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Performance implications of exploration and exploitation in SMEs: The mediating role of interaction orientation

Laure Ambroise, Céline Bérard, Isabelle Prim-Allaz

Lyon 2 University, COACTIS, France

Abstract

Purpose – This research explores the complex relationships between knowledge strategies (i.e., exploration and exploitation) and the performance of manufacturing SMEs by testing the mediating role of customer relationship management capabilities, which are defined as a firm's level of interaction orientation in this study.

Design/methodology/approach – Following a hypothetical deductive approach and using data collected from 793 French manufacturing SMEs, the measurement model and relationships among the constructs were examined with structural equation modelling, using the partial least squares approach.

Findings – The results support the expected mediating role of interaction orientation between exploitation and performance, and stress a competitive mediating role between exploration and performance. Complementary analyses demonstrate that while both exploration and exploitation are effectively antecedents of interaction orientation, which also acts as a lever to performance, they exhibit specific effects on the different dimensions of interaction orientation.

Originality/value – The results specifically highlight that interaction orientation counterbalances the negative impact of exploration on performance. Moreover, the findings underline the key role that customer interaction processes and tools play in making exploration and exploitation

singularly effective. This is a real issue, as SMEs broadly tend to adopt opportunistic tools, not necessarily as part of a clearly defined strategic focus.

Keywords Exploitation, Exploration, Interaction orientation, SME performance

Paper type Research paper

Introduction

Since March's (1991) seminal paper on organizational learning, one of the more enduring ideas in organizational science is that firms need both exploration and exploitation to achieve sustained performance (Gupta et al., 2006; Raisch et al., 2009; Molina-Castillo et al., 2011). However, exploration and exploitation are two fundamentally different knowledge strategy orientations, which involve different goals (Bierly and Daly, 2007; Sirén et al., 2012) and reflect behavioral and strategic differences with significant performance consequences (He and Wong, 2004). The fact remains that previous studies on the performance implications of exploration and exploitation have led to conflicting results, and the confidence in their impact on performance is still limited (Lavie et al., 2010). While some scholars highlight direct links, others recommend considering mediators to better understand the way exploration and exploitation lead to firms' performance (Raisch et al., 2009; Sirén et al., 2012). In particular, exploration and exploitation, as strategic orientations at the corporate level, may be effective only when the firm expands, renews, and improves the required capabilities at the operational or functional level (O'Cass et al., 2014).

Some recent studies specifically highlighted the importance of marketing capabilities when considering the effects of exploration and exploitation strategies on performance. O'Cass et al. (2014) and Sarkees et al. (2010) purposefully studied the mediating role of operational-level exploratory and exploitative marketing capabilities. Among different marketing facilities, a few other studies stressed the pivotal role of customer relationship management in the exploration and exploitation relationships with firm performance; however, their conceptual framework and empirical study focused only on the marketing function scope (e.g., Vorhies et al., 2011). Even though in their programmatic work Zablah et al. (2004) clearly stressed knowledge and interaction management as key for customer relationship management (CRM) success, it is

surprising to note that scholars have largely neglected the relationships between customer relational capability, as an operational ability and competency that could be a performance lever, and corporate-level exploration and exploitation strategic orientations. Nevertheless, both of these orientations are critical to improving customer relations (Cegarra-Navarro and Dewhurst, 2007), and managing customer relationships is itself known to be positively related with firms' performance (Boulding et al., 2005; Ramani and Kumar, 2008). Consequently, this study aims to capture the complex relationships between exploration and exploitation strategic orientations, the operational capabilities associated with customers' interactions and relationships, and firm performance.

While different implementations of CRM exist, we intentionally focus on Ramani and Kumar's (2008) proposed concept of interaction orientation. The literature on CRM is flourishing and suggests two different levels of CRM. "Some have defined it as a higher-level process that includes all activities that firms undertake in their quest to build durable, profitable, mutually-beneficial customer relationships" (Zablah et al., 2004, p. 477); that position joins the broad concept of customer orientation and stresses strategic and cultural factors (Kohli and Jaworski, 1990). "Others have construed it more narrowly and define [CRM] as a process that is concerned with managing customer interactions for the purpose of promoting the establishment and maintenance of long-term, profitable relationships" (Zablah et al., 2004, p. 477). That position emphasizes CRM as a matter of practices (Ramani and Kumar, 2008). From this perspective, interaction orientation stands for a firm's direction in its efforts to manage customer relationships, and "reflects a firm's ability to interact with its individual customers and to take advantage of information obtained from them through successive interactions to achieve profitable customer relationships" (Ramani and Kumar, 2008, p. 27). It is defined at an operational level as a firm's organizational capacity to be customer focused, but also to consider

customers as real co-creators of value (Ramani and Kumar, 2008; Chen et al., 2012). This customer emphasis should also be the “converging point” for both exploration and exploitation (Menguc and Auh, 2008).

Concerning empirical scope, most previous studies on exploration and exploitation have focused on large firms. While small and medium-sized enterprises (SMEs) play an important role in the economy in most countries (Lubatkin et al., 2006; Galvão et al., 2018), we still know little about the consequences of exploration and exploitation in such firms (Bierly and Daly, 2007). Nevertheless, these firms face specific issues that affect the way in which they define their knowledge strategy orientations (Bierly and Daly, 2007; Abebe and Angriawan, 2014). They are also known “to be more relational in their approach to the market, emphasizing interaction [...] marketing” (Coviello et al., 2000, p. 531). Indeed, SMEs are not just small versions of large firms when it comes to exploration and exploitation (Lubatkin et al., 2006; Abebe and Angriawan, 2014) and customers’ interactions and relationships (Alshawi et al., 2011; Jones and Rowley, 2011; Galvão et al., 2018). In particular, there is still a need to better understand the marketing approaches of manufacturing SMEs, and to conduct further empirical research (Ndubisi and Matanda, 2011).

