How market entry order mediates the influence of firm resources on new product performance*

Javier Rodríguez-Pinto, Ana Isabel Rodríguez-Escudero Jesús Gutiérrez-Cillán

Departamento de Organización de Empresas y Comercialización e Investigación de Mercados, Universidad de Valladolid, Avda. Valle Esgueva 6, E47011 Valladolid, Spain.

Abstract

Building from the resource-based view of the firm and the first-mover advantage literature, this paper suggests that the entry order in a new product-market affects how the firm's resources and capabilities influence the product's performance. This proposal is tested on a sample of 136 product launches by Spanish manufacturing firms. The empirical analysis reveals that firms with superior managerial and R&D resources achieve superior new product performance when an early-entry strategy is adopted, Manufacturing resources also contribute positively to the success of new products, but this effect is weakened by the difficulties and inconveniences that firms with advantages in operations face when they attempt to pioneer a new market. The results regarding the influence of marketing resources on new product performance are not conclusive.

Keywords: Market entry order; firm resources; new product performance; mediation.

---

* The authors wish to acknowledge the financial support provided by the Spanish Ministry of Science and Innovation (research project: ECO2010-21546/ECON), Castilla y León's Council of Education (research project: VA089A05), and Murcia's Regional Agency of Science and Technology (research project: 08663/PHCS/08).

Corresponding author: javierrp@uva.es (J. Rodríguez-Pinto).

This is the accepted version of the manuscript:

Rodríguez-Pinto, J., Rodríguez-Escudero, A.I., Gutiérrez-Cillán, J. (2012). "How market entry order mediates the influence of firm resources on new product performance". Journal of Engineering and Technology Management, Volume 29, Issue 2, pages 241-264. https://doi.org/10.1016/j.jengtecman.2012.03.001

Introduction

Product innovation is an important activity in corporate entrepreneurship (Srivastava and Lee, 2005) and technology management (Badawy, 2009). The successful introduction of new products into the market is a critical factor for the survival and growth of companies (Di Benedetto et al., 2008; Wind and Mahajan, 1997). However, the increasingly dynamic and turbulent environment in which firms compete makes the commercialization of a new product not only a necessary, but also a risky venture. It is thus evident the interest of both scholars and practitioners in the research on market entry strategy and its impact on the success or failure of product innovations (Hauser et al., 2006).

This paper focuses on a specific strategic decision in the program for launching product innovations: entry timing. The importance of this decision is reflected in the large number of papers that attempt to determine how order-of-entry is related to performance. The majority of studies on this topic report that first movers gain advantages in market share (Kalyanaram et al., 1995), which seems to be confirmed in the meta-analyses performed by Szymanski et al. (1995) and Vanderwerf and Mahon (1997). However, several theoretical and empirical contributions suggest follower advantages should not be disregarded (Boulding and Christen, 2003; Golder and Tellis, 1993; Lilien and Yoon, 1990; Shankar et al., 1998; Schnaars, 1994). Consequently, the debate on early-entry advantages and disadvantages is still open, and further research is necessary to evaluate the contingent nature of the decision on market entry order (Lieberman and Montgomery, 1988, 1998; Kerin et al., 1992; Szymanski et al., 1995; Sinha and Noble, 2005).

According to Lieberman and Montgomery (1998), the resource-based view of the firm (Barney, 1991; Grant, 1991; Peteraff, 1993; Wernerfelt, 1984) appears to be a promising route for advancing research on the advantages of being a first mover. Order-of-entry should be regarded as an endogenous variable (Moore et al., 1991), that is, a decision which is dependent, at least to some extent, on factors such as the firm's distinctive competences. Therefore, whether being a pioneer is convenient or not cannot be judged independently of the firm's resources and capabilities upon which the decision on when to launch a new product is based (Lieberman and Montgomery, 1998; Robinson et al., 1992;

Schoenecker and Cooper, 1998; Sinha and Noble, 2005). In the study reported herein, we argue that market entry order, in conjunction with the firm's resources, determines product performance.

To date, research on the relationship between resources and market entry order and the influence of these variables on performance has been anecdotal. Lieberman and Montgomery (1988) contend that the ability of a firm to capitalize on first-mover advantages determines whether it should pioneer a new market or not. Thus, the optimum entry timing depends heavily on the importance and nature of a firm's relative strengths and weaknesses. Specialized assets are the major determinants of whether and when industry incumbents should enter an emerging subfield of the industry (Mitchell, 1989). A key study in the literature is that of Robinson et al. (1992), who demonstrate that neither pioneering nor entering later is intrinsically better. Rather, pioneers and late entrants differ in their assets and skills, a factor that helps to explain their behavior regarding the order-of-entry. Schoenecker and Cooper (1998) also suggest that resources and capabilities influence timing, although this effect varies across industries. These authors found that the possession of certain resources leads to early entry in markets in which first-mover advantages are significant. However, they did not find support for Robinson et al.'s (1992) hypothesis that later entrants have different strengths than earlier entrants. In any case, further empirical research is necessary to achieve a deeper understanding of how resources and capabilities, market entry order, and performance are related.

Thus, we aim to explore the contingent nature of the market entry order decision by considering how its fit with the resources and capabilities of a firm affects the performance of a new product. Drazin and Van de Ven (1985) and Venkatraman (1989) note two fundamental strands of contingency theory: "fit-as-moderation" and "fit-as-mediation". Traditionally, the concept of "fit" has been operationalized as moderation, according to which the impact that an independent variable has on a criterion variable is dependent on the level of a third variable, called the moderator. However, an expanded perspective on the concept of fit suggests that it can also be operationalized as mediation, which represents the generative mechanism through which the focal independent variable is able to influence the dependent variable of interest (Baron and Kenny, 1986). Specifically, mediation breaks down the effects that antecedents and mediators have on the outcomes into direct and indirect effects. In doing so,

mediation addresses itself to *how* or *why* such effects occur, as opposed to moderation, which addresses itself to *when* a particular event will take place (Baron and Kenny, 1986).

Hunt and Morgan (1995) posit that the possession of certain resources, although necessary, is not sufficient for obtaining a sustainable competitive advantage. As stated by Morgan (2000, p. 496), "value arises from the firm's resources and how those resources are managed". This perspective, in line with the mediation view, suggests that the resources are not inherently valuable and that they have to be deployed or mobilized adequately if the firm wants them to generate the expected results and strengthen its efficiency and competitive advantage (Barney, 1991; Finney et al., 2008; Lee, 2008). In this paper, where the launch of a new product onto the market is the relevant unit of analysis, the decision about the order of market entry is a mediator that helps (or hinders) to transform the firm's resources and capabilities (i.e. the antecedent variables) into superior performance (the outcome).

Given the above considerations, we formulated our main objective in the study reported herein as the empirical verification of the importance of market entry order as a mediating variable in the relationship between firm resources and the performance of a new product. In doing so, we bring together two important bodies of literature, one on the resource-based view and the other on the success factors in new product launch, which, despite their obvious affinity, have rarely been linked directly. In contrast with previous empirical research on the impact of resources on performance, which focused on corporate performance, the unit of analysis in our research is a specific new product launched by the firm. Thus, we respond to the claim expressed by practitioners who, according to Griffin and Page (1993), are particularly interested in measures associated with the success and failure of individual projects. In addition, and following Lieberman and Montgomery's (1998) recommendation, this paper seeks to contribute to the literature on first-mover advantages and disadvantages by explicitly examining how the firm's resources influence the entry timing strategy. Furthermore, we disaggregate resources and make a detailed assessment of the effect on order-of-entry and new product success of four specific categories of resources (managerial, R&D, manufacturing, and marketing) which are *a priori* important in the development and commercialization of product innovations. Besides, given that the direct impact on performance of these resources is taken into

account, we provide a more robust evaluation of the performance advantages of an early-entry strategy. Finally, we aim to increase the generalizability of our findings on the resources-strategy-performance relationship by providing evidence that is based on a representative sample of new product launches across multiple manufacturing industries.

Theoretical framework and hypotheses

The study draws upon the resource-based view of the firm (Barney, 1991; Grant, 1991; Peteraff, 1993; Wernerfelt, 1984) and on the literature on first-mover advantages and disadvantages (Kerin et al., 1992; Lieberman and Montgomery, 1998). In our conceptual model, depicted in Figure 1, we propose that fit (operationalized as mediation) of the strategy that is implemented for entering a new product-market with the corresponding resources and capabilities of a firm determines its performance. The present research focuses exclusively on one specific strategic decision, i.e. market entry order, which is regarded as an endogenous variable dependent on four types of resources. Following a functional approach, we distinguish between managerial, R&D, manufacturing, and marketing resources (Robinson et al., 1992; Schewe, 1994; Wang et al., 2008). This breakdown is particularly relevant in view of the fact that the different types of resources and competences may produce different effects on a firm's predisposition to pioneer a new market or to be a follower (Di Benedetto et al., 2008) and on performance (Wang et al., 2004).

Figure 1 here.

In what follows, we detail the three groups of hypotheses that we propose to accomplish the main objective of the article: to test the existence of a mediating effect of market entry order in the relationship between firm resources and new product performance. First, we study whether the different kinds of resources and capabilities are positively associated with product performance (hypotheses H1a, H1b, H1c and H1d). In the second set of hypotheses, we postulate that the firm's resource profile affects market entry order (H2a, H2b, H2c and H2d). Finally, we suggest a positive relationship between an early-entry strategy and new product performance (H3). The combination of

H2 and H3 gives rise to the idea that the decision about when to launch a new product intervenes in the resources-performance relationship.

