flexibility to the management, facilitates the development of resources and capabilities, and allows SMEs to continuously rejuvenate their knowledge base (Camisón & Forés, 2010; Liao et al., 2003; Zahra & George, 2002). As such PACAP aids in fostering the explorative dimension of ambidexterity in SMEs; the firms' employees are triggered and inspired by the simple exposure to new types of knowledge enabling them to create new ideas (Birkinshaw & Mol, 2006; Drucker, 2002; Rogers et al., 2002). Another competence trap results from a rather rigorous adherence to and a limitation of cognitive schemes. Todorova and Durisin (2007) argue that when external knowledge fits with an SME's cognitive schemas, assimilation of knowledge takes place without this knowledge having to be transformed (Piaget, Cook, & Norton, 1952). Therefore, PACAP enables SMEs to access information closely linked to their internal processes with the main aim of refining these processes, facilitating exploitative innovation efforts (Ahuja & Lampert, 2001; Liao et al., 2003). As PACAP serves both the explorative and the exploitative dimension of ambidexterity, we posit that:

Hypothesis 1: PACAP has a positive direct effect on an SME's innovation ambidexterity.

Realized absorptive capacity and innovation ambidexterity in SMEs

RACAP represents a two-step process in which a firm is able to integrate and reconfigure existing internal knowledge with newly acquired external knowledge, and to incorporate this transformed knowledge into the firm's systems, processes, routines and operations (Brettel, Greve, & Flatten, 2011; Gray, 2006; Liao et al., 2003), eventually leading to the refinement of existing knowledge, organizational efficiency and the creation of new opportunities (Camisón & Forés, 2010; Zahra & George, 2002). The combination of internal and external knowledge to create something new fits to the explorative dimension of a firm's ambidexterity (Nonaka, 1994; Todorova & Durisin, 2007).

In SMEs, higher RACAP leads to an optimal use of knowledge as internal and external knowledge are integrated (Rothaermel & Alexandre, 2009) and knowledge gaps are covered (Cohen & Levinthal, 1990; Gray, 2006). Through the dissemination of knowledge and the resulting novel combinations, SMEs are sensitized to organizational solutions which take them away from the status quo, thus avoiding competence traps related to overfamiliarity with an SME's existing knowledge base (Liao et al., 2003). Therefore we posit that:

Hypothesis 2: RACAP has a positive direct effect on an SME's innovation ambidexterity.

RACAP as a mediator of the PACAP — Ambidexterity relationship

Kogut and Zander (1992) have introduced the term 'combinative capabilities', thereby emphasizing a firm's ability to synthesize and apply current and acquired knowledge. The main argument is that SMEs need to acquire knowledge and then utilize this knowledge in such a way that it allows them to develop ambidextrous abilities (Cao et al., 2009; Gray, 2006; Jansen, 2005; Liao et al., 2003; Rothaermel & Alexandre, 2009). For SMEs, it is therefore not enough to rely on either PACAP or RACAP. Instead, it is the combination of the two that allows SMEs to harness the tensions that arise from pursuing an ambidextrous innovation strategy. This is in line with the conceptualization of ACAP by Zahra and George (2002), who state that both PACAP and RACAP perform separate but complementary goals.

Although we believe both PACAP and RACAP have an individual positive direct effect on organizational ambidexterity, we argue for a path-dependency between both constructs and the constructs ability to strengthen each other. As such we posit:

Hypothesis 3: In SMEs, RACAP partially mediates the relation between PACAP and innovation ambidexterity.

CEO's strategic engagement, absorptive capacity and ambidexterity

In SMEs, the CEO has a major influence on the complex decision-making process in general (Casson, 2005), and the formulation and enactment of the innovation policy in specific (Lefebvre, Mason and Lefebvre, 1997). As the nature of a firm is shaped by the characteristics of its managers (Hambrick & Mason, 1984), it takes on the idiosyncrasies of its decision makers (Hambrick, 2007; Hambrick & Mason, 1984).

In this paper, we argue that the CEO, a role most often fulfilled by the owner-manager of the SME, plays an essential role in the acquisition and assimilation of information, and this

especially in the context of technology developments. Following the findings of Lybaert (1998), we claim that a higher CEO engagement in the strategic process will result in an increased search for information. Strategy involvement implies setting long term goals, implementing actions to reach these goals and evaluating actions taken *post hoc* (O'Regan & Ghobadian, 2004; Stonehouse & Pemberton, 2002). Strategic activities such as scanning and analyzing provide vital information to deal with uncertainty in an SME's technological environment (Rogers, Miller and Judge, 1999). Moreover, engagement in the strategic process allows managers to formulate a strategic intent (Hamel and Prahalad, 1994), or a vision that provides the organization with a sense of direction. Central to the idea of strategic intent is that the vision is ambitious and compelling, creating a "misfit" between resources and aspirations, and holding out to employees the promise of exploring new competitive territory (Hamel and Prahalad, 1994). We hypothesize:

Hypothesis 4: In SMEs, the CEO's engagement in the strategy process has a positive effect on PACAP.