This study thus aims to get a better comprehension of the complex relationships between exploration and exploitation, as strategic orientations, and firm performance, by testing the mediating role of interaction orientation in manufacturing SMEs. It provides empirical evidence that interaction orientation effectively acts as a mediator between exploitation and SME performance while counterbalancing the negative impact of exploration on performance and so playing the role of a competitive mediator. Complementary analyses demonstrate the specific effects of exploration vs exploitation on the different dimensions of interaction orientation, and

thus suggest singular customer interaction processes and tools to focus on, depending on knowledge strategy adopted.

This paper is structured as follows. First, we introduce the conceptual foundations that lead to formulating our research hypotheses. We then explain the methodology performed, which is based on a survey with the CEOs of 793 French manufacturing SMEs. The results obtained from a structural equation model are then presented, and a discussion of research implications, limitations and future research directions is proposed to conclude.

Theoretical background and research hypotheses

Performance implications of exploration and exploitation

From a knowledge-based perspective (Conner and Prahalad, 1996; Grant, 1996), the essence of strategy rests on “the identification, development, and application of key resources, and ultimately the resource most likely to lead to a sustainable competitive advantage is the firm’s unique knowledge base” (Bierly and Daly, 2007, p. 493). As explained by Bierly and Chakrabarti (1996, p. 123), “there are several strategic choices that [...] determine the firm’s knowledge base”, thus forming the firm’s knowledge strategy. Following March (1991), the literature has usually distinguished two knowledge-based strategies: exploration and exploitation.

On the one hand, exploration-focused firms “strive to develop capabilities to excel at the creation or acquisition of new knowledge” (Bierly and Daly, 2007, p. 494). They aim to create new knowledge, departing from the current knowledge and strategies (Sirén et al., 2012). Indeed, exploration “represents entrepreneurial actions [...] that aim to create new business opportunities that emerge outside the scope of the current strategy” (Sirén et al., 2012, p. 20). This knowledge strategy involves the search for new markets (Lubatkin et al., 2006; Sirén et al., 2012), new technologies or new products with unknown demand (Greve, 2007). Exploration can ultimately

lead to the patenting of new ideas, the creation of innovative products (Sarkees et al., 2014), and the development of radical innovations (Bierly and Daly, 2007; Hughes, 2018). It therefore has a key role in creating new knowledge that lead to completely new products (Westerlund and Rajala, 2010). By offering new products that serve new or latent customer needs, firms that explore can create superior customer value (Menguc and Auh, 2008) and achieve sustainable competitive advantages (Bierly and Daly, 2007), thanks to research, development, and innovation. As such, the literature has recognized that exploration is crucial to the long-term adaptation and survival of firms (Gilsing and Nooteboom, 2006), and contributes to superior long-term performance (Sarkees et al., 2014). However, as exploration entails high costs and increased risk for firms, its benefits tend to be uncertain and remote in time (March, 1991; Bierly and Daly, 2007).

On the other hand, exploitation-focused firms “develop capabilities to excel at the ability to leverage existing knowledge to rapidly create new organizational products and processes” (Bierly and Daly, 2007, p. 494). They aim “to exploit a firm’s current competitive advantage by efficiently managing the firm’s existing resources and capabilities” (Sirén et al., 2012, p. 20). Exploitation is therefore associated with the refinement and extension of current skills and capabilities (Auh and Menguc, 2005; Menguc and Auh, 2008). This knowledge strategy focuses on the improvements of operational efficiency (Sirén et al., 2012), current technologies and products (Greve, 2007) to fulfill the clients’ requirements (Lubatkin et al., 2006). Exploitation can ultimately lead to incremental innovations (Bierly and Daly, 2007; Hughes, 2018). Firms that exploit can create superior customer value, as they “can satisfy expressed customer needs and provide products with exceptional value through cost management” (Menguc and Auh, 2008, p. 460). Thus, exploitation is also presented as a condition for survival, but especially in the short

term (Gilsing and Nooteboom, 2006), contributing to short-term performance (Sarkees et al., 2014).

Exploration and exploitation as strategic orientations may, however, need the creation, deployment, renewal, and improvement of operational capabilities in order to be effective (O’Cass et al., 2014). Following studies in the marketing field, one may suggest that customer relationship management capabilities should be taken into account to better understand the complex relationships between exploration and exploitation strategic orientations and SME performance. One marketing concept rooted in such capabilities is that of interaction orientation, which indeed offers precise measures to indicate a firm’s direction in managing customer relationships (Ramani and Kumar, 2008). The concept of interaction orientation is particularly relevant for this study, for at least three reasons. First, as an operational organizational capability “consisting of practices, processes, and a fundamental belief oriented toward the dynamically changing individual customer’s knowledge” (Thalmann and Brettel, 2012, p. 426), interaction orientation combines the different levels of analysis – culture, processes and practices (Ramani and Kumar, 2008; Zablah et al., 2004) – that are necessary to apprehend the complexity of CRM. Second, as stressed by Ramani and Kumar (2008, p. 27), “advances in technology have resulted in increasing opportunities for interactions between firms and customers”, interactions leading to new opportunities for data collection and intelligence generation, making it possible to take advantage of information obtained from and pertaining to customers (Zablah et al., 2004). Third, as interaction orientation stresses issues related to knowledge management, it is the most appropriate concept to enrich the study of the impact of knowledge strategies on firm performance. It is therefore more relevant than relationship orientation which has been conceptualized as the opposite of a transaction mentality (Day, 2000; Ramani and Kumar, 2008).