The effect of firm resources on new product performance

In essence, the resource-based view of the firm is a theory of competitive advantage which explains how resources drive differences in performance (Finney et al., 2008). In the context of product innovation, it can be argued that managerial resources contribute to improving the firm's competitiveness in a new product-market. Top management support for innovation projects is correlated positively with key indicators of performance, such as market share and relative profits (Cooper and Kleinschmidt, 1987). Wind and Mahajan (1997) state that firms that enjoy consistent success in the development of innovative new products and services usually demonstrate a total commitment to innovation and foster an innovative culture that impregnates the entire organization (they cite 3M and its management as a good example). Previous experience in related industries and product-markets is another important resource that positively affects the results achieved in a new industry or with a new product introduction (Klepper and Simons, 2000; Nerkar and Roberts, 2004). As Talke (2007) shows, a firm's personality (i.e. its corporate mindset) also influences new product performance. In general, the existence of a business culture that promotes innovation and of an entrepreneurial spirit in management, combined with broad experience, help the company to be alert to new market and technological trends, and to correctly interpret these trends, which is very important for the selection of new product projects and for their effective execution (Kor and Mahoney, 2005). Consequently, we postulate

H1a: Managerial resources positively influence new product performance.

The importance of investing in R&D as a driver of competitive advantage and success in new product introduction is recognized in the literature (Calantone and Cooper, 1981; Cooper, 1979; Nerkar and Roberts, 2004). Cooper and Kleinschmidt (1987) find that the proficiency of a firm in new product development activities and the existence of technological synergies among the projects are positively related to the performance of the products that are commercialized. Similarly, Di Benedetto (1999)

observes that the most successful launches are related to greater resources and skills in the R&D area, whatever may be the results indicator that is analyzed. In general, user satisfaction and, hence, sales, market share, and profitability figures, should be related positively to R&D resources insofar as these facilitate the introduction of competitive new products and the continuous improvement of the products marketed to allow a better adaptation to market tastes. Accordingly, we propose

H1b: R&D resources positively influence new product performance.

Manufacturing resources and capabilities should positively affect consumer's satisfaction with the company's product. Customers expect to find a product that works correctly, without defects, something that depends on the quality of the firm's facilities, equipment, and production processes. If customer satisfaction is a consequence of the ability of the company to offer a product that responds to their needs (however demanding they may be), the operations and manufacturing resources will emerge as a key determinant of the product's commercial and financial success. Modern installations, continuous improvement in the production processes, and greater efficiency should encourage the development of products that cost less or are more reliable and of a higher quality than those of the immediate competitors (Murthi et al., 1996, Peng et al., 2008). In other words, those firms that have better manufacturing resources are in a favorable position to launch a product onto the market that, being cheaper than that of their nearest rivals, provides a level of quality in accordance with the chosen specifications and strategic positioning (Vickery et al., 1993). Therefore, in accordance with prior findings of the positive relationship between manufacturing capabilities and performance (Vickery et al., 1993; White, 1996), we postulate

H1c: Manufacturing resources positively influence new product performance.

A new product should perform better when it is launched by firms that have adequate marketing resources and capabilities (Cooper and Kleinschmidt, 1987; De Benedetto, 1999; Harmancioglu et al., 2009; Song and Noh, 2006). A greater skill in marketing activities or the possession of intangible assets, such as a good reputation, positively influence the success of new products (Lilien and Yoon, 1990; Song and Parry, 1996; Williams et al., 1991). In the case of two products of the same quality, the one that is backed by a good brand image will normally perform better than a product marketed

under an unknown brand name because of the greater trustworthiness of the offering, customer loyalty and effectiveness of marketing efforts in support of the launch (Hooley et al., 2005; Morgan et al., 2009). Min and Wolfinbarger (2005) give a good account of the existence of a positive influence of the brand image on performance. In their work on e-commerce, these authors find that companies which integrate offline and online presence ('bricks-and-clicks') attain much larger market shares than internet companies with only an online presence ('pure-plays'). The reputation and trustworthiness of their brand explain this greater success, because these attributes help to overcome the fear of acquiring products that cannot be seen or touched. A denser distribution network, a more effective salesforce, and a better marketing information system may also yield a higher market share due to factors that are related to greater product availability, a more convenient location, and better customer service, factors which help the firm to provide superior value to customers (Srivastava et al., 2001). All these arguments are consistent with empirical findings that firms that invest the most in developing and improving their marketing capabilities obtain better results (Kor and Mahoney, 2005; Krasnikov and Jayachandran, 2008; O'Cass and Weerawardena, 2010; Song et al., 2005; Vorhies and Morgan, 2005). Hence, we suggest

H1d: Marketing resources positively influence new product performance.

The effect of firm resources on market entry order

Many researchers have studied the implications of market entry timing for the success or failure of product innovations. However, most of the literature ignores the fact that entry timing should be regarded as an endogenous variable (Moore et al., 1991). Therefore, in accordance with the resource-based view of the firm, the decision on timing, and hence on order-of-entry, cannot be judged independently of the firm's resources and capabilities upon which this decision depends (Lee, 2008; Lieberman and Montgomery, 1998; Robinson et al., 1992; Schoenecker and Cooper, 1998; Sinha and Noble, 2005). Firms have different resource endowments and, consequently, have different strategic behaviours (Lieberman and Asaba, 2006).

Srivastava and Lee (2005) consider that the characteristics of top management teams influence the order and timing of new product moves made by firms. In general, it is claimed in the literature that the superiority of a firm's managerial resources encourages the pioneering of new product-markets. Companies that have more experience, an innovative culture, and entrepreneurial top management are well-placed to enter the market earlier than their competitors. The experience acquired in previous market entries can also help in entering new markets proficiently (Green et al., 1995). Firms that have an excellent entrepreneurial vision tend to find first-movership attractive (Lieberman and Montgomery, 1988). Likewise, technologically opportunistic firms (i.e. firms that have a clear future focus, top managers that advocate the use of new technologies, and a culture in which flexibility, entrepreneurship, creativity, and adaptability are emphasized) are more inclined to adopt radical technologies than firms that lack these organizational traits (Srinivasan et al., 2002). A firm's willingness to cannibalize their own investments is a key determinant of its success in introducing radical product innovations (Chandy and Tellis, 1998). Factors such as the existence of a focus on future markets and of prominent product champions who promote and stimulate radically new product ideas drive this willingness to cannibalize the sales of current products and to pioneer the introduction of new technologies in the marketplace. Similarly, Herrmann et al. (2007) identify the firm's willingness to take risks as the most influential factor in the transformation processes necessary to introduce radical product innovations. Commitment and adaptability to change are also important for the success of pioneering new products in the case of small and medium-sized companies (Simon et al., 2002). Thus, we postulate

H2a: Managerial resources positively influence the choice of an early-entry strategy in the launch of a new product.

Being a market pioneer is the natural response of those firms that are strongly committed to research, development, and innovation and that devote considerable resources to this type of task (Robinson et al., 1992; Schoenecker and Cooper, 1998). The opportunity to be a pioneer does not come about spontaneously. Rather, foundations have to be laid that will allow the firm to burst onto the market with a new product that is unknown to the consumer. This is the theory sustained by Lieberman and

Montgomery (1988, 1998) and Robinson et al. (1992), who claim that firms that have greater skills in R&D tend to be first movers. Similarly, literature on radical innovation finds that firms with a greater technological orientation or superior technological capabilities launch more radical products onto the market that are different from those of their competitors (Di Benedetto et al., 2008; Gatignon and Xuereb, 1997). This does not mean that follower firms do not also devote a large budget to research and development, but it is more likely that firms with large investments in R&D will be found among the group of pioneers than among the followers (Miller et al., 1989; Robinson et al., 1992). Therefore, we propose

H2b: R&D resources positively influence the choice of an early-entry strategy in the launch of a new product.

Companies that excel in manufacturing tend to find it unattractive to pioneer new markets and prefer to act as followers (Lieberman and Montgomery, 1988, 1998; Robinson et al., 1992). In contrast, first entrants are sometimes deficient in their operations management skills. The cost disadvantages derived from imitation and the technical difficulties associated with being the first firm to manufacture a new product are some of the obstacles to early entry perceived by those organizations that are more concerned with efficiency (Murthi et al., 1996; Robinson, et al., 1992). The literature on explorative and exploitative innovations is consistent with these arguments. The substantial investments in existing technologies and the high risks associated with radical innovations make the returns from exploration (i.e. pioneering new product-markets) far less certain and more distant in time than the returns from exploitation of current structures and processes (Zhou and Wu, 2010). Furthermore, the adaptation of production lines might be too hasty if product standards are not consolidated. Covin et al. (1999) observe that in hostile environments, the reliance on advanced process technology is more beneficial for sales growth among followers than pioneers. According to these authors, the ability to reduce production costs, to adapt rapidly to market demands, and to continuously improve processes are essential competences for followers. Narasimhan and Zhang (2000) share a similar opinion and assert that a firm's investment in areas such as production capabilities or process innovations is of strategic importance because it provides protection against competitors. These investments reduce a

firm's late-mover disadvantages and allow the firm to conquer the market in spite of being a laggard. Therefore, for an incumbent, which frequently holds the resources necessary to succeed in the product-market, it may be optimal to wait and let new entrants assume the risks associated with radical innovations (Mitchell, 1991; Narasimhan and Zhang, 2000). In short, firms with superior manufacturing resources will usually tend to avoid a premature entry. Therefore, we postulate

H2c: Manufacturing resources negatively influence the choice of an early-entry strategy in the launch of a new product.

