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Strategic orientation, innovation performance and the moderating influence of marketing management

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ABSTRACT

This research aims at exploring the relationship between a firm's strategic orientation, marketing management in terms of marketing mix tactics, and innovation performance. We examine three types of strategic orientations: customer, technology, and combined customer/technology orientation. We analyze their direct effect on innovation performance as well as the moderating effect of marketing management in terms of the marketing mix on this relationship. We test our hypotheses on a sample of 1603 French manufacturing firms and show that organizations with a combined customer/technology orientation outperform those with a customer or technology orientation alone. We also show that the moderating effect of marketing management in boosting innovation success is positive for all orientations, but greatest for organizations with a technology orientation. Finally, we find that the moderating effect of marketing management on the relationship between orientation and performance increases as more elements of the marketing mix are deployed simultaneously.

1. Introduction

The strategic orientation of firms has attracted widespread attention from scholars in marketing, management and innovation studies. Although distinct typologies and constructs for strategic orientations have been developed across different literature streams, the concept generally refers to “principles that direct and influence the activities of a firm and generate the behaviors intended to ensure its viability and performance” (Hakala, 2011, p. 199). At the heart of the concept is the orientation of firms to the identification, collection, and analysis of intelligence to create new knowledge within firms (Cacciolatti & Fearne, 2013; Morgan & Strong, 2003). Strategic orientation may therefore be considered a critical element of the innovation process. Evolutionary economics suggests, in fact, that new knowledge provides opportunities not only to advance new ideas along established trajectories but also to create new combinations of knowledge and generate new trajectories for innovation (Nelson & Winter, 1982).

Much of the extant empirical research on strategic orientations examines the direct influence of strategic orientation on business performance. The foundations of this research lie in the marketing literature on the relationship between customer/market orientation and performance (Day, 1994; Kohli & Jaworski, 1990; Narver & Slater, 1990). This work was later extended in other streams of the literature, however, to include more types of orientations (e.g. technology orientation, entrepreneurship orientation, learning orientation) and a more specific focus on innovation performance (Deutscher, Zapkau, Schwens, Baum, & Kabst, 2016). Studies have also been extended to examine external environmental factors (Covin & Slevin, 1989; Lumpkin & Dess, 1996; Rauch, Wiklund, Lumpkin, & Frese, 2009) and product characteristics (Gatignon & Xuereb, 1997) that may determine the conditions under which one type of strategic orientation may be more appropriate than another.

By contrast, relatively less attention has been given in the empirical literature to the factors that may moderate the relationship between strategic orientation and innovation performance. While initial evidence indicates that firm characteristics do play a role in this relationship (Escribá-Esteve, Sánchez-Peinado, & Sánchez-Peinado, 2008), little is known about the influence on performance of what firms actually do and how they invest their resources to respond to the knowledge assets they generate. A gap thus exists in researchers' understanding of how the deployment of firm resources and capabilities may moderate the relationship between different types of strategic orientation and innovation performance.

This study addresses this gap by examining the role of marketing

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resources and capabilities in moderating the relationship between three types of strategic orientation and innovation performance: customer orientation (CO), technology orientation (TO), and a combined customer/technology orientation (CO/TO). More specifically we investigate the use of marketing management activities related to the marketing mix as they interact with these three types of orientation to affect innovative performance. Our choice of orientations is based on the innovation literature in which demand-pull perspectives are often juxtaposed against technology-push approaches (Berthon, Hulbert, & Pitt, 1999; Di Stefano, Gambardella, & Verona, 2012). Our choice of moderator is based on resource-based theory that views marketing mix tactics as capabilities that may be deployed to respond to the intelligence gathered by firms to improve new product development and commercialization (Danneels, 2007; Helfat, 1997; Madhavan & Grover, 1998). We test our hypotheses on a sample of 1603 manufacturing firms in France.

Our study makes several contributions to the literature. First, while our results show that both customer and technology orientations have a positive association with innovation success, they also show that organizations with a combined orientation outperform those with a single orientation. Second, our findings show that the moderating effects of marketing management in terms of the use of the marketing mix is positive for all types of orientations. This result supports previous work that suggests that specific marketing-related organizational capabilities are important assets to help firms respond to the intelligence they generate and to achieve innovation success (Cacciolatti & Fearne, 2013; Morgan, Vorhies, & Mason, 2009). Even further, however, our findings show that the positive effect on the relationship between orientation and performance is greatest for technology-oriented firms. This finding suggests that marketing management may be a critical success factor not only for organizations with a customer orientation, but in particular for firms that may lack customer-based knowledge assets. Finally, our findings indicate that the combination of marketing mix elements, rather than any single mix element on its own, positively affects the orientation-performance relationship. Overall, this study highlights the important role marketing departments play in enabling firms to respond more effectively to both customer and technology intelligence to achieve superior performance (Cacciolatti & Lee, 2016).

2. Theoretical framework and hypotheses

2.1. Strategic orientation and innovation performance

A critical part of the innovation process involves the search for new knowledge that may be used to develop commercially successful products. Research in evolutionary economics suggests that new knowledge provides opportunities not only to advance new ideas along established trajectories but also to create new combinations of knowledge and generate new trajectories (Nelson & Winter, 1982). Consistent with the resource-based view of the firm, new knowledge also represents an important resource that may provide firms with sustained competitive advantage if such resources are of value to customers, are superior to those of competitors, and are hard to replicate (Barney, 1991).

We build on this literature by examining the strategic orientations of firms in terms of their search for new knowledge for innovation. A firm's strategic orientation reflects its philosophy about how best to compete in a market and how to achieve superior performance (Gatignon & Xuereb, 1997). Strategic orientation will thus influence choices regarding the types of knowledge resources necessary to search and assess, as well as the types of knowledge in which to invest to gain competitive advantage. In this sense, strategic orientation helps determine both whether or not and how companies engage in intelligence activities to collect information that may be used to improve internal decision making (Cacciolatti & Fearne, 2013).

Our study focuses on three important types of strategic orientation and their influence on innovation performance: a customer orientation, a technology orientation, and a combined customer/technology orientation. This choice is consistent with the literature on innovation that juxtaposes two opposing perspectives on the drivers of innovation (Di Stefano et al., 2012). On the one side, scholars identify demand-pull factors as key to the marketability and profitability of innovations (Cooper, 1984; Day, 1994; Drucker, 1974; Kirca, Jayachandran, & Bearden, 2005; Levitt, 1960). On the other side, scholars focus on research and point to developments in science and technology as critical factors in innovative activities (technology push) (Chesbrough, 2006; Dosi, 1982; Mowery & Rosenberg, 1991).