It also seems more relevant than customer orientation, which is generally focused only on sellers' behaviors more than on knowledge management (Homburg et al., 2011; Franke and Park, 2006).

Mediating role of interaction orientation

The concept of interaction orientation arouses great interest in the marketing literature, as it is widely recognized that such an orientation may contribute to superior performance and profitability (Kumar and Ramani, 2006; Ramani and Kumar 2008; Chen et al., 2012; Thalmann and Brettel, 2012).

This orientation involves a customer-centric approach (Chen et al., 2012), which can be defined as “the set of beliefs and behaviors that puts the customer’s interests first and creates superior customer value throughout the organization-wide culture” (Park et al., 2018, p. 1002). Therefore, interaction orientation requires a customer-oriented culture, making it imperative to be concerned about customers’ needs and to seek to propose solutions as the primary goal (Rindfleisch and Moorman, 2003). However, a customer-oriented culture is not sufficient to develop an interaction orientation: it is also essential to interact with the customers in order to get to know them (Ramani and Kumar, 2008). The deep knowledge of customers and their expectations is a necessary condition for customer satisfaction and loyalty (Galvão et al., 2018). From this perspective, interactions help firms to refine and give sense to their knowledge of customers’ behaviors and preferences (Srinivasan et al., 2002; Ramani and Kumar, 2008), and to propose an offer that meets specific needs, expectations, or problems (Vargo and Lusch, 2004). Beyond the “belief” in the customer-centric approach, interaction orientation thus requires firms to develop abilities through processes and practices that promote interactions with individual customers (Ramani and Kumar, 2008; Chen et al., 2012; Thalmann and Brettel, 2012). Such processes and practices can include customer empowerment practices, customer value

management practices, and systems and processes that support a firm's interaction response capacity (Ramani and Kumar, 2008).

Both exploration and exploitation may assist in strengthening a customer-interaction culture and the interactions with customers. On the one hand, by seeking to serve new or emerging customer needs (Menguc and Auh, 2008; Chen et al., 2012), exploration often leads to new marketing trajectories (Lubatkin et al., 2006) with innovative ways to meet customers' expectations and reach new customers (Lubatkin et al., 2006; Sirén et al., 2012). Exploration-oriented firms can thus be seen as "prospectors" (Menguc and Auh, 2008), which may tend to adopt a high level of customer emphasis (Olson et al., 2005). Moreover, by focusing on the creation of new knowledge to meet customer needs in an innovative way (Sirén et al., 2012), it may reinforce both knowledge creation and innovative thinking, which are supported in essence by an interaction orientation through interaction practices and processes (Thalman and Brettel, 2012). In addition, Cegarra-Navarro and Dewhurst (2007) suggested, in the specific context of SMEs, that exploration could contribute to creating customer capital, which can be seen as "a result of interactions between an organization and its customers" (p. 1720).

On the other hand, by seeking to improve product and service ranges, exploitation can lead to refinements to current marketing trajectories (Lubatkin et al., 2006) through the constant surveying of existing customers' satisfaction, the adaptation of ranges to keep current customers satisfied, and/or the deeper penetration into the firm's existing customer base (Lubatkin et al., 2006; Sirén et al., 2012). In this sense, exploitation may also reinforce the customer interaction emphasis. Moreover, some authors have suggested that exploitation plays a key role in strengthening relationships with current customers (Cegarra-Navarro and Dewhurst, 2007; Vorhies et al., 2011). In the specific context of SMEs, Cegarra-Navarro and Dewhurst (2007) showed that exploitation positively influences the creation of customer capital, which results

from interactions between the SME and its customers. While exploitation seeks to take advantage of existing knowledge (Bierly and Daly, 2007) and, ultimately, to “better” use the current resources and capacities of the firm, this notably relies on interaction practices with customers (Sirén et al., 2012).

The arguments discussed above suggest that both exploration and exploitation positively influence interaction orientation, which in turn positively affects performance. Taken collectively, we therefore propose the following hypotheses:

H1. The adoption of an interaction orientation mediates the positive effect of exploration on SME performance.

H2. The adoption of an interaction orientation mediates the positive effect of exploitation on SME performance.

Method

Sample and data collection

793 French manufacturing SME CEOs/directors were given closed-ended questions in the form of an interview. This was conducted as part of a research project in collaboration with a French authority. The respondents had to participate in the interview before benefiting from a training program they had applied to. Reflecting the French manufacturing industry, which mostly includes firms with fewer than 10 employees¹, our sample comprises relatively small firms: 29.8% have fewer than 10 employees, 54.5% between 10 and 49 employees, and the remainder between 50 and 250 employees. The turnover is less than €5 million for 69.7% of the SMEs

¹ INSEE, French institute of statistics and economic studies

included in the sample. The average age of the firms is quite high; indeed, 7.1% have existed for less than 5 years, and 33.6% for more than 35 years.