The literature concerning the relationship between marketing resources and the timing strategy is controversial. On the one hand, some authors point to the existence of a positive relationship between the strength of marketing resources and early market entry. The possession of a good corporate image is more beneficial for first movers than for later entrants (Williams et al., 1991). Having a good reputation and high educational capability can be incentives to pioneer new markets and enhance performance prospects, given that these intangible assets allow the company to reduce the uncertainty involved in the launch of a new product and facilitate its adoption and diffusion (Kerin et al., 1996; Shepherd et al., 2000; Thomas, 1996). Schoenecker and Cooper (1998) provide similar arguments for those firms that rely on an efficient distribution and salesforce, crucial factors for the acceptance of some innovations. On the other hand, other authors argue that the availability of strong marketing assets and skills favors late entry. Firms that have well-established brands should not use brand extensions when they aim to enter a new product category early so as to avoid the brand's prestige being damaged if the new product turns out to be a failure and to prevent unwanted associations with older product categories (Robinson et al., 1992; Sullivan, 1992). As a consequence, having a good brand image discourages market pioneering. Furthermore, firms that have strong marketing skills do not need to assume the risks of being a first mover. Companies that excel in marketing can afford to enter late and let other firms test the market, because, if the business opportunity turns out to be attractive, they can take advantage of these kinds of resources to easily surpass those pioneers that have poorer resources. A good corporate reputation, effective advertising, a proficient salesforce, or greater control of the best distribution channel give a firm the ability to overcome late-mover

disadvantages and facilitate market penetration (Covin et al., 1999; Lieberman and Montgomery, 1988, 1998; Narasimhan and Zhang, 2000; Robinson et al., 1992; Schewe, 1996). In contrast, firms lacking these kinds of supportive assets should enter new markets early if they aim to gain a substantial market share (Mitchell, 1991). Given the nature of the investigation, where the launch of a new product category (i.e. excluding mere modifications or minor revisions to company's existing product portfolio) is the relevant unit of analysis, we adhere to this second group of opinions. Technological and commercial risks are typically higher for these types of innovation, which reduces the incentives of a firm with superior marketing resources to pioneer a new market. According to Yalcinkaya et al. (2007), marketing resources drive exploitation capabilities, which are associated with stable markets and technologies. Hence, we propose the following hypothesis:

H2d: Marketing resources negatively influence the choice of an early-entry strategy in the launch of a new product.

The effect of market entry order on new product performance

Two broad categories of argument help to explain 'first-mover advantages'. One strand of the literature emphasizes economic factors and calls attention to advantages related to the creation of barriers to entry, such as those due to technological leadership, the preemption of scarce assets, or the existence of buyer switching costs (Gilbert and Birnbaum-More, 1996; Kerin et al., 1992; Lieberman and Montgomery, 1988). First-movers can gain competitive advantage through technological leadership because of the cost advantage due to the learning or experience effect (early entrants have the opportunity to accumulate greater experience than later entrants) and because first-movers' success in patent or R&D races may enable them to sustain innovation (Lieberman and Montgomery, 1988). The preemption of scarce assets such as input factors, shelf space, the best geographic locations, or the most attractive niches for product differentiation, may also confer an advantage for early entrants because latecomers may find it extremely difficult to enter the market or to compete in a profitable manner under these circumstances (Lieberman and Montgomery, 1988). First-mover advantages may also arise from buyer switching costs. For example, contractual switching costs may be created by the pioneer and this can be seen as a form of preemption of demand which forces late entrants to invest

extra resources to attract customers (Gilbert and Birnbaum-More, 1996; Lieberman and Montgomery, 1988).

Another strand of the literature on first-mover advantages emphasizes the cognitive, attitudinal, and behavioral aspects of consumers (Alpert and Kamins, 1994; Carpenter and Nakamoto, 1989; Kardes and Kalyanaram, 1992) and of retail buyers (Alpert et al., 2001) that may favor pioneering brands or products. Carpenter and Nakamoto (1989) demonstrated that an advantage for pioneers could arise from the process by which consumers learn about brands and form their preferences. When a new product category is introduced in the market, consumers probably know little about its features, the importance of each attribute, or the ideal combination of attributes. In this context, the pioneer brand has the opportunity to "define the category" and to influence in its favor how users evaluate the product and its attributes, thus shaping their preferences. In addition, Kardes and Kalyanaram (1992) argue that consumers tend to develop favorable attitudes toward the brands which they have more information about –presumably the brands that entered the market first–. Information about early entrants in a new product category is more easily memorized because it is perceived as novel and interesting. Therefore, pioneering brands tend to be more familiar and, thus, have more possibilities to be retrieved, to form part of the consumer's evoked set and to be chosen over follower brands (Kardes and Kalyanaram 1992; Kardes et al., 1993; Alpert and Kamins, 1994). Risk-aversion and imperfect information of buyers regarding the quality of new product offerings may also benefit first-movers because a rational consumer tends to be loyal to a product he or she has already tried and find it satisfactory (Schmalensee, 1982). Pioneer brand might also enjoy a favorable global reputation (Alpert and Kamins, 1994). These and other arguments suggested from a behavioral perspective of first-mover advantage are consistent with the asymmetries that Bowman and Gatignon (1996) observe in the effectiveness of a firm's marketing instruments according to its order of market entry. These authors find that the response to marketing efforts is more favorable for pioneering brands than for late entrants.

Neither the existence of the so-called 'second-mover advantages' (e.g. free-rider effects) (Gilbert and Birnbaum-More, 1996) nor the anecdotal evidence showing that pioneering firms can find their

leadership threatened by followers (Golder and Tellis, 1993, Schnaars, 1994) should be ignored. However, the market share advantage of first movers is regarded as an empirical generalization (Kalyanaram et al., 1995; Szymanski et al., 1995; Vanderwerf and Mahon, 1997). This advantage is temporary in nature. According to Ferrier et al. (1999), competitive rivalry may lead to market share erosion or even to a dethronement, but these authors demonstrate that firms which carry out competitive actions (e.g. product innovation) more quickly than rivals have superior performance. Therefore, speed is an important competitive weapon. Being faster than competitors in new product introductions allows industry leaders to maintain their leadership and help challengers to disrupt the competitive status quo. Consequently, we propose

H3: An early-entry strategy positively influences new product performance.

The mediating effect of market entry order

The first group of hypotheses conjectures that firms with superior managerial, R&D, manufacturing, and marketing resources are in a good position to achieve superior performance with the new products they launch (Schewe, 1994). However, having superior resources does not guarantee success; firms have to mobilize these resources adequately if they are to gain a competitive advantage (Barney, 1991; Hunt and Morgan, 1995). Value creation stems from an adequate fit between resources and strategy (O'Cass and Weerawardena, 2010). Thus, in line with Lieberman and Montgomery's (1998) suggestion, the present study integrates the resource-based view and the literature on first-mover advantages, and proposes that order-of-entry is a decision contingent on the resources and capabilities possessed by the firm. The fit of entry order with the firm's resource profile determines its performance in a new product-market. In particular, we agree with the view of Edelman et al. (2005) about the alignment of resources and strategy as a mediated relationship. We therefore emphasize that market entry order acts as an intervening variable in the transformation of a firm's resources into superior performance.

The proposed mediating effect will be corroborated if the independent variables (in our study, those that represent the firm's managerial, R&D, manufacturing, and marketing resources) significantly influence the mediator (market entry order), i.e. if hypotheses H2a-d are confirmed, and the mediator

significantly affects the dependent variable (new product performance), i.e. if H3 is confirmed. More specifically, the combination of hypotheses H2a with H3 and H2b with H3 implicitly suggests the existence of two positive indirect effects on performance (via entry order) of, respectively, managerial and R&D resources. These two effects account, to some extent, for the positive relationships predicted in H1a and H1b (i.e. the coefficient measuring the influence on new product performance of managerial and R&D resources should decrease when the effect of market entry order is controlled). In contrast, we implicitly postulate that market entry order is a suppressor that weakens the relationship between the other two categories of resources considered in this paper, on the one hand, and product performance, on the other. With regard to manufacturing resources, the combination of hypotheses H2c and H3 yields a hypothesized negative indirect effect on product performance that counteracts the positive association suggested in H1c. Similar reasoning may be applied with respect to marketing resources (hypotheses H1d, H2d, and H3). We must note that suppression effects have rarely been examined in organizational and psychological research, despite the study of such effects may in fact contribute to theoretical development (Cheung and Lau, 2008). In any case, several authors recommend the use of structural equation models and bootstrap methods for examining both mediation and suppression effects, and highlight the importance of testing the significance of the indirect effects before establishing either type of intervention (Cheung and Lau, 2008; Preacher and Hayes, 2004; Shrout and Bolger, 2002; Zhao et al., 2010).

To sum up, we conjecture that market entry order intervenes in the relationship between firm resources and the performance achieved with a new product launch in such a way that the firm's profile of resources affects the decision on when to enter the market (Lieberman and Montgomery, 1998; Robinson et al., 1992; Schoenecker and Cooper, 1998), which in turn affects product performance (Lilien and Yoon, 1990; Kalyanaram et al., 1995). An adequate fit between resources and order-of-entry should help to explain how a firm's relative superiority in its resource endowment translates into a successful introduction of new products. Empirical testing of the three groups of hypotheses presented in Figure 1, together with the assessment of the statistical significance of the four possible

indirect effects derived from our model, will allow us to examine the role of market entry order as a mediator in the relationship between resources and product performance.

Methodology

Sample and data collection

The data come from a sample of Spanish manufacturing firms with over 50 employees and sales over 10 million euros competing in innovative industries (see Table 1), that is, industries with a high percentage of innovative companies, high innovation expenditures, and a high relative importance of product innovations over process innovations (INE, 2002). Our selection of industries matches the ranking elaborated by CORDIS (Community Research and Development Information Service) using the Innovation Sector Index, published since 2004 as part of the "European Innovation Scoreboard" report (CORDIS, 2004).

A questionnaire, accompanied by an explanatory letter, was mailed to the CEO or the marketing director of each firm. Respondents had to base their answers on a new product launched within the last five years which was representative of the firm's product innovation program, and whose development and commercialization had constituted a challenge at the time of launch. It was also required that the new product had been in the market for more than six months to ensure the company had sufficient data on the resulting performance, and that competition was already present in the market at the time of responding to the questionnaire to ensure there was a meaningful benchmark against which respondents could base comparisons to assess resources, strategy and performance. These requirements are consistent with previous research on product innovation (Langerak and Hultink, 2006). After a follow-up telephone call, a total of 136 complete questionnaires were returned, which constitutes a response rate of 8.2%. The average respondent firm has 341 employees and a turnover of around 63.4 million euros (see Table 1).