A customer orientation is one of the three main components of a marketing orientation (Kohli & Jaworski, 1990; Narver & Slater, 1990), the others being competitor orientation and inter-functional coordination. Consistent with our focus on demand-pull factors and with prior studies of strategic orientations that look at demand-side factors (Gao, Zhou, & Yim, 2007), we focus here on customer orientation disaggregated from the other components related to competitors and coordination. As defined by Gatignon and Xuereb (1997) a customer-oriented firm is a firm with the ability and the willingness to identify, analyze, understand and answer to the expressed needs of customers. A customer orientation directs firms to listen to the feedback of customers in order to understand their needs and preferences and to deliver superior value (Narver & Slater, 1990). A customer orientation may also be considered a set of beliefs that gives top priority to the interests of the customers (Deshpandé, Farley, & Webster, 1993). Customer intelligence is therefore a critical element for firms adopting a customer orientation in order to gather information directly from customers through an analysis of their preferences and behavior patterns as well as through customer satisfaction surveys.

Empirical studies in the marketing literature suggest that a positive relationship exists between a marketing orientation, including a customer orientation, and organizational performance (Jaworski & Kohli, 1993; Kirca et al., 2005; Morgan et al., 2009; Morgan & Strong, 2003). Yet empirical research also provides evidence that a customer orientation alone is positively associated with both revenue-based performance measures (Deshpandé et al., 1993; Gao et al., 2007; Han, Kim, & Srivastava, 1998; Slater & Narver, 1994) and, more specifically, innovation (Grinstein, 2008). Customer orientation enhances the likelihood of innovation success by providing firms with direct input from customers about what is needed to meet their needs and how to improve their offerings. Firms that adopt a customer orientation, in fact, will focus on learning from intelligence to uncover both the unmet and the latent needs of their customers (Atuahene-Gima, 1996; Narver, Slater, & MacLachlan, 2004). They may also work directly with users to uncover product innovations proposed by the users themselves to improve product functionality or to meet more specific needs (von Hippel, 1988). While some management scholars argue that too much focus on the expressed needs of current customers may lead firms to develop only incremental improvements (i.e. customers may not be able to articulate interests that are beyond their experience) (Im & Workman, 2004) and may even blind them from forces supporting more significant, disruptive innovation (Christensen & Bower, 1996), most marketing scholars argue that customer orientation is positively related to innovation success (Appiah-Adu & Singh, 1998; Grinstein, 2008). This latter argument is also consistent with the literature on user innovation which suggests that user knowledge increases the likelihood of successful innovations (Adams, Fontana, & Malerba, 2013; Chatterji & Fabrizio, 2014; von Hippel, 1988). We therefore propose:

Hypothesis 1a (H1a). A 'customer orientation' alone is positively associated with innovation performance.

Firms with a technology orientation, by contrast, place priority on technologies, products or processes. In fact, a technology orientation is often juxtaposed against a customer orientation in order to highlight important differences in attitudes towards the major source of customer value (Gao et al., 2007; Gatignon & Xuereb, 1997; Hakala, 2011;

Hakala & Kohtamäki, 2011). For firms with a technology orientation, customer value is created through new solutions based on technological advancements rather than on customer inputs. This orientation normally involves a strong commitment to R&D activities targeting the exploration and acquisition of knowledge concerning new technologies. Firms with a technology orientation seek to acquire technological knowledge and use it in the development of new products or processes (Gao et al., 2007; Gatignon & Xuereb, 1997; Zhou, Yim, & Tse, 2005). These firms invest in the collection of technological intelligence from both internal and external environments through R&D done in-house and increasingly in collaboration with other firms and organizations. While internal R&D supports firms' absorptive capacity (Cohen & Levinthal, 1990), R&D collaboration with different partners allows firms to access an extensive and diverse set of knowledge sources and to develop competences (Du, Leten, & Vanhaverbeke, 2014; Un, Cuervo-Cazurra, & Asakawa, 2010). This technological intelligence may then be used to build new and innovative solutions for customers and to gain competitive advantage (Cassiman & Veugelers, 2006; Hamel & Prahalad, 1996).

Empirical research largely supports a positive association between technology orientation and business performance. Such studies also suggests that a technology orientation may have a more positive impact on performance with increasing levels of turbulence concerning both markets and technologies (Gao et al., 2007; Gatignon & Xuereb, 1997). Surprisingly, however, less empirical research has been done to examine the direct relationship between a technology orientation and innovation success. Yet evidence to support a positive relationship is found in studies by Peneder (2003, 2010) on new product development in industrial markets. Peneder's findings suggest that the driving force behind the commercial success of new products in such markets is the technological and production proficiency of firms. Studies on innovation also provide evidence that technological knowledge (Bierly & Chakrabarti, 1996) and access to sources of technological opportunities (Arora & Gambardella, 1994; Christensen & Bower, 1996; Klevorick, Levin, Nelson, & Winter, 1995) are critical factors for successful product innovations. More specifically, extant research highlights how knowledge and capabilities drawn from research and development, may affect both the design (Deeds & Hill, 1996; Hagedoorn & Duysters, 2002; Stuart, 2000) and the successful commercialization (Gans & Stern, 2003; Zahra & Nielsen, 2002) of innovations. We therefore propose:

Hypothesis 1b (H1b). A ‘technology orientation’ alone is positively associated with innovation performance.

Yet firms do not necessarily adopt only one orientation or one orientation as an alternative of another. Studies on strategic orientations, in fact, have identified several ways in which multiple orientations may be adopted by the same firm (Deutscher et al., 2016; Hakala, 2011). In some cases, in fact, firms follow one orientation after another in a development sequence to meet the evolving needs of the business context or to support new and changing objectives for the firm (Farrell, 2000; Mavondo, Chimhanzi, & Stewart, 2005; Zaharieva, Gorton, & Lingard, 2004). In other cases firms may adopt a second orientation as a means to amplify the effects of their principal orientation.[1] Still others view different orientations as complementary to each other and therefore adopt more than one simultaneously (Atuahene-Gima & Ko, 2001; Bhuian, Menguc, & Bell, 2005; Hakala & Kohtamäki, 2011). This last approach is based on the argument that no orientation is universally beneficial and that organizations that are too narrowly focused on only one orientation will produce less than optimal results over the long term. It is also based on a premise that each orientation represents a unique set of capabilities that are deeply embedded within organizations (Day, 1994; Hult & Ketchen, 2001). As such, they may be used to support each other in order to help firms address complex environments.