Measures

The measurement scales, which came from the literature, are presented in the appendix.

The scales used to measure exploration and exploitation were proposed by Bierly and Daly (2007). The exploration scale's four items "focus on the extent to which the firm excels at developing radically new knowledge", while the exploitation scale's three items focus "on the extent to which the firm successfully exploits existing knowledge areas" (Bierly and Daly, 2007, p. 502).

Interaction orientation was measured through four dimensions in accordance with Kumar and Ramani (2006) and Ramani and Kumar (2008). The first dimension concerns the belief in the customer-centric approach, that is, the customer culture, and represents "the degree of the embedded belief among managers that the firm should strive to engage each potential and current customer in order to understand the needs of each individual customer" (Kumar and Ramani, 2006, p. 113). This dimension was measured through four items adapted from Ramani and Kumar (2008), Periatt et al. (2004), and Rindfleisch and Moorman (2003). The second and third dimensions concern the managerial practices adopted by interaction-oriented firms, including customer empowerment practices and customer value management practices (Ramani and Kumar, 2008). Customer empowerment was captured through three items that reflect the extent to which firms provide their customers possibilities to actively participate in the development and improvement of products (Ramani and Kumar, 2008). Customer value management, which "represents the extent to which the firm is able to define and dynamically measure customer value and use it as its guiding metric for marketing resource allocation decisions" (Kumar and

Ramani, 2006, p. 114), was measured using three items reflecting the firm's capability to collect and analyze each customer's contribution to overall profitability (Ramani and Kumar, 2008). Finally, the fourth dimension focuses on systems and processes employed by the firm to support interaction response capacity (Ramani and Kumar, 2008). This capacity, which represents the degree to which a firm is able to offer "successive interaction experiences to each customer by dynamically incorporating feedback from previous behavioral responses [of customers]" (Kumar and Ramani, 2006, p. 115), was measured through three items adapted from Ramani and Kumar (2008).

Concerning the dependent variable, we chose to measure an objective indicator of financial performance. Indeed, several scholars have adopted an objective approach to measure firms' performance, regarding the accounting measures as acceptable (Boulding et al., 2005; Chiao et al., 2006). In entrepreneurial literature, such an approach is considered especially relevant for reducing the bias associated with managers' perceptions (Bacidore et al., 1997). Among accounting-based measures, we chose one standard profitability ratio: the net margin ratio (Net Profit / Sales). This ratio captures the firm's real economic performance, while preempting "the possible problem of the manipulation of asset valuations" that may arise from the other frequently used profitability ratios (Chiao et al., 2006, p. 482). Consequently, for each firm, the data collected from CEO interviews were matched with the DIANE-NEO database edited by the Van Dijk Company to obtain the net margin ratio.

We also included two control variables – firm size and age – as proposed in numerous empirical studies on exploration and exploitation (e.g., Bierly and Daly, 2007; Sarkees et al., 2014). To measure firm size, we took into account the total number of employees, as provided by respondents. The age of firms was measured from their creation date to the date of survey administration.

Data analysis and results

Reliability, validity, and common method bias

The Cronbach's alpha and composite reliability values were used to evaluate reliability. Cronbach's alpha coefficients are all close to or above 0.700, except for the interaction capacity dimension, with a lower value; all Rho's values are between 0.766 and 0.864, demonstrating an appropriate composite reliability (Chin, 2010). The average variance extracted (AVE), which was used to assess convergent validity, is above 0.500 for each component, as expected. Finally, following Fornell and Larcker's (1981) procedure, the results of a comparison between the AVE and the squared latent variable correlations confirm that construct discriminant validity is satisfactory. All indicators corroborate the reliability and validity of measurement scales (see Table 1).

INSERT TABLE 1 ABOUT HERE

To minimize the issues of common method bias, several precautions were taken. First, items related to our conceptual framework were included in a more comprehensive survey on SMEs' managerial practices. They were presented in a way that made it very difficult to draw any conclusions about the current research question and hypothesis. The survey was pilot-tested during informal interviews with 20 participants, CEOs, or firm managers who did not participate in the final study. Second, respondent anonymity was guaranteed in order to limit the risk of social desirability bias (Podsakoff et al., 2003). Furthermore, based on the suggestions of Hair et al. (2016), ex-post verifications were conducted. As proposed by Liang et al. (2007), a common method factor encompassing all indicators of the model was computed. The substantive variance explained by the research model constructs and the common method factor are presented in Table 2. As expected, high and significant loadings of the measured constructs on indicators are

obtained (they explain on average 0.781 of indicator variance), while the common method factor has only a few significant loadings (and explains on average only 0.019 of indicator variance). Thus, common method bias is not relevant for these empirical results.

INSERT TABLE 2 ABOUT HERE

Analysis and statistical methods

As the research objective is prediction and theory development, the measurement model and relationships among the constructs were analyzed with structural equation modelling, using the partial least squares (PLS) approach (Hair et al., 2011). This method handles constructs measured “with metric data, quasi-metric scaled data, and binary coded variables,” modeled as both formative and reflective variables (Hair et al., 2016, p. 19). It allows construct design at first- and second-order and above latent level variables (Chin, 2010), and constructs with few items can be used - in our case, only one manifest variable was used for the net margin ratio. Furthermore, it permits global identification of key driver constructs, and hence the testing of whether exploration, exploitation, and interaction orientation are drivers of SME performance. All analyses were conducted with the software package XLStat – PLSPM (version 18).