Except for firm size, we did not find significant differences in the mean responses on model constructs between products in our sample commercialized more recently and those launched earlier, suggesting that retrospective bias does not seem to be an issue in this study. 62 respondents were marketing

directors, 58 CEOs, and 16 held other top management positions in their companies such as plant director, operations manager, R&D manager, or corporate planning director. No significant differences across respondents with different functional backgrounds were found in the constructs' mean scores, except for R&D resources, for which CEOs and marketing directors reported a higher mean than informants in other managerial positions. Self-selection bias is probably the most serious problem associated with low response rates in survey research (Wilson, 1999). We addressed this issue by applying Armstrong and Overton's (1977) time-trend extrapolation procedure. A division of the sample into early respondents (the first to answer the questionnaire, 67%) and late respondents (the remaining 33%) did not reveal any significant differences in the mean responses on any of the constructs. In addition, the response rates are similar in each sector (see Table 1). A further comparison of population and sample means for two known characteristics, turnover and number of employees, did not show significant differences, except for the machinery sector. Together, these results suggest that respondent bias, industry bias, and non-response bias are not a major problem, and that the sample is fairly representative of the population.

Table 1 here.

Measures

We pretested the questionnaire by conducting in-depth interviews with six CEOs and marketing executives. Participants had to identify items that were confusing, questions that were difficult to respond to, and any other problems that they encountered. With the information from this pretest, the questionnaire was reworked to create the final, mailed version.

The constructs are measured using instruments drawn from previous studies (Table 2). New product performance was operationalized through four items that measure the product's sales, market share, and profitability, as well as the relative strength of the competitive position attained in the market (Griffin and Page, 1993). The participants had to rate all these indicators on a scale ranging from 1 to 5, where 1 means 'extremely inferior to competitors' and 5 'extremely superior to competitors'. This

four-item scale shows high reliability (Cronbach's alpha=0.82, Composite Reliability=0.83, Average Variance Extracted=0.56).

For the measurement of market entry order, four categories were established: 'pioneer', 'one of the pioneers', 'early follower', and 'late entrant'. This way of measuring is similar to that used in research using the STR2 and STR4 databases of the Strategic Planning Institute (Miller et al., 1989; Robinson et al., 1992). The scale ranges from 1 to 4, assigning 1 point to late followers and 4 to pioneers. Of the firms in the sample, 44 were pioneers in the particular product category they selected for responding to the questionnaire, 34 were 'one of the pioneers' in the product-market, 38 were early followers, and 20 were late entrants. A follow-up survey on some of the sampled products allowed us to check the reliability of the answers on entry order[1].

Table 2 here.

Three indicators were used to measure managerial resources: the entrepreneurial spirit of top managers, the extent to which the firm's culture promotes innovation, and the experience in the sector (Chandy and Tellis, 1998; Green et al., 1995; Shepherd et al., 2000; Srinivasan et al., 2002). R&D resources were measured using five items: R&D experience, R&D investment, degree of innovation in products, agility in the design and development of new products, and patent ownership (Lilien and Yoon, 1990; Miller et al., 1989; Robinson et al., 1992; Schewe, 1994; Szymanski et al., 1995). Three indicators were used to measure manufacturing resources: the degree of innovation in the production processes, the quality of the manufacturing facilities, and the efficiency of the production process (Covin et al., 1999; Miller et al., 1989; Murthi et al., 1996; Robinson et al., 1992; Schewe, 1994). Finally, marketing resources were operationalized through five items related to the brand image of the

[1] For a selection of 24 out of the 136 product-markets of the sample, the authors asked an instructed group of collaborators, who had been divided into teams, to establish the sequence of entry of all the brands competing in a particular market. Each team only knew the brand name and the manufacturing firm of the product for which the team had to research the real order of market entry. This survey reveals that in 83% of the cases, the information provided is absolutely consistent. A total of 20 out of the 24 products included in this study are, without any doubt, classified in the same category of entrant that the questionnaire's respondent assigned it to. In the remaining four cases, the team members did not achieve unanimity about how to classify that product, but the category stated by the respondent was always one of the acceptable alternatives. A similar study for pharmaceutical products, performed by consulting the medicine database of the General Spanish Council of Pharmacists (www.portalfarma.com), which includes information on the year of market entry of all the medicines commercialised in Spain, confirms that the answers regarding the order-of-entry were correct.

products sold by the firm, the effectiveness of its communication policy, its sales force and its distribution policy, and the quality of its marketing information system (Covin et al., 1999; Lilien and Yoon, 1990; Miller et al., 1989; Murthi et al., 1996; Robinson et al., 1992; Schewe, 1994; Szymanski et al., 1995). The multiple items used to measure the diverse resources of a firm relative to those of competitors are formative. In contrast with reflective scales, the observed variables in a formative construct cover different facets of the concept that the construct aims to measure, and significant intercorrelations should not be expected (Bollen and Lennox, 1991; Diamantopoulos and Winklholfer, 2001; Jarvis et al., 2003). Therefore, traditional procedures for determining the validity and reliability of the scales are inadequate. To assess the appropriateness of the formative indices, we followed the recommendations of Bollen and Lennox (1991) and Diamantopoulos and Winklhofer (2001). For each construct, indicator collinearity was examined by observing variance inflation factors (VIF) and condition numbers (CN). None of the measures for managerial (max VIF=1.9, max CN=14.4), R&D (max VIF=2.5, max CN=16.8), manufacturing (max VIF=1.6, max CN=13.4), and marketing resources (max VIF=1.7, max CN=18.8) offer any indication that collinearity was a matter for concern, so all items were retained[2]. In addition, we employed the vanishing tetrad test to assess whether a formative or reflective measurement specification was appropriate for the resource constructs with four or more indicators (i.e. R&D and marketing resources), as suggested by Bollen and Ting (2000). The results of the test confirmed the validity of both constructs as formative indices[3].

The analysis controls for other factors that can potentially influence new product performance: firm size, new product relatedness, and entry scale. The inclusion of a variable measuring firm size relative to competitors allows us to control for other possible resources, apart from those studied explicitly, that could contribute to the success of the new product. For example, firm size may be viewed as a

[2] As noted above, conventional discriminant validity is not meaningful when examining formative indices (Diamantopoulos et al., 2008). Discarding items from the initial item pool used to operationalize a formative construct solely on the basis of, for example, moderate or high correlation with other constructs is an incorrect practice since it alters construct definition. However, since it could be argued that some items in different constructs share a common theme, i.e. innovation (e.g. business culture favorable to innovation in the managerial resources index, innovation in production processes in the manufacturing resources index), we verified that the inclusion/omission of these items does not affect our conclusions. As suggested by the review team of this manuscript, hypotheses were tested using different alternative item specifications for the formative constructs as a means to assess the robustness of our findings, obtaining consistent results.

proxy for financial resources. Larger organizations typically have larger budgets or easier access to the capital markets, that is, to the financial support necessary to succeed in the commercialization of any innovation (Sinha and Noble, 2005). In addition, we assess the extent to which a bad or a good performance is due to the fact that the new product introduced either represents a pure diversification move or, on the contrary, is strongly related to the rest of the products in the firm's portfolio, thus facilitating the achievement of technological and market synergies that enhance the outcomes of innovation projects (Cooper and Kleinschmidt, 1987; Schewe, 1994). Finally, based on the perceived level of uncertainty associated with the launch of a new product, the firm has to choose the entry scale. A firm can opt for a full-scale launch to all of its target segments (sprinkler strategy), or for a slower and sequential rollout market entry (waterfall strategy). According to Kalish et al. (1995), current market conditions may favor the so-called sprinkler strategy.

For the testing of the hypotheses, multiple items measuring product performance and firm resources were averaged to create a single measure of each construct. Table 3 shows the means, standard deviations, and correlations for the research variables.

Table 3 here.

Most researchers agree that common method variance is a potentially serious biasing threat in behavioral research, especially with single informant surveys. According to Podsakoff et al. (2003), the two primary ways to control for method biases are through procedural and statistical remedies. We attempted to control method bias by applying some procedural remedies recommended by Podsakoff et al. (2003). In particular, we explicitly assured the respondents that there were no right or wrong answers and that the information they provided would be treated confidentially. In addition, we applied the following statistical remedies. First, Harman's single-factor test was conducted. Evidence for common method bias exists when a single factor emerges from the factor analysis or when one general factor accounts for the majority of the covariance among the measures. This analysis produced seven factors, with the first factor only accounting for 25.4% of the total variance explained (total

[3] The tetrad χ^2 values are significant in both cases (R&D resources: T-χ^2=13.74, df=5, p=0.02; Marketing resources: T-

variance explained = 67.1%). Second, the data show discriminant validity between constructs, with generally moderate correlations. The average correlation between the variables is 0.18. Third, we employed Lindell and Whitney's (2001) marker variable technique. Essentially, this technique requires researchers to identify a marker variable that should be theoretically unrelated to at least one of the other variables. This marker variable, in our case the degree of autonomy of the business unit in new product launch decision-making, serves as a proxy for method variance. The lowest positive correlation between the marker variable and the study constructs is selected as the best estimate of method variance and, next, method variance adjusted correlations among study constructs and their statistical significance are computed. A comparison of original and adjusted correlations reveals that only 1 out of the 18 significant correlations reported in Table 3 become nonsignificant after accounting for the marker, which indicates that the relationships were not seriously contaminated by common method variance (Malhotra et al., 2006). Furthermore, to minimize concerns about common method bias, we included autonomy in new product launch decision-making (i.e. the marker variable) as an additional control variable in the estimated model and verified that our empirical findings remain unaltered. Finally, and as noted previously, we confirmed average scores for the research constructs are similar across respondents with different functional backgrounds. In summary, while we are unable to completely eliminate the possibility that common method bias affected our findings, results from the above-mentioned tests suggest that the possible impact was minimal at most.

Analysis and results

Covariance-based path analysis with maximum likelihood estimation (AMOS 7.0) was used to test our hypotheses. The choice of path analysis over full structural equation modeling (SEM) was based on two reasons: the study's small sample size in relation to the complexity of the model (Kline, 2005) and the formative nature of some of the constructs used in this research. First, our sample size and the total number of structural parameters in our model pose problems to estimate the model using full SEM,

---

χ^2=18.27, df=5, p=0.00).

which includes measurement and structural models. Covariance-based path analysis, on the other hand, can be applied in small samples, yielding correct standard errors (McDonald, 1996). Second, the four categories of resources considered in our study were operationalized as formative constructs, and the estimation of covariance-based SEM models with formative measures also tends to be problematic because of identification issues.