We adopt this last perspective of considering orientations as potentially complementary to study the relationship between a combined customer and technology orientation (CO/TO) on innovation performance. While scholarship suggests that firms that are able to complement a customer orientation focused on consumer needs with a technology orientation focused on new technologies and innovation are better equipped to meet customer needs through appropriate product quality and design characteristics and to react to complex and uncertain environments, little empirical work has been conducted to test these ideas.[2]

We propose that a combined customer/technology orientation will be more strongly associated with innovation performance than either orientation alone. This proposition is consistent with previous studies that show that organizations that focus on both product/innovation and market simultaneously are characterized by successful performance (Appiah-Adu & Singh, 1998; Berthon et al., 1999; Hortinha, Lages, & Filipe Lages, 2011; Knotts, Jones, & Brown, 2008). It is also consistent with extant research on the relationship between intelligence and innovation performance that provides evidence that firms that search widely, tapping into a greater breadth of knowledge sources, tend to be more successful at innovation (Cohen & Malerba, 2001; Katila, 2000; Katila & Ahuja, 2002; Laursen & Salter, 2006; Leiponen & Helfat, 2010; Love, Roper, & Vahter, 2014). In such studies, breadth includes customer sources of knowledge as well as sources related to technological knowledge from other firms, public and private laboratories and universities. Consistent with this research, we expect that firms with a combined orientation will be more successful at innovation than other types of firms. Greater scope in intelligence due to a combined customer/technology orientation means that these firms may access complementary types of knowledge that may be recombined to generate successful innovations (Kogut & Zander, 1992; Leiponen, 2005; Nelson & Winter, 1982; Roy & Sarkar, 2016). These arguments suggest the following hypothesis:

Hypothesis 1c (H1c). A combined ‘customer/technology orientation’ is more positively associated with innovation performance than either a ‘customer orientation’ alone or a ‘technology-orientation’ alone.

2.2. The moderating effect of marketing management

Prior research has studied the moderating effects of factors both external and internal to the firm on the relationship between strategic orientation and organizational performance. The external factors examined include market turbulence, competitive intensity and technological change (Kirca et al., 2005; Langerak, Hultink, & Robben, 2004). The internal factors examined include entrepreneurship (Bhuian et al., 2005) as well as top management profiles and competitive strategies (Escribá-Esteve et al., 2008). While these studies provide initial evidence that both types of factors play some role in moderating the orientation-performance relationship, a significant gap remains in researchers' understanding of how organizational capabilities might leverage the knowledge resources gained through different types of

[1] Several studies point to the role of learning orientation as a mediator for both market orientation and entrepreneurial orientation on business performance and innovation success (Liu, Luo, & Shi, 2002, 2003; Zhou et al., 2005).

[2] It may be noted that for some authors, the learning orientation may be conceptualized as encompassing both market (i.e. customer) and technology orientations. A learning orientation, in fact, is viewed as the organization's commitment to create and use knowledge in the quest for competitive advantage (Sinkula, Baker, & Noordewier, 1997). Yet because extant studies concerning a learning orientation do not distinguish between specific types of knowledge in their definitions (Hult, Hurley, & Knight, 2004; Wang, 2008), as do those concerning both customer and technology orientations, we prefer here to refer to this type of orientation as a combined customer/technology orientation rather than as a learning orientation.

strategic orientations to achieve superior performance. In this study, we address this gap by examining the moderating effect of organizational capabilities on the relationship between both customer and technology orientations and innovation performance.

We draw on resource-based theory to propose that firms require organizational capabilities to act upon the knowledge resources that they control in order to achieve superior performance in target markets (Barney, 1991; Grant, 1996; Teece, Pisano, & Shuen, 1997). The capabilities that may be associated with innovation performance in terms of the successful commercialization of new products are those related to marketing management (Danneels, 2007) and the ability of organizations to develop and execute marketing mix decisions to differentiate and facilitate the commercialization of products (Morgan, Zou, Vorhies, & Katsikeas, 2003; Vorhies & Morgan, 2005). Marketing mix decision processes involve choices made concerning the packaging, pricing, distribution and promotion of new products (Kotler, 1991). These decision processes represent the core features of dynamic marketing capabilities (Barrales-Molina, Martínez-López, & Gázquez-Abad, 2014; Davcik & Sharma, 2016) and function as market-relating mechanisms by which knowledge assets are deployed by firms to achieve commercial success (Davcik & Sharma, 2016; Morgan et al., 2009). We therefore examine the moderating effect of marketing management related to marketing mix decisions on the relationship between orientation and innovation performance.

The innovation literature suggests that heterogeneous innovation performance is due not only to differences in technological knowledge resources, but also to internal differences in the ability of firms to turn that knowledge into commercially successful products (Patel & Pavitt, 1997). Research by marketing scholars also supports this argument by showing that the success of new products depends in part on the types of resources dedicated to related marketing mix activities (Maidique & Zirger, 1984). More specifically, Langerak et al. (2004) find that proficiency in marketing mix decisions related to the launch of new products has a direct and positive impact on new product performance.

Yet marketing mix decisions may also play a positive role in the relationship between orientation and new product success. Initial support for this assertion is provided by a study on the interaction effects between market-orientation (MO) and marketing capabilities on organizational performance. The findings of this study suggest that "market-based knowledge assets such as MO require complementary organizational capabilities if their value to the firm is to be fully realized" (Morgan et al., 2009: pg. 917). These findings are consistent with resource-based theory and the dynamic capabilities literature that argues that organizational capabilities represent critical mechanisms through which firms deploy their knowledge assets to generate economic rents (Danneels, 2007; Helfat, 1997; Teece et al., 1997). We build on this scholarship to propose that marketing capabilities in the form of mix decisions concerning new products will work to increase the positive effects of orientation on innovation performance. The moderating effect of marketing mix decisions will be positive for both a customer orientation in which the marketing mix is coupled with knowledge related to the expressed needs and preferences of customers, and a technology orientation in which mix tactics are coupled with knowledge assets based on research and development. In this latter case, marketing mix choices may help adapt technical innovations to market needs and thus, may also help favor adoption and diffusion (Di Stefano et al., 2012). Along similar lines, marketing mix decisions will also have a positive effect on performance for a combined customer/technology orientation. A more extensive use of marketing mix tactics is likely to have a positive impact on the ability of firms to respond effectively to the knowledge they generate and, subsequently, to achieve commercial success. We therefore propose:

Hypothesis 2 (H2). Marketing management related to marketing mix activities will increase the positive effects of a firm's strategic orientation on innovation performance.

3. Data and methods

The data for the analysis are drawn from the 'sixth wave' of the French Community Innovation Survey (CIS) carried out in 2007, and the French organizational survey 'Changements Organisationnels et Informatisation' (COI) conducted in 2006.