Main results

All indices confirm the stability of the model (Table 3 shows very close values for absolute and bootstrapped absolute goodness of fit - GOF). Moreover, the values of the external model’s GOF confirm a satisfactory model adjustment with regard to the measurements (0.998). Finally, the structural relationships show a strong significance, as shown by the values of the internal model’s GOF (0.698).

INSERT TABLE 3 ABOUT HERE

The results (see Table 4 and Figure 1) show that both exploration and exploitation have a significant positive influence on interaction orientation as a global construct (0.161 and 0.261, respectively) and that interaction orientation significantly increases performance (0.098). In addition, it appears that exploration has a direct negative influence on economic performance, partially validating H1, which predicted a mediating effect of interaction orientation. Indeed, because the direct effect of exploration on performance remains significant, the mediation is not a full one. Moreover, and interestingly, the mediation effect appears to be a suppressor (Zhao et al., 2010) as the direct effect is negative and the mediated effect is positive. One can also talk about a competitive or inconsistent mediation (McKinnon et al., 2007). While exploration decreases performance, its indirect effect through interaction orientation increases it. On the other hand, exploitation is proving not to have a direct influence on economic performance. The positive effect of exploitation on performance is therefore fully mediated by interaction orientation, thus supporting H2.

INSERT TABLE 4 ABOUT HERE

INSERT FIGURE 1 ABOUT HERE

Overall, these findings highlight the complexity of the relationships between exploration and exploitation strategic orientations, interaction orientation and SME performance. While both exploration and exploitation have a positive impact on the global construct of interaction orientation, which in turn positively influences performance, a complementary analysis demonstrates the following differentiated effects (see Table 5): exploration mainly influences customer empowerment (0.287) and to a lesser extent customer culture (0.083); whereas exploitation impinges on the four dimensions of interaction orientation, predominantly on customer value management (0.205), customer culture (0.196) and interaction response capacity (0.179), and, to a lesser extent, customer empowerment (0.139).

INSERT TABLE 5 ABOUT HERE

Discussion and conclusion

Theoretical implications

As claimed by Gupta et al. (2006, p. 697), “arguments in favor of the need for both exploration and exploitation are well established and accepted.” However, previous studies on performance implications of knowledge strategies led to mixed results (Lavie et al., 2010), especially for manufacturing SMEs (Bierly and Daly, 2007; Abebe and Angriawan, 2014). To fill this gap, some scholars have recommended considering certain mediators to better understand the complex relationships between exploration, exploitation, and performance (Raisch et al., 2009; Sirén et al., 2012). More precisely, Sirén et al. (2012) stressed the need to consider the mediating role of intra-organizational processes related to strategic knowledge. From this perspective and in line with O’Cass et al. (2014), our findings reveal a theoretical pathway involving operational-level marketing capabilities by which exploration and exploitation contribute to performance. Indeed, our findings highlight the key role played by interaction orientation so that knowledge strategies act as levers of economic performance. Consequently, our study enriches the literature on the performance implications of exploration and exploitation in manufacturing SMEs by studying the mediating role of interaction orientation, rooted in both customer relationship management and customer knowledge capabilities.

On the one hand, our results show that firms need to develop and enhance interaction orientation capabilities to fully benefit from exploitation. On the other hand, they suggest that deploying and improving such capabilities is necessary, but not necessarily sufficient, for exploration to be effective, by contributing towards alleviating the costs and risks of exploration. The direct negative effect of exploration on performance indeed confirms the idea that

exploration entails high costs and increased risk for firms, making the benefits uncertain (Bierly and Daly, 2007). However, this negative impact can be counterbalanced by the positive mediated effect of interaction orientation. Consequently, our results support the expected mediating role of interaction orientation between exploitation and SME performance. They also demonstrate a competitive mediation of interaction orientation between exploration and SME performance. These various mediating effects are interesting, reiterating the importance of considering mediators when studying a phenomenon (MacKinnon et al., 2007).

While both exploration and exploitation have a positive impact on the global construct of interaction orientation, which can in turn act as a performance lever, the complementary analysis of the different dimensions of interaction orientation reveals varying effects of exploration and exploitation: exploration mainly influences customer empowerment, while exploitation mainly influences customer culture, customer value management, and interaction response capacity. Exploration therefore mainly stimulates the development of knowledge *from* the customer, while exploitation puts greater emphasis on knowledge *about* the customer. These findings suggest the importance of matching knowledge strategy orientations and customer relationship management and customer knowledge capabilities, so as to increase the firm's global economic performance. More generally, the literature has indeed recognized that knowledge management and customer relationship management are efficient only if they are well aligned, making it possible to have the right "processes in place to collect, analyze and apply the acquired customer information" (Boulding et al., 2005, p. 156).

Managerial implications

Given that manufacturing SMEs face specific concerns (especially a lack of resources and specific competences) that affect their ability to implement knowledge strategies (Bierly and

Daly, 2007; Abebe and Angriawan, 2014), it is essential to consider the levers that allow exploration and exploitation to be effective. According to our results, SME managers should invest in developing practices, processes and tools that foster interaction orientation, for both exploration and exploitation strategies. Our findings thus confirm the need to develop and improve marketing capabilities in order to enable firms to benefit from knowledge strategies (O’Cass et al., 2014; Sarkees et al., 2010). An extended adoption of an interaction orientation is all the more important in the case of exploration strategy, to be able to counterbalance the negative direct effect on performance. To a certain extent, by improving and giving sense to knowledge about customers’ behaviors and preferences through interactions (Srinivasan et al., 2002; Ramani and Kumar, 2008), interaction orientation may contribute to strategic learning, which is essential especially in conjunction with exploration strategy (Sirén et al., 2012).