In order to gain interpretational clarity and a full vision of the relationships between the constructs, we employed a model comparison approach as suggested by Anderson and Gerbing (1988). Figure 2 presents the two alternative structural models that were compared for assessing the veracity of the research hypotheses. The *no-mediation model* suggests that market entry order has no direct association with product performance. Instead, performance is posited as resulting primarily from the direct effect of the firm's resources. This model tests hypotheses H1a to H1d and H2a to H2d. The second model, the *mediation model*, posits that the decision on market entry order, in addition to being influenced by the resource profile of the company, has an impact on product performance. This second model allowed us to test H3 and to assess whether market entry order mediates (at least partially) the effects of resources on product performance. The comparison of both models enabled us to examine whether the magnitude of the direct association between a firm's resources and performance changes substantially when indirect effects (through entry order) are considered. If this phenomenon is observed, it would offer a first indication of the presence of a mediation effect.

When comparing rival nested models, it is possible to identify which is the best one by examining whether the difference in fit between the models is statistically significant (Byrne, 2001). In this case, the better of the two models is the one that postulates the existence of mediating effects ($\chi^2_{(3)} = 0.19$, p=0.01) as opposed to the one that postulates the non-existence of such effects ($\chi^2_{(4)} = 13.09$, p=0.98). Freely estimating the parameter that measures the effect of market entry order on new product performance leads to a significant decrease in χ^2 ($\Delta\chi^2_{(1)} = 12.9$). Therefore, the inclusion of the indirect

effects that resources have on performance as a result of the timing of entry substantially improves the model fit[4].

Figure 2 here.

The results of the estimation of the *no-mediation model* support H1a, since the effect of managerial resources on new product performance is significant (β=0.28, p<0.01). In contrast, the findings do not support H1b. The coefficient representing the effect of R&D resources on performance is not significant. Apparently, H1c is not confirmed either. However, this result deserves specific discussion in the following section, due to the fact that a suppression effect occurs when market entry order is introduced as a mediating variable between manufacturing resources and performance. Finally, the coefficient measuring the effect of marketing resources on product performance is, as expected, positive, but only marginally significant[5] (β=0.18, p=0.09), which leads to the rejection of H1d.

The findings support H2a and H2b, since the effects of managerial and R&D resources on market entry order are both significant and positive (β=0.39, p<0.01 and β=0.33, p<0.01, respectively). The results also support H2c. The coefficient measuring the influence of manufacturing resources on market entry order is, as expected, negative and significant (β=-0.38, p<0.01). Finally, the data do not support H2d because the coefficient of the relationship between marketing resources and entry order is positive but not statistically significant.

[4] The *mediation model* was also compared to a more parsimonious model, which could be termed *complete mediation model*, in which the direct paths from the four resource constructs to performance were set to zero. These restrictions led to a significant increase in χ^2 ($\Delta\chi^2_{(4)} = 23.8$), which indicates that market entry order mediates some (but not all) of the effects of firm resources on product performance. In addition, we considered another model which, as the *no-mediation model*, likewise assumes that market entry order is not a mediating variable, albeit for a different reason. In this alternative model there would not be mediation because it is assumed that market entry order is independent of the firm's resources and capabilities (i.e. the paths from the four resource constructs to market entry order were set to zero, which is equivalent to treat market entry order as an exogenous variable). As in the other two model comparisons, the restrictions introduced significantly worsened model fit ($\Delta\chi^2_{(4)} = 26.2$), which means that market entry order is, as hypothesized in H2a to H2d, dependent on firm resources, and that it is an important intervening variable in the resources-performance relationship.

[5] A series of post-hoc power analyses were completed using the G*POWER 3 computer software (Faul *et al*., 2007) to determine the p-values for the analysis path included in the study. We calculated power values for each dependent variable in the path model. In all cases, the power values for a medium effect size and Type I error (α) of 0.05 exceeded Cohen's (1988) recommended criterion of 0.80 (0.96 for entry order and 0.90 for new product performance). Hence, an alpha-value of 0.05 seems to be appropriate for judging the statistical significance of the parameter estimates in the path analysis.

The *mediation model* is able to explain the variance of new product performance better than the *no-mediation model* (R^2=33.26% vs. 26.16%) and provides evidence of the significant impact on this variable of market entry order (β=0.20, $p<0.001$). Hence, the data support H3. The *mediation model* also supports the existence of an indirect effect on performance, via entry order, of managerial, R&D, and manufacturing resources. Specifically, the direct effect of managerial resources on performance drops from 0.28 ($p<0.01$) to 0.20 ($p<0.05$) when the effect of entry order on performance is added. This coefficient is still significant, which means that market entry order mediates this relationship, although the mediation is in this case partial. The estimated coefficient of the effect of R&D resources on performance also drops, from 0.09 to 0.03, which points to the existence of complete or full mediation by this strategic variable. Finally, the path coefficient measuring the direct relationship between manufacturing resources and new product performance is now significant (β=0.18, $p<0.05$ vs. β=0.10, $p>0.05$), which indicates the possible existence of a suppression effect (i.e. the combination of a positive direct effect and a negative indirect effect via order-of-entry). The influence of marketing resources on performance continues to be non-significant.

Several methods for testing mediation effects have been proposed in the literature. MacKinnon et al. (2000) evaluate 14 methods in terms of statistical power. They find that the commonly used method that is suggested by Baron and Kenny (1986) for testing mediation has very low statistical power unless the effect and the sample size are very large. Furthermore, Preacher and Hayes (2004) note several shortcomings in Baron and Kenny‘s approach and argue for the need to formally test the significance of the indirect effects of X on Y, because it is possible to find a significant indirect effect even when there is no evidence for a significant total effect. Cheung and Lau (2008) agree on the need to examine mediation by testing the significance of the indirect effects. Following the recommendations found in recent literature on mediation analysis (Shrout and Bolger, 2002; Cheung and Lau, 2008; Zhao et al., 2010), our study uses a bootstrap procedure (2000 sub-samples were randomly generated) to define the bias corrected confidence intervals of the total, direct and indirect effects, which allows us to obtain more accurate estimates of standard errors and to formally test the significance of mediation and suppression effects. According to this procedure, three of the four

possible indirect effects on new product performance identified are significant, since the corresponding 95% confidence interval does not include zero (see Table 4). Thus, the results indicate that the estimated indirect effects of managerial (0.39*0.20=0.08, $p<0.02$), R&D (0.33*0.20=0.07, $p<0.02$), and manufacturing resources (-0.38*0.20=-0.08, $p<0.01$) are significant. Hence, we may conclude that market entry order partially mediates the managerial resources-performance relationship, fully mediates the R&D resources-performance relationship, and suppresses the manufacturing resources-performance relationship. In contrast, neither the direct nor the indirect effects of marketing resources on new product performance are significant.

Table 4 here.

Discussion and managerial implications

Literature on first-mover advantages reports robust evidence of the increased sales and market share accrued by pioneering firms. However, market entry order should be considered an endogenous variable dependent, at least to some extent, on factors such as the firm's resources and capabilities. Failure to control for these factors could result in biased estimates of the effect of market pioneering on performance (Moore et al., 1991). Accordingly, we formulate a model of product innovation in which market entry order is an antecedent of new product performance and, at the same time, a decision conditioned by the firm's resource profile, which may also directly affect performance. Thus, after controlling for firm resources, we observe that entry timing is still significantly related to new product performance. Consistent with prior research, we find that an early-entry strategy is on average better than entering the market late. However, several questions require further scrutiny. What are the starting resources that make the implementation of this strategy feasible? Should all the firms pursue a first-mover strategy?

By addressing these questions, our investigation contributes to the integration of two research streams: the resource-based view and the study of first-mover advantages and disadvantages. The empirical findings of the study reported herein provide evidence of how the decision on when to enter a new product-market facilitates or hinders the transformation of a firm's resources and capabilities into the

successful introduction of a new product. Having good resources is no guarantee of superior performance. These resources must be adequately mobilized by implementing entry strategies that fit well within the firm's competences. In this sense, market entry order emerges as an important intervening variable. Being a pioneer in the marketplace is not easy; nor can it be recommended under all circumstances. To make a new product successful, it is essential for managers to make the right decision as to when to enter the market. Judicious consideration of the resources the firm possesses will help to make this decision and, hence, to convert these resources into superior performance. Being a pioneer or a follower can be beneficial or detrimental for the outcomes of a new product depending on the type of capabilities the firm has at its disposal.

The quality of a firm's management, measured in terms of its experience, its entrepreneurial spirit, and its role as a promoter of innovation, is a valuable source of competitive advantage in product innovation. In contrast to what happens with other types of resources, whatever the company's order of market entry, the better the managerial resources, the better new products perform. These kinds of resources help to combine and exploit synergies among the other functional resources (Wang et al., 2004), support an effective implementation of the strategies chosen for market entry, and make the adaptation to uncertain market conditions easier (Kor and Mahoney, 2005), which may explain the consistent direct effect on performance that the empirical results reveal. In general, previous experience confers an advantage in the strategy formulation phase, as well as in the execution of the selected entry strategy (regardless of whether the firm enters the market early or late). In addition, a culture that is favorable to innovation makes it possible to introduce rapidly the strategic changes that might be necessary to make a new product successful. However, as Chandy and Tellis (1998), Green et al. (1995), and Srinivasan et al. (2002) note, the decision about when to enter the market is not irrelevant. Our findings show that order-of-entry partially mediates the relationship between managerial resources and product performance. When these resources are used to enter the market earlier than competitors, the new product will be significantly more successful. Pioneering new markets involves considerable risks and the realization of first-mover advantages is not automatic. Hence, and consistent with recent empirical findings by Garrett et al. (2009), it is critical that the firm

has experienced and responsive top managers who are capable of fostering innovation throughout the entire organization and of engaging in a market pioneering strategy.