Both surveys were administered and managed by the French government statistics services, hence the sampling and the administration procedures used were similar in both surveys. Both surveys sampled firms with 10 or more employees located in all French regions.[3] Response rates were about 80%.[4] Confidentiality is guaranteed by government statistics processes and directives. In addition, a unique identifier was given to each respondent firm, which allows us to merge the data from both surveys.

The French CIS investigates the process of innovation development by manufacturing firms in the three-year period preceding the survey (2004–2006). It is part of a periodical effort of the statistical agency of the European Union[5] that manages the survey across several European countries. Following the OECD guidelines for innovation surveys, firms are asked about the type of innovation introduced in the three years preceding the survey, the sources of information and collaboration used in that process, the investments in several types of innovation activities, and the mechanisms used to protect innovations. Analogous survey data from other countries has been used in previous analyses regarding knowledge search (see de Leeuw, Lokshin, & Duysters, 2014; Garriga, Von Krogh, & Spaeth, 2013; Laursen & Salter, 2006; Leiponen & Helfat, 2010).

The COI survey investigates the organizational structure and routines of both manufacturing and service firms. This survey includes questions on the practices used for innovation design, the implementation and use of several management tools as well as questions about firms' relationships with clients and suppliers. It asks respondents to answer the same questions with reference to the year of the survey (i.e. 2006) and to three years before the survey (i.e. 2003).

Using the respondent firm's unique identifier we combined the CIS dataset for the period 2004–2006 with the responses from the COI survey relative to 2003. The CIS provides the dependent variable and the indicator of marketing management related to marketing mix activities. The COI survey instead provides information on our main explanatory variables related to customer orientation, technology orientation, and combined orientation. The final sample consists of 1603 manufacturing firms that have responded to both COI and CIS surveys. Our main explanatory variables reflect data for the 2003 period while our dependent variable reflects data for the 2004 and 2006 time period. The absence of overlap between the two periods reduces the concerns for simultaneity issues (Leiponen & Helfat, 2010). While there are more recent waves of French CIS survey, the COI was implemented in 1997 and 2006 only. The possibility to examine simultaneously the organizational and the innovation activities of the firms, using a large and representative sample of manufacturing firms in France, is thus unique to the period 2004–2006.

3.1. Dependent variable

We measure innovation performance by considering the proportion of the firm's turnover in 2006 deriving from product innovations

[3] It was used a stratified sample of companies with 10 or more employees, including a *sample* of firms with < 250 employees and the *population* of firms with > 250 employees or a presence in more than three regions.

[4] Response rate of CIS survey in France is much higher than any other European Union (EU) country where the survey was carried out.

[5] EUROSTAT coordinates the results of the survey administered in several European countries (including France) and managed by these countries local government statistical agencies.

developed and commercialized during the 2004–2006 time period. In particular, the variable *innovation performance* provides information on the share of turnover that firms declared to be due to the launch of *products new-to-the-market*.[6] This variable is taken from the CIS data. Prior studies that relied on CIS data (Garriga et al., 2013; Laursen & Salter, 2006) have employed the same variable as a proxy for performance, under the rationale that such sales reflect the ability of firms to produce and launch products that have not been previously developed and commercialized by others.

3.2. Explanatory variables

The key explanatory variables in our analysis are the three orientations defined in the Theoretical framework and hypotheses section. Rather than being based on information concerning the perceptions of the managers across different items as done in marketing studies, these variables are constructed by employing information on the actual choices and behavior of firms, as is usually done in the field of innovation studies. This allows us to overcome the common method bias that is prevalent in using data on perceptions and, hence, to provide a reliability test to our hypotheses on strategic orientation.

The COI survey asked respondents to characterize their strategy for new product design and commercialization. Firms were asked whether or not they use the following two mechanisms to grasp information from knowledge sources during their processes of product and market development: 1) market studies and surveys of customer behavior, customer needs and customer satisfaction; 2) R&D collaboration with other private firms, private labs, universities and public research organizations. Firms that responded that in 2003 that they relied on market studies and customer surveys are considered to have a customer orientation; otherwise they are considered not to have a customer orientation. Firms that responded that in 2003 they relied on R&D collaboration are considered to have a technology orientation; otherwise they are considered not to have a technology orientation.

On the basis of the firms' answers we defined our explanatory variables as follows: *Customer orientation alone* (*COA*) is a dummy equal to one for those firms with a customer orientation and with no technology orientation and equal to zero otherwise. *Technology orientation alone* (*TOA*) is a dummy variable equal to one for firms with no customer orientation and with a technology orientation and equal to zero otherwise. *Combined orientation* (*Combined*) is a dummy variable equal to one for firms with both a customer orientation and technology orientation and equal to zero otherwise.

A firm's *marketing management* is instead captured by a variable that accounts for the degree to which marketing management related to marketing mix activities were employed as these firms launched their new products onto the market. The variable measures innovation in the four elements of the marketing mix: product and packaging, promotion, channels of distribution, and price. Similar indicators are used in the literature to proxy for firms' ability to generate, disseminate and respond with a view to external information (Langerak et al., 2004; Morgan et al., 2003, 2009). The variable, constructed using the CIS data, has maximum value of 4 and a minimum of zero depending on the number of elements of the marketing mix that the firms declared to use during the 2004–2006 period. The moderating effect of marketing management related to marketing mix activities is assessed by creating linear interactions between this variable and each of the dichotomous variables that identifies a firm's orientation as defined above.

Table 1 reports the frequencies of the dependent variable and of the two predictors for each category for the firms in our sample. In terms of innovativeness, as measured by the share of innovators in each category, the majority of *Combined* and *TOA* firms in our sample are innovators, compared to < 40% of *COA* firms and 24% of firms with no identifiable orientation. The data show that firms with *Combined orientation* achieve, on average, the highest share of revenues from new-to-the market products (11%), followed by *TOA* (7%), and *COA* (6%). Firms with no identifiable orientation perform worst on average with a share of 4%. Finally, in terms of *marketing management*, our data show that firms with *Combined orientation* are, on average, the most responsive, followed by *COA* and *TOA*.

3.3. Control variables

Our control variables capture a set of firm characteristics that have been shown to affect innovation performance. Many of these control variables have been used in prior studies based on CIS data (Leiponen & Helfat, 2010; Garriga et al., 2013; Laursen & Salter, 2006).

3.3.1. Logarithm of the number of employees (size)

This variable is a proxy of firm's size. Large firms may have greater access to financial as well as human resources and, therefore, may have a higher capability to achieve returns from product innovation. Consistent with prior studies (Garriga et al., 2013; Laursen & Salter, 2006; Leiponen & Helfat, 2010) we use the logarithmic transformation of the raw data available from the 2006 CIS survey. As in the study by Love et al. (2014), we also include the square of this variable to account for the presence of non-linearity.