In addition, as exploration and exploitation have varying effects on the different dimensions of interaction orientation, our results suggest that SME performance may increase when the firm adapts its customer approach processes and tools to its knowledge strategies. This aspect is even more crucial as SMEs broadly tend to adopt opportunistic tools, not necessarily as part of a clearly defined strategic focus (Appiah-Adu and Singh, 1998). Ambroise and Prim-Allaz (2012) have indeed shown that some SMEs are “compulsive”, acquiring a plethora of CRM tools without having strategy for using them. These SMEs are less profitable than those with fewer tools but a real strategy when acquiring them. In light of this, our results highlight the fact that the CRM approaches and tools mobilized by SMEs must be adapted to the kind of customer-related knowledge to develop according to the knowledge strategies they pursue.

On the one hand, exploitation may mainly concern the enhancement over time and capitalization of accumulated knowledge about customers using CRM devices. If a firm seeks to exploit, it may simultaneously implement wide-ranging initiatives associated with relational

marketing and a customer-centric approach, especially, but not only, customer value management and interaction response capacity. This implies that managers must invest in human and financial resources to implement processes and tools that assist them to satisfy customers in their relationship with the firm, but also to gather knowledge about them. Nevertheless, it appears that customers' information that is already available within SMEs is generally underexploited and of poor quality. Alshawi et al. (2011, p. 381) noted a general "lack of knowledge for the customer data issues" in these firms. Our findings should therefore encourage managers of SMEs to use and reinforce existing customer knowledge to increase their firm's performance when they adopt an exploitation strategy. Knowledge about the customer is indeed "a kind of knowledge that the firm attains in order to get to know its targeted customer better (e.g., record of customer transactions, products used, and certain personal preferences)", and is "accumulated as a valuable knowledge base during long-term business operations" (Wu et al., 2013, p. 360). For instance, customer value management practices mainly rely on this kind of knowledge by aiming to evaluate customer value through quantitative metrics in order to guide marketing resource allocation decisions (Chen et al., 2012; Kumar and Shah, 2009; Ramani and Kumar, 2008).

On the other hand, exploration may mainly concern the creation of value from customers by implementing processes that collect, transform, and accumulate value from customer experiences. It thus mainly stimulates the development of knowledge *from* the customer and less the development of knowledge *about* the customer. In particular, exploration sharply reinforces customer empowerment practices, which allow customers to give and share their opinion, and to participate in new product development (Fuchs and Schreier, 2011), thus contributing to developing knowledge from the customer. The latter is indeed a kind of knowledge that "refers to the knowledge fed back or contributed by customers (e.g., the ideas, thoughts and information a firm receives from its customers regarding their preferences, creativity, or consumption

experience of specific products or services)” (Wu et al., 2013, p. 360-361). As exploration aims to create or acquire new knowledge to be creative (Bierly and Daly, 2007; Sirén et al., 2012), our findings suggest that managers of SMEs that seek to explore must implement specific practices that favor creativity in developing new knowledge from customers and including, for instance, co-innovation (Westerlund and Rajala, 2010) or open innovation (e.g., online platform of ideation, community or customer co-creation, and others), which can in turn lead to customer empowerment (Fuchs and Schreier, 2011; Ruspil et al., 2019).

Limitations and avenues for future research

Some limitations suggest possibilities for future research. First, an objective profitability ratio was considered. In turn, the influence of declarative statements from CEOs regarding our independent and mediating variables has a restricted effect on such a global metric of a firm’s operations and achievement. However, it seems essential to consider the real firm’s financial performance, and this study proves the significant effects of our independent and mediating variables.

Second, the performance variable could usefully be measured over a longer period of time. While most empirical studies on exploration and exploitation have used a cross-sectional survey design (Junni et al., 2013), longitudinal studies are recommended to capture both the short- and long-term performance effects of knowledge strategies. In particular, such studies would be expected when considering the mediating role of interaction orientation, given that relational marketing research also shows a time delay between investment in customer relations and return on investment (Boulding et al., 2005). Indeed, the consideration of temporal factors should enrich research in relational marketing (Plakoyiannaki and Saren, 2006).

Finally, as the capacity to both explore and exploit is essential to a firm's success (Gupta et al., 2006; Raisch et al., 2009; Molina-Castillo et al., 2011), it would be useful to study how exploration and exploitation could jointly influence interaction orientation and firm performance. This would be aligned with previous studies on ambidexterity that focus on marketing capabilities and performance by using the knowledge-based and dynamic capability views of the firm (Vorhies et al., 2011; O'Cass et al., 2014).