Next to the CEOs' influence on the acquisition of information, their engagement in the strategy process will also guide employees with regards to the relevance of the knowledge acquired. Currently, the sheer amount of information available in a firm's direct and indirect environment can be overwhelming. Given the small number of employees in an SME, the cognitive ability to process and deal with all external information can be inadequate, potentially making the identification of relevant knowledge a difficult task (Chang & Hughes, 2012; Forbes & Milliken, 1999; Gigerenzer & Selten, 2002; Pissarides, 1999). This could lead to situations of "information overload". (Klausegger, Sinkovics, & "Joy" Zou, 2007). Hemp (2009) suggests that this information overload can adversely affect innovation, creativity and productivity. Firms need to determine the value of the information to achieve their long-term goals. As these long-term goals are defined in an organization's strategic intent, a CEO's active engagement in the different phases of the strategy process - initiation, planning, implementation and evaluation (Wooldridge & Floyd, 1990) – will facilitate a firm's ability to use its knowledge resources in an effective and efficient way.

Hypothesis 5: In SMEs, the CEO's engagement in the strategy process has a positive moderating effect on the mediated path PACAP- RACAP- ambidexterity.

METHODOLOGY AND RESULTS

We selected a random sample of Dutch SMEs in the manufacturing industry to test our hypotheses. *Ambidexterity* is measured using a scale developed by Jansen et al. (2006) assessing both exploratory and exploitative innovation. Following Gibson and Birkinshaw (2004) and Jansen et al. (2009), we calculate our ambidexterity score by multiplying the explorative and exploitative innovation scores. *Absorptive Capacity* is measured using an adapted form of the scale first developed by Jansen, Van den Bosch, and Volberda (2005). The scale to measure our moderating variable, *CEO's engagement in the strategic process*, is adapted from Machold, Huse, Minichilli, and Nordqvist (2011).

We estimate several OLS models to test the direct relationship of potential absorptive capacity and realized absorptive capacity on ambidexterity, as well as for the mediating effect of realized absorptive capacity on this relationship. The mediation model is tested using the PROCESS tool in SPSS (Hayes, 2012) which allows us to interpret the confidence interval for the proposed mediation.

In support of both hypothesis 1 and 2, both PACAP (β : 1.156, $p < 0.01$) and RACAP

(β : 1.389, $p < 0.01$) have a direct, positive, and significant effect on an organization's ambidexterity in innovation. We also confirm the expected positive relationship between PACAP and RACAP, in line with hypothesis 3. However, the indirect effect of PACAP on ambidexterity through RACAP should be assessed. The estimation results show that RACAP partially mediates the relation between the independent and dependent variable, providing evidence for hypothesis 3. For hypothesis 4, discussing the effect of a CEO's engagement in the strategy process on PACAP, the estimation results show the hypothesized direct positive link (β : 0.448, $p < 0.01$). Finally, we found significant values for the low, mean and high level CEO engagement in the strategic process, with bootstrapped 95% confidence intervals around the indirect effect of X on Y not containing zero (low = .154; .453; mean = .224; .555; high = .273; .693). Thus, hypothesis 5 is supported; the indirect and positive effect of PACAP on organizational ambidexterity through RACAP is reinforced when the levels of a CEO's engagement in the strategic process are low, moderate and high.

DISCUSSION

Starting from the knowledge-based view of the firm (Eisenhardt & Martin, 2000; Todorova & Durisin, 2007), our study adds to the innovation literature in SMEs by shifting the research focus on the antecedents of ambidexterity in SMEs (Kammerlander et al., 2015; Lavie et al., 2010) to information gathering and knowledge utilization.

Furthermore, we contribute to the debate on the conceptualization of absorptive capacity (Volberda et al., 2010). We offer empirical insight in the validity of the argumentations used to re-conceptualize ambidexterity (Cohen & Levinthal, 1990; Todorova & Durisin, 2007; Volberda, Foss, & Lyles, 2010; Zahra & George, 2002). The most notable difference in these re-conceptualizations is the discussion whether or not ACAP is a sequential linear process and whether individual steps can have an effect regardless of the presence of other ACAP elements (Todorova & Durisin, 2007). Our study illustrates that both PACAP and RACAP have a direct positive effect on an SME's ambidexterity. Even when combining PACAP and RACAP in a mediation model (Zahra & George, 2002), RACAP only partially mediates the PACAP-ambidexterity relationship. These results provide empirical support for the notion that in an SME setting, although mutually beneficial, PACAP and RACAP are independent constructs.

Also, we make an addition to the strategic management literature in SMEs by studying the impact of a CEO's engagement in the strategic process. A strategic intent (Pralhad & Hamel, 1994) is the dot on the horizon that the SMEs' CEO aspires, and which creates a gap between current resources and aspirations. As such a sense of urgency is created for the SMEs' employees to gather the information required to meet these aspirations and to enhance RACAP. Furthermore, strategic intent act as a filter to identify relevant information, thereby giving SME managers confronted with bounded rationality (Gigerenzer & Selten, 2002) a tool to guide their employees in the utilization of valuable information. The inclusion of this strategy variable adds to the discussion of the impact of managerial behavior on a SMEs' absorptive capacity (Lane et al., 2006; Volberda et al., 2010) and ambidexterity, and further extends the growing stream of literature in these fields (Fernández-Mesa et al., 2013; Kammerlander et al., 2015; Visser et al., 2011; Volery, Mueller, & von Siemens, 2013).

REFERENCES AVAILABLE FROM THE AUTHORS