3.3.2. Logarithm of R&D intensity (R&D intensity)

This variable is calculated as the ratio of a firm's R&D expenditures (intramural R&D activities, extramural R&D activities, and acquisition of other external knowledge) over total firm sales (Capasso, Treibich, & Verspagen, 2015; Rothaermel & Alexandre, 2009). In addition, it is log transformed to reduce the skewness and kurtosis of its distribution. As greater investment in R&D is inductive to product innovation, we expect higher R&D intensity to increase revenues from product innovation.

3.3.3. Industry of operation

We control for industry specific effects by including an industry dummy for each NACE 2-digit industry in which the firms are active. The category *Other manufacturing activities* is taken as the reference category. This allows us to control for the presence of cross industry differences in terms of speed, and pattern of market and technology evolution (Abernathy & Utterback, 1978; Granstrand, Patel, & Pavitt, 1997; McGahan & Silverman, 2001).

3.4. Estimation

As the variable *innovation performance* represents a share of turnover rather than an absolute number, it may range between 0 and 1. Also, the value of innovation performance can be observed only when firms have launched with success an innovation, while the values of the explanatory variables are observed independently of the successful outcome. In these circumstances, OLS estimation methods would produce inconsistent estimates. Thus we follow the prior literature (Garriga et al., 2013; Laursen & Salter, 2006; Leiponen & Helfat, 2010; Meyer & Subramaniam, 2014) and use Tobit maximum likelihood regression models (a non-parametric alternative to OLS) with robust standard errors to analyze the data. In these estimates, our dependent variables are treated as a censored continuous variable bounded by zero from below and 1 from above. Further estimates with different methods are also

[6] In the survey respondents are asked whether they developed a product innovation in the period 2004–2006 and to characterize those new products as *new-to-the-market* (i.e. the new products were introduced before their competitors) or *new-to-the-firm* (i.e. the products were similar to ones already available in the market when the firm launched them). We focus only on products new-to-the-market. For this type of products firms were then asked to estimate the share of turnover that is due to these products. This share is our dependent variable.

Table 1
Innovation performance and marketing management related to marketing mix activities by firm orientation.

Firm orientations	Customer orientation alone (COA)	Technology orientation alone (TOA)	Combined orientation	No identifiable orientation	All sample
Total number of firms	359	192	505	547	1603
No. innovators (%)	138 (39%)	102 (53%)	293 (58%)	395 (24)%	667 (42%)
Innovation performance					
Mean	0.06	0.07	0.11	0.04	0.07
Std. Dev.	0.15	0.14	0.20	0.13	0.16
Marketing management					
Mean	0.88	0.68	0.98	0.51	0.76
Std. Dev.	1.16	1.05	1.15	0.92	1.08

performed to analyze the robustness of our results to the choice of this estimation method.[7]

4. Results

Table 2 reports the descriptive statistics and zero-order pairwise correlations among all variables used in the analysis.

On average, *innovation performance*, measured as the share of turnover due to *products new-to-the-market* accounted, for slightly < 7% of sales revenues for the innovators in our sample. Firms with a *Combined* orientation account for the largest share of the firms in our sample (31.6%) followed by *COA* firms (22.3%) and *TOA* firms (12.0%). The average firm in our sample employs less than one (0.76%) marketing mix element in their marketing management. Coefficients in the correlation matrix do not seem to suggest that collinearity is a problem in our data.[8] Indeed, with the exception of the high, but expected, correlation coefficient between firm size and size squared, all the other correlation coefficients are below 0.364. Despite the high correlation between size and size squared we include the latter variable in the estimation to capture the presence of non-linearity in the relationship with firm performance (Love et al., 2014).[9]

Table 3 provides results of the Tobit regression. Model 1 includes only the control variables. Model 2 adds the simple effect of the orientations as well as of marketing management. Model 3 adds the linear interaction between the orientations and marketing management related to marketing mix activities.

Results in Models 2 and 3 show that the coefficients for *COA* and *TOA* are positive and significantly different from zero. These results support H1a and H1b that argue that COA and TOA are positively associated with innovative performance. In addition to this, in both models the coefficient for *Combined orientation* is higher in magnitude and statistically different from the coefficients for both *COA* and *TOA*. This result supports H1c that stated that a combined 'customer and technology orientation' is more positively associated with innovative performance than either a customer orientation alone or a technology orientation alone.

Results in Model 3 also allow us to assess the role of marketing management related to marketing mix activities in moderating the effect of the orientations on the returns from product innovation. Our results suggest that, while the simple effect of marketing management on innovative performance is positive across the firms in our sample, this relationship varies across the different orientations of firms. To understand these variations we must consider that in Model 3 the omitted group consists of firms with neither customer nor technology orientation. Therefore the coefficient of the marketing management variable (0.110) must be taken as the coefficient for this group. To compute the coefficient for firms with customer- orientation alone we must add to this number the estimated coefficient for COA (0.110 + (−0.070)), which yields 0.040. Likewise, we can compute the coefficient for firms with technology orientation alone and with combined orientation (0.061 and 0.029, respectively). However, in a Tobit regression, the coefficient may not represent correctly the effect of the interaction variables. Hence, we calculate the interaction effect between firms' orientations and marketing management, at the mean of all of the control variables. In Fig. 1 we plot the effects on *Innovation performance* for different number of elements of the marketing mix that relate to marketing management.

Fig. 1 shows that the slope of the curves is positive. This indicates that each firm's orientation benefits from marketing management related to marketing mix activities, even when only one or two marketing elements are employed. The effects increase with the number of elements in the marketing mix used, suggesting that it is the combination of elements that define the marketing management, rather than the effect of any one of its elements in isolation, that makes the difference.[10] In addition to this result, the figure also shows that the slopes of the three curves are different: the slopes are steeper for both *COA* and *TOA* than for *Combined orientation*. The innovation performance of firms with a *Combined* orientation is higher for low levels of the marketing management (1 and 2 elements of the marketing mix). For higher levels of marketing management instead (3 and 4 elements of the marketing mix) the performance is higher for TOA firms. COA firms are the ones that for all levels of marketing management related to marketing mix activities achieve a lower innovation performance, but the difference with firms with *Combined* orientation decreases for high levels of marketing management (3 and 4 elements of the marketing mix), while the difference with TOA firm increases. All in all, this evidence supports H2 that stated that marketing management related to marketing mix activities will increase the positive effects of a firm's strategic orientation on innovation performance.

4.1. Robustness check

To check the robustness of our results, we conduct a series of additional analyses. The results are reported in Table 4.