For firms that have outstanding R&D resources, pioneering new markets is essential in order to outperform rivals and achieve a stronger competitive position and greater profitability. Consistent with previous research (e.g. Cohen et al., 2000; Dowling and McGee, 1994; Levin et al., 1987; Moore et al., 1991), we observe that the superiority of a firm in the R&D arena is positively associated with product performance and that this association is largely explained by lead time. Order-of-entry fully mediates the R&D resources-performance relationship, which confirms that companies that have relative superiority in R&D perform better when they act as first movers than when they act as followers. A company may be experienced and skillful in new product development, but if for a particular project other firms shorten time-to-market and take the lead in launching the innovation, the company will not achieve the desired rewards in terms of larger sales, market share, and hence profitability. Customers may perceive that the products launched by late entrants lack novelty and are imitations of those launched by market pioneers, or that they only offer trivial or superfluous innovations (Carpenter and Nakamoto, 1989; Nerkar and Roberts, 2004). In brief, an early entry into the market should be a priority for companies that demonstrate an important commitment to R&D activities.

The incorporation of market entry order as a mediating variable in the relationship between manufacturing resources and new product performance gives rise to what is known as a suppression effect. The suppression is evident from the fact that the *no-mediation model* in Figure 2 shows that the effect of manufacturing resources on performance is not significant, whereas in the *mediation model* a significant direct effect does appear. In short, the influence of manufacturing resources is complex. Good manufacturing resources and capabilities contribute to improved performance, but the firm's competitive position does not fully reflect this effect because the difficulties and inconveniences of early entry into a new market attenuate it. As authors such as Kerin et al. (1992), Lieberman and Montgomery (1988, 1998), Moore et al. (1991) or Robinson et al. (1992) have noted, some firms excel at leading whereas other excel at following, and this latter situation seems to be the case of firms being more focused on enjoying manufacturing advantages. First-mover advantages are not so obvious for

those firms that are more concerned with improving their production processes and their efficiency in manufacturing. They find it more appealing to be a follower, a strategy that is not as rewarded in terms of performance as the pioneer strategy. These firms prefer to avoid the risks of pioneering and concentrate on the development of less novel but competitive products that allow them to succeed in the market in spite of being a late entrant. Research on explorative vs. exploitative innovations also provides support for our findings of the negative influence of manufacturing resources on the choice of an early-entry strategy. Firms with a strong operations orientation tend to consider the returns from exploration are far less certain and more distant in time and prefer to focus on exploitation of existing knowledge and production processes (Kim and Atuahene-Gima, 2010; Zhou and Wu, 2010). Being the pioneer in the market introduction of a new product category might destroy the potential value of current manufacturing resources. Yet firms that excel in operations, in addition to being more efficient and proficient in manufacturing, should try to achieve greater flexibility also. Trade-offs between flexibility, on the one hand, and other competitive priorities such as costs, quality and reliability, on the other, may exist (Größler and Grübner, 2006), but research on manufacturing capabilities reveals it is possible to improve on multiple dimensions simultaneously and, thus, to experience synergistic effects (Rosenzweig and Easton, 2010; White, 1996). The ability of a firm competing in a dynamic environment to quickly reconfigure its operations is an important source of competitive advantage (Flynn et al., 2010; Peng et al., 2008). Flexible manufacturing capabilities enable the firm to more easily accommodate the transition from one generation of products to another (Dacko et al., 2008). This flexibility would make it possible to enter new product-markets earlier and would allow the firm to benefit, to some extent, from the advantages enjoyed by first movers. In this way, the influence of manufacturing resources on product success would be more positive.

High correlation with other independent constructs might explain the lack of significance of both the direct and the indirect effects of marketing resources on performance. Marketing resources are correlated significantly with the other types of resources and, according to Woodside (2005), high intercorrelation could cause a direct path to be insignificant for an independent variable that is associated significantly with the dependent variable. Consideration of the correlation matrix (see Table

3) reveals that marketing resources are indeed related positively to new product performance (and to market entry order). Therefore, the influence of marketing resources on performance should not be discarded. Besides, we remind that the path coefficient of marketing resources in the *no-mediation model* was marginally significant. Furthermore, it turns to be highly significant when the variables representing the other types of resources are dropped from the model. Consequently, given the interdependencies existing among the diverse firm's functional resources (Schewe, 1994), we do not believe that marketing resources are irrelevant for securing a good level of success.

In addition, the influence of marketing resources on market entry order seems to be more complex than the research model reflects. As mentioned before, the relationship between these resources and the timing of entry is controversial. One way to bring both perspectives together would be to consider a different functional form of the relationship between these two variables: a U-shaped curve. Firms that have moderate marketing resources will probably perceive higher risks in entering a new product-market early than will their counterparts with poorer or richer marketing resources and, as a consequence, they will be reluctant to commit their limited resources to this strategy. In contrast, firms with poor or strong marketing resources could be more predisposed to pioneering new markets: the former because being a first mover is the only option to overcome their commercial weakness and to achieve a successful competitive position, and the latter because they have such market dominance that few, if any, competitors would undertake the risky venture of launching a radical new product. This U-shaped hypothesis was tested by estimating a model with a quadratic term for the marketing resources, but this term is not significant either.

An alternative explanation is that, perhaps, certain marketing skills favor a first-mover strategy, while others lead to avoiding being a pioneer. For instance, the availability of a well-established brand or control of distribution channels may discourage market pioneering (because of the risks that this strategy involves) and facilitate the diffusion of new products even though the firm is a late entrant (Covin et al., 1999; Robinson et al., 1992; Sullivan, 1992). In contrast, a proficient direct salesforce may be critical for the acceptance of radically new products (Schoenecker and Cooper, 1998). It is also possible that the same factor makes both early and late entry easier. This could be the case with firms

that have a high-quality marketing information system. Such a system enables the firm to have more control over the new product introduction time (Dacko et al., 2008) because it is helpful for identifying new technological and market trends rapidly, thus giving the firm the opportunity to be a first mover (Di Benedetto et al., 2008), and also for identifying profitable opportunities in growth or even in mature markets that allow the firm to be a successful follower (Schewe, 1996). In general, different marketing resources may affect the decision as to when to enter the market differently, with the result that their combined influence may be masking the real effect on order-of-entry. Therefore, a finer approach is necessary to capture the conflicting effects of this construct on the choice of a particular timing strategy.

Limitations and future research

Our article is obviously subject to some limitations which suggest potential starting points for future research. Firstly, given the diversity of products and industries that the investigation includes, using real figures for the research variables seems inappropriate (as well as difficult), because objective measures can only be interpreted in a particular industry and for a specific product category. Thus, the study used subjective measures based on the perceptions of participating managers about a firm's behavior in relation to its competitors. Undoubtedly, these kinds of measure can be biased, so it is necessary to interpret the findings with caution. Furthermore, although a sample of firms in a varied set of industries allows the results to be generalized beyond the idiosyncratic nature of a specific industry, research at the level of single industries would be useful for validating the results.

Secondly, our small sample size posed problems to estimate the model using full SEM and might hamper the achievement of adequate statistical power to detect significant relationships. However, as shown by Coffman and MacCallum (2005), summing or averaging the scale items prior to estimating the structural parameters of the model can lead to biased parameter estimates. Thus, these authors recommend that, whenever possible, it is better to use a full SEM model for hypothesis testing, for which a larger sample is needed, and which would be useful to determine the validity of our results.

The Spanish context of our study might also place some constraints on the generalizability of the findings to other national contexts. Spain shares many characteristics with other developed Western economies in terms of technological development, consumer behavior, or social and market conditions. The coincidence in the rankings of sector according to their innovative nature elaborated by the INE (Spanish National Institute of Statistics) and the CORDIS –see information on "sample and data collection"– constitutes a sign of the similarities in the behavior of companies in Spain and other European countries. Furthermore, many firms in our sample are divisions or business units of multinational corporations, and there is no reason to expect extreme disparities in the management of these divisions across countries. Nevertheless, multi-country research conducted by Song et al (1999) confirms that there are significant differences in the perceptions of managers of Western and Asian Pacific firms regarding the advantages and disadvantages of pioneering. Therefore, further research in other geographical regions will help to determine whether our conclusion are of global importance or whether the relationships examined in this paper are subject to variations due to differences in cultural and business environmental contexts.

Another limitation is related to the fact that a single key informant provided the data in each company. Studies that collect data from only one source may be biased by artificially high intercorrelations because of an overall (positive or negative) response bias (Aviolo et al., 1991; Gupta and Beehr, 1982). However, simply assuming that single-source data are less valid than multisource data is overly simplistic (Aviolo et al., 1991). Without minimizing the importance of common method bias, the tests performed to control for method variance (Lindell and Whitney, 2001; Malhotra et al., 2006; Podsakoff et al., 2003) indicate that common method bias is not a major problem in our study. Nevertheless, future research should attempt to gather data from multiple informants and, if possible, from different functional areas within the organization, because previous research calls attention to the diversity of goals and perceptions that the R&D, manufacturing, and marketing functions have regarding what drives the performance of new products (Song et al., 1997).

Finally, certain issues related to construct measurement may also be the object of future studies. For example, our new product performance construct does not totally capture the complexity of a

multidimensional concept such as the relative success or failure of a new product. Firm resources and entry order may also influence other outcomes, such as customer satisfaction or product costs. Furthermore, it is argued in the literature on first-mover advantages and disadvantages that the relationship between entry order and performance may change depending on the type of measures that are assessed (i.e. market-based vs. financial). Pioneers tend to enjoy significant market-share advantages (Kalyanaram et al., 1995; Szymanski et al., 1995; Vanderwerf and Mahon, 1997), but suffer higher costs (Boulding and Christen, 2003). Consequently, further research is needed, particularly at the new product level, to examine in depth the differing impact of market entry order (as well as of firm resources) on specific dimensions of performance.