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Appendix. Measurement scales

All the scales presented below are 5-point scales (1= “strongly disagree”; 5= “strongly agree”).

| | <i>Loading</i> |
|---|----------------|
| Exploration (4 items from Bierly and Daly, 2007) | |
| <i>Alpha Cronbach = 0.766 / CR = 0.851 / AVE = 0.587</i> | |
| “We frequently experiment with radical new ideas.” | 0.828 |
| “At our firm, employees frequently come up with creative ideas that challenge conventional ideas.” | 0.761 |
| “Compared to our principal competitors, a high percentage of our firm sales come from new products launched within the past 3 years.” | 0.744 |
| “We are usually one of the first companies in our industry to use new, breakthrough technologies.” | 0.730 |
| Exploitation (3 items from Bierly and Daly, 2007) | |
| <i>Alpha Cronbach = 0.742 / CR = 0.853 / AVE = 0.660</i> | |
| “At our firm, a strong emphasis is placed on improving efficiency.” | 0.853 |
| “Our firm excels at refining existing technologies.” | 0.802 |
| “We frequently adjust our procedures, rules, and policies to make things work better.” | 0.781 |

Customer culture (4 items from Ramani and Kumar, 2008; Periatt *et al.*, 2004; Rindfleisch and Moorman, 2003)

Alpha Cronbach = 0.788 / CR = 0.863 / AVE = 0.614

| | |
|---|-------|
| “We think that it is essential to adapt our products to satisfy our customers.” | 0.685 |
| “We always try to figure out what our customer needs are.” | 0.803 |
| “We design our products to be best suited to our customers’ problems.” | 0.837 |
| “We always offer products in the best interest of our customers.” | 0.801 |

Customer empowerment (3 items from Ramani and Kumar, 2008)

Alpha Cronbach = 0.687 / CR = 0.827 / AVE = 0.614

| | |
|---|-------|
| “Our firm encourages customers to share their opinions of our products with us.” | 0.823 |
| “Our firm encourages customers to share opinions of our products with other customers.” | 0.724 |
| “Our firm encourages customers to participate actively in designing products.” | 0.800 |

Customer value management (3 items from Ramani and Kumar, 2008)

Alpha Cronbach = 0.738 / CR = 0.852 / AVE = 0.658

| | |
|--|-------|
| “Our firm has an excellent idea of what each individual customer has been contributing to our profits.” | 0.746 |
| “Our firm predicts what each individual customer will contribute to its profits in future.” | 0.814 |
| “Our firm computes the revenues generated as a result of every marketing action directed at an individual customer.” | 0.869 |

Customer interaction response capacity (3 items from Ramani and Kumar, 2008)

Alpha Cronbach = 0.541 / CR = 0.766 / AVE = 0.520

| | |
|--|-------|
| “Our firm is able to analyze customer transactions at the individual level.” | 0.750 |
| “Our firm can identify all transactions pertaining to each individual customer.” | 0.706 |
| “In our firm, all customer interfaces possess transaction information on individual customers at all times.” | 0.705 |

Figures and tables

Figure 1 Analysis of the mediating role of interaction orientation

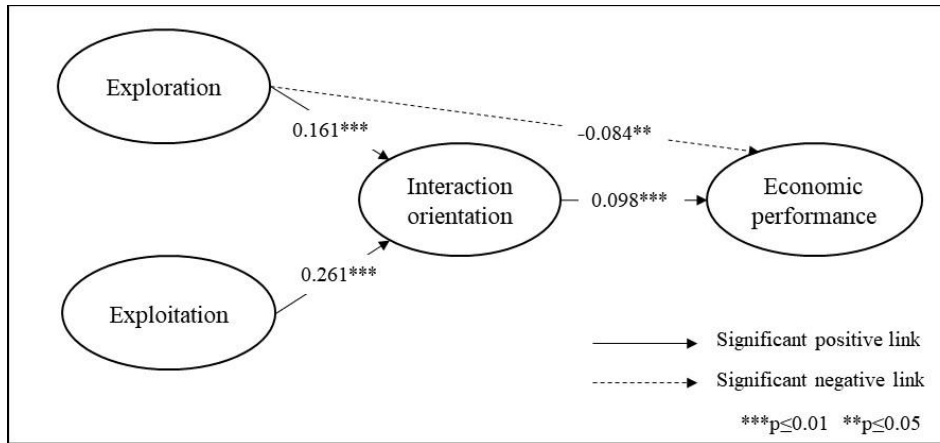


Table 1 Constructs' properties and correlation matrix

| Constructs | No of items | α | CR | 1 | 2 | 3 | 4 | 5 | 6 |
|---------------------------------|-------------|----------|-------|---------|---------|---------|---------|---------|---------|
| 1 Exploration | 4 | 0.785 | 0.861 | (0.608) | | | | | |
| 2 Exploitation | 3 | 0.746 | 0.855 | 0.520 | (0.664) | | | | |
| 3 Customer Culture | 4 | 0.788 | 0.864 | 0.183 | 0.236 | (0.612) | | | |
| 4 Customer Empowerment | 3 | 0.691 | 0.829 | 0.356 | 0.285 | 0.242 | (0.616) | | |
| 5 Customer Value Management | 3 | 0.743 | 0.854 | 0.159 | 0.230 | 0.152 | 0.325 | (0.662) | |
| 6 Interaction Response Capacity | 3 | 0.543 | 0.766 | 0.125 | 0.192 | 0.300 | 0.236 | 0.432 | (0.515) |