[7] As Tobit estimations are highly sensitive to heteroskedasticity we have also estimated a multiplicative heteroskedastic Tobit that allows the variance to be a multiplicative function of the explanatory variables (Harvey, 1976), and computed a likelihood-ratio test, to compare a full model with heteroskedasticity against the full model without. The likelihood-ratio test does suggest that our model using robust standard error procedure is homoskedastic. These additional analyses are available upon request from the authors.

[8] This observation is confirmed by the Variance Inflation Factor (VIF) of 1.80 when square size is excluded, which is within the acceptable threshold (Belsley, Kuh, & Welsch, 1980).

[9] Results do not change in terms of sign and significance level of the estimated coefficients when size squared is excluded. Also these additional analyses are available upon request from the authors.

[10] To check for the effect of each element in isolation we interacted the orientation of each firm category with each single element of the marketing mix that defines the marketing management. None of the coefficient estimates turned out to be highly significant.

Table 2
Summary statistics and correlation table.

	Min	Max	Mean	S. Dev.	1	2	3	4	5	6	7
1) Innovation performance	0.00	1.00	0.069	0.162	1						
2) Customer orientation alone (COA)	0.00	1.00	0.223	0.416	−0.036	1					
3) Combined orientation (combined)	0.00	1.00	0.316	0.465	0.152**	−0.364**	1				
4) Technology orientation alone (TOA)	0.00	1.00	0.120	0.325	0.011	−0.198**	−0.251**	1			
5) Marketing management	0.00	4.00	0.760	1.083	0.153**	0.059*	0.138**	−0.029	1		
6) Size	1.79	11.48	5.712	1.241	0.153**	−0.018	0.318**	0.040	0.198**	1	
7) Size squared	3.21	131.81	34.164	14.319	0.159**	−0.031	0.319**	0.038	0.197**	0.988**	1
8) R&D intensity	0.00	0.08	0.003	0.007	0.112**	−0.043	−0.033	0.045	0.035	−0.327**	−0.30**

** $p < 0.05$.

Table 3
Estimation of the innovation performance.

	Model 1	Model 2	Model 3
Customer orientation alone (COA)		0.047+	0.104**
		[0.026]	[0.034]
Combined orientation (combined)		0.117***	0.185***
		[0.025]	[0.032]
Technology orientation alone (TOA)		0.089**	0.125***
		[0.028]	[0.032]
Marketing management		0.054***	0.110***
		[0.008]	[0.016]
COA × Marketing management			−0.070***
			[0.021]
Combined × Marketing management			−0.081***
			[0.019]
TOA × Marketing management			−0.049+
			[0.027]
Size	0.247***	0.213***	0.204***
	[0.049]	[0.047]	[0.047]
Size squared	−0.012**	−0.011**	−0.010**
	[0.004]	[0.004]	[0.004]
RD intensity	13.378***	11.850***	11.793***
	[1.766]	[1.710]	[1.719]
Constant	−1.206***	−1.147***	−1.163***
	[0.165]	[0.159]	[0.160]
Industry fixed effects	Yes	Yes	Yes
Sigma	0.290***	0.283***	0.281***
	[0.018]	[0.018]	[0.018]
Observations	1603	1603	1603
Degrees of freedom	13	17	20
F statistic	13.76	13.36	11.84
log likelihood	−599.7	−559.5	−550.6
Pseudo R squared	0.185	0.239	0.252

Note: Heteroskedasticity robust standard errors in brackets.
*** $p < 0.001$.
** $p < 0.01$.
* $p < 0.05$.
+ $p < 0.1$.

First, we check the robustness of our results to the choice of the estimation technique, using two alternative methods. In particular, we re-estimate our final specification (Model 3) using a Fractional Probit model. Fractional Probit models are an extension of the General Linear Model (GLM) binomial family with a Probit link. This method is appropriate when the dependent variable is expressed as a proportion, as in our case (Hardin, Hilbe, & Hilbe, 2007; Papke & Wooldridge, 1996). The Fractional Probit estimation produces coefficients for the simple effect of *COA*, *TOA* and *Combined orientation* that are similar, albeit higher in magnitude, to those obtained from the Tobit regression. The main difference with the results in Model 3 is that the coefficient of the interaction between marketing management and TOA is no longer significant. This means that the 'computed coefficient' of the interaction between marketing programs and TOA is slightly higher than the one estimated in Model 3 as the effect of TOA is now only captured by the coefficient of the marketing management variable.[11]

Second, we check the robustness of our results to the inclusion of additional explanatory variables. In particular, in Model 5 we include an indicator of variety of knowledge search methods (*Variety in search*). This indicator is the normalized sum of the knowledge sources (suppliers, customers, competitors, private labs, universities and public research organizations) reported by the firm as being of medium or high importance for innovation. This is identical to the measure used by Laursen and Salter (2006) and Leiponen and Helfat (2010). The results of this estimation mirror the findings reported in Table 2.

Third, we explore whether our results are sensitive to the choice of the indicator of innovation performance. In particular, we re-estimate the Tobit model by examining the share of turnover from the launch of products *new-to-the-firm*. Our results (see Model 6) suggest that a *combined* orientation is associated with greater average returns from incremental innovations. The coefficients for COA and TOA firms, by contrast, are not different from zero. In addition, marketing management related to marketing mix activities alone has a positive effect on innovation performance. However it does not moderate the effect of customer orientation and technology orientation on innovation performance. We interpret these results as a further qualification of our hypotheses. They indicate that the benefits derived from strategic orientation and from marketing management are weak when new product development processes involve the imitation of competitors' products and/or incremental innovation (Laursen & Salter, 2006; Leiponen & Helfat, 2010; Wadhwa, Bodas Freitas, & Sarkar, 2017).

We further check whether the effect of strategic orientation and marketing management differs across industries as the moderating effect of the elements of the marketing mix may be different for firms active in low-tech versus high-tech industries. To do this, we split the firms in our sample into *Low and medium-low* technology industries and *Medium-high and high* technology industries as done in Peneder (2003, 2010).[12] Our results (see

[11] As our dependent variable is concentrated with 85% of the observations showing a share of turnover equal or < 10% we followed Cameron and Trivedi (2010) and Stewart (2013) and implemented the two-part model proposed by Cragg (1971), which is suited to deal with situations in which the censored variable has a high incidence of similar values (zeros for instance). In the two-part model, first we have estimated the probability that firms bring successfully a new product innovation to market, and second we have estimated the share of turnover that is due to sales of those new products. These estimations produce results that are qualitatively similar to those of the Tobit reported in the paper. Finally, we have also estimated separate Tobit and OLS models in which the dependent variable is limited to shares of turnover higher than 0. Again results are qualitatively similar although, as somehow expected, the estimated coefficients are smaller than those in the Tobit model. These additional analyses are available upon request from the authors.