Closely related to this issue is the use of formative indices to operationalize the diverse categories of resources. This method of operationalization is appropriate in view of the nature of the relationship between each resource construct and their respective measures (the direction of causality runs from the indicators to the construct). However, formative measurement models are not exempt from problems (Wilcox et al., 2008). Formative indices are by definition multidimensional and, as a consequence, it is (ideally) required to have a comprehensive set of indicators to fully capture the meaning of every resource construct (Diamantopoulos et al., 2008). Therefore, in future studies we find it necessary to incorporate some other aspects or dimensions which were not covered in this survey so as to enrich the domain of the different resource constructs and to improve their measurement. Besides, it is certainly reasonable to argue that the different aspects defining the index may relate to other variables in the model in a different way. As we discussed in the previous section, this phenomenon may be occurring with, for example, the relationship between entry order and every particular marketing resource. For that reason, it is no doubt interesting to conduct a more fine-grained analysis of the impact of each specific category of resources (and of its particular defining dimensions) on the launch strategy for a new product and on the diverse dimensions of performance. Furthermore, in line with Krasnikov and Jayachandran's (2008) suggestion, it is important to evaluate to what extent it is feasible and/or recommendable for firms to simultaneously develop multiple resources and capabilities. Thus, examining whether it is possible that a firm excels in multiple categories of resources (and in multiple

facets within each resource type) and exploring their interactions would provide additional insights on how resources, strategy and performance are related and would make a notable contribution to the literature on technology management and product innovation.

References

Alpert, F.H. and Kamins, M.A., 1994. Pioneer brand advantage and consumer behavior: A conceptual framework and propositional inventory. *Journal of the Academy of Marketing Science*, 22 (3), 244-253.

Alpert, F.H., Kamins, M.A., Sakano, T., Onzo, N. and Graham, J., 2001. Retail buyer beliefs, attitude and behavior toward pioneer and me-too follower brands. *International Marketing Review*, 18 (2), 160-187.

Anderson, J.C. and Gerbing, D.W., 1988. Structural equation modeling in practice: a review and recommended two step approach. *Psychological Bulletin*, 103 (3), 411-423.

Armstrong, J.S. and Overton, T.S., 1977. Estimating no response bias in mail survey. *Journal of Marketing Research*, 14, 396-402.

Aviolo, B.J., Yammarino, F.J. and Bass, B.M., 1991. Identifying common methods variance with dates collected from a single source: An unresolved sticky issue. *Journal of Management*, 17, 571-587.

Badawy, A.M., 2009. Technology management simply defined: A tweet plus two characters. *Journal of Engineering and Technology Management*, 26 (4), 219-224.

Barney, J., 1991. Firm resources and sustained competitive advantage. *Journal of Management*, 17 (1), 99-120.

Baron, R.M. and Kenny, D.A., 1986. The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical consideration. *Journal of Personality and Social Psychology*, 51 (6), 1173-1182.

Bollen, K.A. and Lennox, R., 1991. Conventional wisdom on measurement: A structural equation perspective. *Psychological Bulletin*, 110 (2), 305-314.

Bollen, K.A. and Ting, K.F., 2000. A tetrad test for causal indicators. *Psychological Methods*, 5, 3-22.

Boulding, W. and Christen, M., 2003. Sustainable pioneering advantage? Profit implications of the market entry order. *Marketing Science*, 22 (3), 371-392.

Bowman, D., and Gatignon, H., 1996. Order of entry as a moderator of the effect of the marketing mix on market share. *Marketing Science*, 15 (3), 222-242

Byrne, B.M., 1991. *Structural Equation Modeling with AMOS. Basic Concepts, Applications, and Programming*. Mahwah, NJ, Lawrence Erlbaum Associates.

Calantone, R. and Cooper. R.G., 1981. New Product Scenarios: Prospects for Success. *Journal of Marketing*, 45, 48-60.

Carpenter, G.S and Nakamoto K., 1989. Consumer preference formation and pioneering advantage. *Journal of Marketing Research*, 26, 285-298.

Chandy, R.K. and Tellis, G.J., 1998. Organizing for radical product innovation: The overlooked role of willingness to cannibalize. *Journal of Marketing Research*, 35 (4), 474-487.

Cheung, G.W. and Lau, R.S., 2008. Testing mediation and suppression effects of latent variables. Bootstrapping with Structural Equation Models. *Organizational Research Methods*, 11 (2), 296-325.

Coffman, D.L. and MacCallum, R.C., 2005. Using parcels to convert path analysis models into latent variable models. *Multivariate Behavioral Research*, 40 (2), 235-259.

Cohen, J., 1988. *Statistical Power Analysis for the Behavioral Sciences*. Mahwah, NJ, Lawrence Erlbaum Associates.

Cohen, W.M., Nelson, R.R. and Walsh, J.P., 2000. Protecting their intellectual assets: Appropriability conditions and why U.S. manufacturing firms patent (or not). *NBER Working Paper* No. 7552.

Cooper, R.G., 1979. The dimensions of industrial new product success and failure. *Journal of Marketing*, 43, 93-103.

Cooper, R.G. and Kleinschmidt, E.J., 1987. What separates winners from losers? *Journal of Product Innovation Management*, 4, 169-184.

CORDIS - Community Research and Development Information Service. European Innovation Scoreboard 2004. Comparative Analysis of Innovation Performance, European TrendChart on Innovation, Brussels.

Covin, J.G., Slevin, D. and Heeley, M.B., 1999. Pioneers and followers: competitive tactics, environments and firm growth. *Journal of Business Venturing*, 15, 175-210.

Dacko, S.G., Liu, B.S., Sudharshan, D. and Furrer, O., 2008. Dynamic capabilities to match multiple product generations and market rhythm. *European Journal of Innovation Management*, 11 (4), 441-471.

Di Benedetto, C.A., 1999. Identifying the key success factors in new product launch. *Journal of Product Innovation Management*, 16, 530-544.

Di Benedetto, W.S., DeSarbo, W.S. and Song, M., 2008. Strategic capabilities and radical innovation: An empirical study in three countries. *IEEE Transactions on Engineering Management*, 55 (3), 420-433.

Diamantopoulos, A., Riefler, P. and Roth, K.P., 2008. Advancing formative measurement models. *Journal of Business Research*, 61 (12), 1203-1218.

Diamantopoulos, A. and Winklhofer, H.M., 2001. Index construction with formative indicators: An alternative to scale development. *Journal of Marketing Research*, 38 (2), 269-277.

Dowling, M.J. and McGee, J.E., 1994. Business and technology strategies and new venture performance: A study of the telecommunications equipment industry. *Management Science*, 40 (12), 1663-1677.

Drazin, R. and Van de Ven, A.H., 1985. Alternative forms of fit in contingency theory. *Administrative Science Quarterly*, 30 (4), 514-539.

Edelman, L.F., Brush, C.G. and Manalova, T., 2005. Co-alignment in the resource-performance relationship: strategy as mediator. *Journal of Business Venturing*, 20, 359-383.

Faul, F., Erdfelder, E., Lang, A.G. and Buchner, A., 2007. G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39 (2), 175-191.

Ferrier, W.J., Smith, K.G. and Grimm, C.M., 1999. The role of competitive action in market share erosion and industry dethronement: A study of industry leaders and challengers. *Academy of Management Journal*, 42 (4), 372-388.

Finney, R.Z., Lueg, J.E. and Campbell, N.D., 2008. Market pioneers, late movers, and the resource-based view (RBV): A conceptual model. *Journal of Business Research*, 61 (9), 925-932.

Flynn, B.B., Wu, S.J. and Melnyck, S., 2010. Operational capabilities: Hidden in plain view. *Business Horizons*, 53, 247-256.

Garrett, R.P., Covin, J.G. and Slevin, D.P., 2009. Market responsiveness, top management risk taking, and the role of strategic learning as determinants of market pioneering. *Journal of Business Research*, 62 (8), 782-788.

Gatignon, H. and Xuereb, J.M., 1997. Strategic orientation of the firm and new product performance. *Journal of Marketing Research*, 34 (1), 77-90.

Gilbert, J.T. and Birnbaum-More, P.H., 1996. Innovation timing advantages: From economic theory to strategy application. *Journal of Engineering and Technology Management*, 12, 245-266.

Golder, P.N. and Tellis, G.J., 1993. Pioneer advantage: Marketing logic or marketing legend? *Journal of Marketing Research*, 30 (2), 158-170.

Grant, R.M., 1991. The Resource-based Theory of Competitive Advantage: Implications for Strategy Formulation. *California Management Review*, 33 (3), 114-135.

Green, D.H., Barclay, D.W. and Ryans, A.B., 1995. Entry strategy and long-term performance: conceptualization and empirical examination. *Journal of Marketing*, 59 (4), 1-16.

Griffin, A. and Page, A.L., 1993. An interim report on measuring new product development success and failure. *Journal of Product Innovation Management*, 10, 291-308.

Größler, A. and Grübner, A., 2006. An empirical model of the relationships between manufacturing capabilities. *International Journal of Operations & Production Management*, 26 (5), 458-485.

Gupta, N. and Beehr, T. 1982. A test of the correspondence between self-report and alternative data source about work organization. *Journal of Vocational Behavior*, 20, 1-13.

Harmancioglu, N., Droge, C. and Calantone, R.J., 2009. Strategic fit to resources versus NPD execution proficiencies: what are their roles in determining success? *Journal of the Academy of Marketing Science*, 37, 266-282.

Hauser, J., Tellis, G.J. and Griffin, A., 2006. Research on innovation: A review and agenda for Marketing Science. *Marketing Science*, 25 (6), 687-717.

Herrmann, A., Gassmann, O. and Eisert, U., 2007. An empirical study of the antecedents for radical product innovations and capabilities for transformation. *Journal of Engineering and Technology Management*, 24, 92-120.

Hooley, G.J., Greenley, G.E., Cadogan, J.W. and Fahy, J., 2005. The performance impact of marketing resources. *Journal of Business Research*, 58, 18-27.

Hunt, S.D. and Morgan, R.M., 1995. The comparative advantage theory of competition. *Journal of Marketing*, 59 (2), 1-15.

INE, 2002. *Technological Innovation in Companies Survey 2000*. Instituto Nacional de Estadística, Madrid.

Jarvis, C.B., MacKenzie, S.B. and Podsakoff, P.M., 2003. A critical review of construct indicators and measurement model misspecification in marketing and consumer research. *Journal of Consumer Research*, 30 (2), 199-218.

Kalish, S., Mahajan, V. and Muller, E., 1995. Waterfall and sprinkler new-product strategies in competitive global markets. *International Journal of Research in Marketing*, 12 (2), 105-119.