α = Cronbach's alpha; CR= composite reliability

All correlations are significant at $p = .01$

Average Variance Extracted (AVE) are presented along diagonals

Table 2 Common method bias – HTMY matrix

| Constructs and items | Substantive factor loading | R1 ² | Method factor loading | R2 ² |
|---|----------------------------|-----------------|-----------------------|-----------------|
| <u>Exploration</u> | | | | |
| Item 1 | 0.814 *** | 0.661 | 0.582 | 0.002 |
| Item 2 | 0.746 *** | 0.542 | 0.545 | 0.015 |
| Item 3 | 0.780 *** | 0.609 | 0.554 | 0.002 |
| Item 4 | 0.759 *** | 0.591 | 0.527 | 0.015 |
| <u>Exploitation</u> | | | | |
| Item 1 | 0.847 *** | 0.710 | 0.602 | 0.008 |
| Item 2 | 0.810 *** | 0.634 | 0.589 | 0.024 |
| Item 3 | 0.783 *** | 0.644 | 0.520 * | 0.030 |
| <u>Customer Culture</u> | | | | |
| Item 1 | 0.672 *** | 0.438 | 0.410 | 0.014 |
| Item 2 | 0.799 *** | 0.622 | 0.483 | 0.017 |
| Item 3 | 0.846 *** | 0.727 | 0.471 | 0.011 |
| Item 4 | 0.808 *** | 0.671 | 0.439 ** | 0.017 |
| <u>Customer Empowerment</u> | | | | |
| Item 1 | 0.817 *** | 0.661 | 0.525 | 0.006 |
| Item 2 | 0.764 *** | 0.639 | 0.416 *** | 0.048 |
| Item 3 | 0.777 *** | 0.555 | 0.552 *** | 0.055 |
| <u>Customer Value Management</u> | | | | |
| Item 1 | 0.751 *** | 0.571 | 0.404 | 0.007 |
| Item 2 | 0.803 *** | 0.626 | 0.474 * | 0.020 |
| Item 3 | 0.881 *** | 0.787 | 0.470 | 0.012 |
| <u>Customer Interaction Response Capacity</u> | | | | |
| Item 1 | 0.698 *** | 0.452 | 0.427 *** | 0.043 |
| Item 2 | 0.725 *** | 0.548 | 0.322 ** | 0.019 |
| Item 3 | 0.743 *** | 0.565 | 0.346 | 0.013 |
| <i>Average</i> 0.781 0.613 0.483 0.019 | | | | |

Table 3 Goodness of fit estimations

| | GOF | GOF (Bootstrap) | Standard Error |
|----------------|-------|--------------------|-------------------|
| Absolute | 0.396 | 0.397 | 0.010 |
| Relative | 0.722 | 0.696 | 0.019 |
| External model | 0.999 | 0.998 | 0.009 |
| Internal model | 0.723 | 0.698 | 0.018 |

Table 4 Comparison of impacts on performance (Net Margin Ratio)

| | R ² (bootstrap) | <i>p-value</i> | Stand. path coefficient (bootstrap) | t | <i>p-value</i> |
|--------------------------------|-------------------------------|----------------|---|--------|----------------|
| <i>Interaction Orientation</i> | 0.139 | <i>0.000</i> | | | |
| Exploration | | | 0.161 *** | 4.153 | <i>0.000</i> |
| Exploitation | | | 0.261 *** | 6.745 | <i>0.000</i> |
| <i>Performance</i> | 0.025 | <i>0.008</i> | | | |
| Exploration | | | -0.084 ** | -2.019 | <i>0.044</i> |
| Exploitation | | | 0.046 | 1.066 | <i>0.287</i> |
| Interaction Orientation | | | 0.098 *** | 2.580 | <i>0.010</i> |
| Firm's Age | | | 0.078 ** | 2.100 | <i>0.036</i> |
| Firm's Size | | | -0.048 | -1.267 | <i>0.206</i> |

*** $p \leq 0.01$ ** $p \leq 0.05$ * $p \leq 0.1$

Table 5 Influence of knowledge strategies on interaction orientation

| <i>On second-order construct</i> | R ² (bootstrap) | <i>p-value</i> | Stand. path coefficient (bootstrap) | t | <i>p value</i> |
|---|-------------------------------|----------------|---|-------|----------------|
| Exploration | 0.139 | <i>0.000</i> | 0.161 *** | 4.153 | <i>0.000</i> |
| Exploitation | | | 0.261 *** | 6.745 | <i>0.000</i> |
| <i>On first-order dimensions</i> | R ² (bootstrap) | <i>p-value</i> | Stand. path coefficient (bootstrap) | t | <i>p value</i> |
| <u><i>Customer Culture</i></u> | | | | | |
| Exploration | 0.065 | <i>0.000</i> | 0.083 * | 2.032 | <i>0.042</i> |
| Exploitation | | | 0.196 *** | 4.788 | <i>0.000</i> |
| <u><i>Customer Empowerment</i></u> | | | | | |
| Exploration | 0.145 | <i>0.000</i> | 0.287 *** | 7.355 | <i>0.000</i> |
| Exploitation | | | 0.139 *** | 3.553 | <i>0.000</i> |
| <u><i>Customer Value Management</i></u> | | | | | |
| Exploration | 0.060 | <i>0.000</i> | 0.056 | 1.333 | <i>0.183</i> |
| Exploitation | | | 0.205 *** | 4.996 | <i>0.000</i> |
| <u><i>Interaction Response Capacity</i></u> | | | | | |
| Exploration | 0.043 | <i>0.000</i> | 0.035 | 0.842 | <i>0.400</i> |
| Exploitation | | | 0.179 *** | 4.263 | <i>0.000</i> |

*** $p \leq 0.01$ ** $p \leq 0.05$ * $p \leq 0.1$