[12] Low and medium-low technology intensive industries include: food, textiles, wood products, pulp, paper, printing and publishing, coke, rubber and plastics, non-metallic minerals, metals, and other manufacturing products. Medium-high and high technology-intensive industries include: electronic and optical equipment, chemicals, pharmaceuticals, machinery, and motor vehicles and other transport equipment.

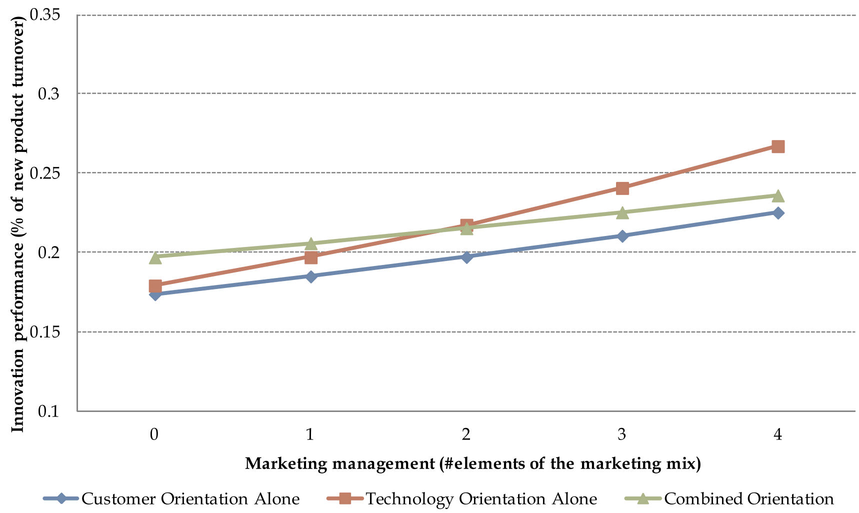

Fig. 1. The moderating effect of marketing management related to marketing mix activities on the innovation performance (share of turnover due to new-to-market products).

Table 4
Robustness check.

	Model 4	Model 5	Model 6	Model 7	Model 8
	Fractional Probit	Including Variety in search	Share of turnover due to products new-to-firm	Low and medium low industries	High and medium high industries
Customer orientation alone (COA)	0.319*	0.079*	0.049	0.123*	0.071+
	[0.130]	[0.034]	[0.032]	[0.052]	[0.036]
Combined orientation (combined)	0.526***	0.148***	0.100**	0.200***	0.157***
	[0.111]	[0.031]	[0.032]	[0.047]	[0.041]
Technology orientation alone (TOA)	0.215+	0.073*	0.055	0.096+	0.125**
	[0.122]	[0.033]	[0.034]	[0.053]	[0.038]
Marketing management	0.282***	0.081***	0.063***	0.123***	0.100***
	[0.050]	[0.016]	[0.019]	[0.021]	[0.027]
COA × Marketing management	−0.233***	−0.058**	−0.009	−0.074*	−0.069*
	[0.070]	[0.021]	[0.023]	[0.029]	[0.030]
Combined × Marketing management	−0.239***	−0.073***	−0.033	−0.073**	−0.089**
	[0.062]	[0.019]	[0.023]	[0.026]	[0.030]
TOA × Marketing management	−0.080	−0.031	−0.031	−0.017	−0.094**
	[0.081]	[0.027]	[0.025]	[0.037]	[0.034]
Size	0.352*	0.155**	0.245***	0.243**	0.210***
	[0.149]	[0.048]	[0.053]	[0.079]	[0.063]
Size squared	−0.016	−0.009*	−0.015***	−0.014*	−0.010*
	[0.011]	[0.004]	[0.004]	[0.006]	[0.005]
RD intensity	25.008***	9.192***	10.039***	12.488***	12.217***
	[4.266]	[1.839]	[1.700]	[2.179]	[3.606]
Variety in search		0.371***			
		[0.038]			
Constant	−3.708***	−1.022***	−1.146***	−1.309***	−1.043***
	[0.497]	[0.159]	[0.173]	[0.255]	[0.224]
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Sigma		0.275***	0.284***	0.320***	0.231***
		[0.018]	[0.018]	[0.027]	[0.020]
Observations	1603	1603	1603	992	604
Degrees of freedom	20	21	20	18	13
F statistic		14.27	8.865	6.985	7.111
Wald chi^2	192.14***				
log likelihood	−370.2	−494.2	−594.7	−378.0	−150.9
Pseudo R squared	0.084	0.328	0.165	0.217	0.321

Note: Robust standard errors in brackets.
*** $p < 0.001$.
** $p < 0.01$.
* $p < 0.05$.
+ $p < 0.1$.

Models 7 and 8 in Table 4) confirm the main findings reported in Table 3. In *Medium-high and high* technology industries the results of these models mirror those presented in Model 3. In *Low and medium-low* technology industries, by contrast, the coefficient of the interaction between marketing management and TOA is no longer significant. Again, here the 'computed coefficient' of the interaction between marketing management and TOA is slightly higher than the one estimated in Model 3.

5. Conclusions and discussion

This research aims at exploring the relationship between a firm's strategic orientation, marketing management in terms of marketing mix tactics, and innovation performance. First, our findings indicate that the use of marketing management tools specifically related to the marketing mix has a positive effect on the relationship between customer, technology and combined customer/technology orientations and innovation performance. Second, the results show that the moderating effect of marketing management in boosting innovation success is greatest for organizations with a technology orientation. Third, our findings suggest that the moderating effect of marketing management on the relationship between orientation and performance increases as more elements of the marketing mix are deployed simultaneously. Finally, while our findings show that both customer and technology orientation are positively associated with innovation performance, they also show that organizations that follow a combined customer/technology orientation tend to outperform organizations that follow either one or the other of these orientations alone.

While the relationship between customer, technology and combined customer/technology orientation on innovation performance is always positive, it is enhanced with the use of marketing management tools in the form of marketing mix elements (product, price, distribution, promotion). This finding is consistent with the literature on resource-based theory and dynamic capabilities which argues that organizational capabilities may affect inter-firm differences in performance (Barney, 1991; Teece et al., 1997). In this case, market-relating capabilities enhance the ability of firms to align knowledge resources with the market environment to achieve greater success in the commercialization of new products. Yet our findings also add a new perspective to studies on the role of marketing capabilities in the relationship between strategic orientation and performance. Morgan et al. (2009) examine the interaction effects between market orientation and firm performance. These authors argue that market-based knowledge assets such as market orientation and marketing capabilities complement one another and that their interaction possesses the characteristics of asset interconnectedness that acts as a source of competitive advantage. Langerak et al. (2004) present an alternative perspective. These authors examine the relationship between strategic orientation, marketing capabilities and performance as a sequential process. For these authors, marketing orientation is an antecedent of the effectiveness of marketing management that, in turn, has a significant and positive relationship with new product performance. By contrast to these two studies, we view marketing management as having a moderating effect on the relationship between orientation and performance. Our work suggests, in fact, that organizational capabilities linked to the marketing function assist firms in realizing the full potential of knowledge resources that they may acquire through intelligence.

Two important findings of our study provide further insight into the role of marketing management in the relationship between orientation and performance. First, we show that the moderating effects of marketing management on the relationship between orientation and innovation performance is greatest for a technology orientation alone. In this way, our study extends prior research that focuses on the complementarity between market-based knowledge assets and market relating mechanisms (i.e. marketing capabilities) (Langerak et al., 2004; Morgan, 2012; Morgan et al., 2009) to show that organizations oriented to customer needs are not the only ones to benefit from marketing capabilities. Our results suggest, in fact, that marketing management seems to represent a more critical complementary asset for firms with a technology orientation by assisting them in the alignment of technology based intelligence to the market environment. Kotler (1991) defines the marketing mix as the set of controllable variables that firms can use to influence a buyer's response. While information about how buyers may respond to innovations may be automatically part of new product development processes in customer oriented organizations, they may not be well integrated into such processes in technology oriented firms. Marketing management may therefore provide support to understand how to achieve a more positive response from buyers. It may also be that technology oriented firms produce more technical innovations than firms oriented to expressed customer needs and customer feedback on existing products. As a result, marketing mix tactics may be more important for these firms to help buyers understand and appreciate offers that may be technically different from existing solutions and norms. Further research is therefore needed to analyze how the superior effect of marketing management for technology-oriented firms might be related to different types of innovation.

Second, we show that the greater the number of elements of the marketing mix used by organizations, the greater the moderating effect of marketing management on the relationship between orientation and performance. This suggests that it is the combination of elements of the marketing mix, rather than any one element in isolation, that is best able to boost the effects of orientation on innovation performance. This finding is consistent with much of the scholarship in the marketing literature that emphasizes the need for an integrated approach to the elements of the marketing mix. From very early scholarship on the marketing mix, in fact, it was suggested that the "necessity of integration in marketing thinking is ever present" (Borden, 1964: pg. 12). According to this view, while each mix element is different, it is not the use of one or the other that may achieve the best results. Rather, the more the elements of the mix that are used together, the better the results should be. Our study supports this perspective by showing that with each use of an additional mix element, the positive relationship between orientation and returns from innovation increase. For each type of orientation, the best results are achieved when all four elements of the mix are used simultaneously. Overall, our study highlights the importance of the marketing department and the marketing function in the commercialization of innovations (Cacciolatti & Lee, 2016; Davcik & Sharma, 2016). Marketing capabilities in the form of management of the marketing mix represent levers to help firms align their knowledge assets with their market environments (Day, 1994; Morgan et al., 2009). Used together, these levers seem to be stronger than when used separately and may help organizations when needed to compensate for a lack of customer based knowledge resources.

Finally, this study contributes to the debate in innovation studies, which has long juxtaposed two perspectives on the source of successful innovations. Scholars embracing a demand-pull approach emphasize the role of consumer and user needs and customer feedback as critical inputs in the decision making processes for new product development. By contrast, scholars adopting the technology-push perspective focus on the role of science and technology and R&D in developing innovations (Dosi, 1982). This study addresses this debate by examining the relationship between two orientations (customer and technology) and innovation performance. Our findings fall in the middle of this debate by indicating that innovation performance may benefit from both types of orientations.

Yet our findings also indicate that organizations that combine a customer orientation with a technology orientation are more likely to outperform organizations that follow either one of these orientations alone. These findings are consistent with the innovation literature that suggests that firms that adopt broader horizons with respect to innovation objectives and knowledge search are more likely to achieve commercial success (Katila & Ahuja, 2002; Laursen & Salter, 2006; Leiponen & Helfat, 2010). Greater breadth in new knowledge search improves the ability of firms to use existing knowledge, create new knowledge, and experiment with combinations of knowledge, all of which lead to improved innovation performance (Leiponen, 2005; Winter, 2005). These findings are also consistent with prior research that suggests that configurations in which multiple orientations are combined together are positively associated with firm growth (Deutscher et al., 2016). Orientations may provide mutual support for each other. In our case, knowledge about customer needs and opinions combined with knowledge about technologies results in a higher likelihood of new product success. The integration of different orientations within an organization may also constitute a unique set of resources that are hard to imitate, thereby providing these organizations with a competitive advantage with respect to rivals (Hult et al., 2004; Liu et al., 2003). Like other studies, therefore, our research supports the suggestion that analyses of strategic orientations need to look further than the impact of single orientations on performance to include explorations into role of different orientations together, either as configurations of multiple orientations (Deutscher et al., 2016) or as moderators/mediators in the relationship between orientation and firm performance (Hakala, 2011).

6. Limitations and future research

This study is subject to a number of limitations that may be addressed in future research. First, our study uses a measure of innovation performance based on revenues from innovative products without distinguishing between different types of products and different degrees of innovation. Extant research on strategic orientations and firm performance, however, indicates that such distinctions may influence the results of analyses (Gatignon & Xuereb, 1997; Zhou et al., 2005). More work is therefore needed to test how our findings might be affected by the use of different measures of success. As stated earlier, this may be particularly important for understanding why marketing management seems to play a more critical role in the relationship between technology orientation and innovation performance than between customer orientation and performance. Second, consistent with previous research, our study indicates that organizations that combine more than one orientation outperform organizations that follow only a single orientation. This suggests that more is always better. We suggest, however, that further research is needed to explore the trade-offs between these choices in light of the resources and costs needed by firms to adopt multiple orientations simultaneously. In terms of the data, our study is based on survey data, which limits the possibility to analyze in-depth both the search orientations and marketing management decisions. Future studies relying on qualitative research methods may provide additional insights on the different search orientations of the firms, as well as on the types and amounts of resources deployed by marketing teams in the launch of new products.

Our results also represent a snapshot for a single time period and do not address issues related to situations in which the returns from product innovation are persistently higher for firms that persist in following a specific search orientation or to the longer-term effects of marketing programs. Future research may provide insights on whether persistence in orientation plays a critical role in the ability of firms to gain increasing returns from product innovation. Finally, while responses to the survey were obtained from firms in a wide range of manufacturing industries, the study is based on data from a single country, France. Future research may extend the analysis to other countries.

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