Kalyanaram, G., Robinson, W.T. and Urban, G.L., 1995. Order of market entry: Established empirical generalizations and future research. *Marketing Science*, 14 (3), G212-G221.

Kardes, F.R. and Kalyanaram, G., 1992. Order-of-entry effects on consumer memory and judgment: An information integration perspective. *Journal of Marketing Research*, 29, 343-357.

Kardes, F.R., Kalyanaram, G., Chandrashekaran, M., and Dornoff, R.J., 1993. Brand retrieval, consideration set composition, consumer choice, and the pioneering advantage. *Journal of Consumer Research*, 20, 62−75.

Kerin, R.A, Varadarajan, P.R. and Peterson, R.A., 1992. First-mover advantage: A synthesis, conceptual framework, and research propositions. *Journal of Marketing*, 56 (4), 33-52.

Kerin, R.A., Kalyanaram, G. and Howard, D.J., 1996. Product hierarchy and brand strategy influences on the order of entry effect for consumer packaged goods. *Journal of Product Innovation Management*, 13, 21-34.

Kim, N. and Atuahene-Gima, K., 2010. Using exploratory and exploitative market learning for new product development. *Journal of Product Innovation Management*, 27, 519-536.

Klepper, S. and Simons, K.L., 2000. Dominance by birthright: Entry of prior radio producers and competitive ramifications in the U.S. television receiver industry. *Strategic Management Journal*, 21, 997-1016.

Kline R., 2005. *Principles and Practice of Structural Equation Modeling*. Guilford Press, New York.

Kor, Y.Y. and Mahoney, J.T., 2005. How dynamics, management, and governance of resource deployments influence firm-level performance. *Strategic Management Journal*, 26, 489-496.

Krasnikov, A. and Jayachandran, S., 2008. The relative impact of marketing, research-and-development, and operations capabilities on firm performance. *Journal of Marketing*, 72 (July), 1-11.

Langerak, F. and Hultink, E.J., 2006. The impact of product innovativeness on the link between development speed and new product profitability. *Journal of Product Innovation Management*, 23 (3), 203-214.

Lee, G.K., 2008, Relevance of organizational capabilities and its dynamics: What to learn from entrants' product portfolios about the determinants of entry timing. *Strategic Management Journal*, 29, 1257-1280.

Levin, R.C., Klevorick, A.K., Nelson, R.R. and Winter, S.G., 1987. Appropriating the returns from industrial research and development. *Brookings Papers on Economic Activity*, No. 3, Special Issue on Microeconomics, pp. 783-831.

Lieberman, M.B. and Asaba, S., 2006. Why do firms imitate each other? *Academy of Management Review*, 31 (2), 366-385.

Lieberman, M.B. and Montgomery, D.B., 1988. First-mover advantages. *Strategic Management Journal*, 9, 41-58.

Lieberman, M.B. and Montgomery, D.B., 1998. First-mover (dis)advantages: Retrospective and link with the resource-based view. *Strategic Management Journal*, 19, 1111-1125.

Lilien, G.L. and Yoon, E., 1990. The timing of competitive market entry: An exploratory study of new industrial products. *Management Science*, 36 (5), 568-585.

Lindell, M.K. and Whitney, D.J., 2001. Accounting for common method variance in cross-sectional research designs. *Journal of Applied Psychology*, 86 (1), 114-121.

MacKinnon, D.P., Krull, J.L. and Lockwood, C.M., 2000. Equivalence of the mediation, confounding and suppression effect. *Prevention Science*, 1 (4), 173-181.

Malhotra, N.K., Kim, S.S. and Patil, A., 2006. Common method variance in IS research: A comparison of alternative approaches and a reanalysis of past research. *Management Science*, 52 (12), 1865-1883.

McDonald, R.P., 1996. Path analysis with composite variables. *Multivariate Behavioral Research*, 31, 239-70.

Miller, A., Gartner, W.B., and Wilson, R., 1989. Entry order, market share, and competitive advantage: A study of their relationships in new corporate ventures. *Journal of Business Venturing*, 4 (3), 197-209.

Min, S. and Wolfinbarger, M., 2005. Market share, profit margin, and marketing efficiency of early movers, bricks and clicks, and specialists in e-commerce. *Journal of Business Research*, 58, 1030-1039.

Mitchell, W., 1989. Whether and when? Probability and timing of incumbents' entry into emerging industrial subfields. *Administrative Science Quarterly*, 34, 208-230.

Mitchell, W., 1991. Dual clocks: Entry order influences on incumbent and newcomer market share and survival when specialized assets retain their value. *Strategic Management Journal*, 12 (2), 85-100.

Moore, M.J., Boulding, W. and Goodstein, R.C., 1991. Pioneering and market share: Is entry time endogenous and does it matter? *Journal of Marketing Research*, 28 (1), 97-104.

Morgan, R.M., 2000. Relationship marketing and marketing strategy: the evolution of relationship strategy within the organization. In: JN Sheth and A Parvatiyar (Editors), *Handbook of relationship marketing*, SAGE Publications, Thousand Oaks, California, 481–504.

Morgan, R.A., Vorhies, D.W. and Mason, C.H., 2009: "Market orientation, marketing capabilities, and firm performance". *Strategic Management Journal*, Vol. 30, 909-920.

Murthi, B.P.S., Srinivasan, K. and Kalyanaram, G., 1996. Controlling for observed and unobserved managerial skills in determining first-mover market share advantages. *Journal of Marketing Research*, 33 (3), 329-336.

Narasimhan, C. and Zhang, Z.J., 2000. Market entry strategy under firm heterogeneity and asymmetric payoffs. *Marketing Science*, 19 (4), 313-327.

Nerkar, A. and Roberts, P.W., 2004. Technological and product-market experience and the success of new product introductions in the pharmaceutical industry. *Strategic Management Journal*, 25, 779-799.

O'Cass, A. and Weerawardena, J., 2010. The effects of perceived industry competitive intensity and marketing-related capabilities: Drivers of superior brand performance. *Industrial Marketing Management*, 39, 571-581.

Peng, D.X., Schroeder, R.G. and Shah, R., 2008. Linking routines to operations capabilities: A new perspective. *Journal of Operations Management*, 26, 730-748.

Peteraff, M.A., 1993. The cornerstones of competitive advantage: A resource-based view. *Strategic Management Journal*, 14 (3), 179-191.

Podsakoff, P.M., MacKenzie, S.B. and Podsakoff, N.P., 2003. Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88 (5), 879-903.

Preacher, K.J. and Hayes, A.F., 2004. SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments & Computers*, 36, 717-731.

Robinson, W.T., Fornell, C. and Sullivan, M., 1992. Are market pioneers intrinsically stronger than later entrants? *Strategic Management Journal*, 13 (3), 609-624.

Rosenzweig, E.D. and Easton, G.S., 2010. Tradeoffs in manufacturing? A meta-analysis and critique of the literature. *Production and Operations Management*, 19 (2), 127-141.

Schewe, G., 1994. Successful innovation management: An integrative perspective. *Journal of Engineering and Technology Management*, 11, 25-53.

Schewe, G., 1996. Imitation as a strategic option for external acquisition of technology. *Journal of Engineering and Technology Management*, 13, 55-82.

Schnaars, S.P., 1994. *Managing Imitation Strategies. How Later Entrants Seize Markets from Pioneers*. New York: The Free Press.

Schoenecker, T.S. and Cooper, A.C., 1998. The role of firm resources and organizational attributes in determining entry timing: A cross-industry study. *Strategic Management Journal*, 19 (12), 1127-1143.

Shankar, V.; Carpenter, G.S. and Krishnamurthi, L., 1998. Late mover advantage: How innovative late entrants outsell pioneers. *Journal of Marketing Research*, 35 (February), 54-70.

Shepherd, D.A., Ettenson, R. and Crouch, A., 2000. New venture strategy and profitability: A venture capitalist's assessment. *Journal of Business Venturing*, 15, 449-467.

Shrout, P.E. and Bolger, N., 2002. Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods*, 7 (4), 422-445.

Simon, M., Elango, B., Houghton, S.M. and Savelli, S., 2002. The successful product pioneer: Maintaining commitment while adapting to change. *Journal of Small Business Management*, 40 (3), 187-203.

Sinha, R.K. and Noble, C.H., 2005. A model of market entry in an emerging technology market. *IEEE Transactions on Engineering Management*, 52 (2), 341-351.

Song, X., Di Benedetto, A. and Zhao, Y.L., 1999. Pioneering advantages in manufacturing and services industries: empirical evidence from nine countries. *Strategic Management Journal*, 20 (9), 811-836.

Song, M., Droge, C., Hanvanich, S. and Calantone, R., 2005. Marketing and technology resource complementarity: An analysis of their interaction effect in two environmental contexts. *Strategic Management Journal*, 26, 259-276.

Song, X., Montoya-Weiss, M.M. and Schmidt, J.B., 1997. Antecedents and consequences of cross-functional cooperation: A comparison of R&D, manufacturing, and marketing perspectives. *Journal of Product Innovation Management*, 14 (1), 35-47.

Song, M. and Noh, J., 2006. Best new product development and management practices in the Korean high-tech industry. *Industrial Marketing Management*, 35, 262-278.

Song, X.M. and Parry, M.E., 1996. What separates Japanese new product winners from losers. *Journal of Product Innovation Management*, 13 (5), 422-439.

Srinivasan, R., Lilien, G.L. and Rangaswamy, A., 2002. Technological opportunism and radical technology adoption: An application to e-business. *Journal of Marketing*, 66 (3), 47-60.

Srivastava, A. and Lee, H., 2005. Predicting order and timing of new product moves: The role of top management in corporate entrepreneurship. *Journal of Business Venturing*, 20, 459-481.

Sullivan, M.W., 1992. Brand extensions: When to use them. *Management Science*, 38 (6), 793-806.

Szymanski, D.M., Troy, L.C. and Bharadwaj, S.G., 1995. Order of entry and business performance: An empirical synthesis and reexamination. *Journal of Marketing*, 59 (4), 17-33.

Talke, K., 2007. Corporate mindset of innovating firms: Influences on new product performance. *Journal of Engineering and Technology Management*, 24, 76-91.

Thomas, L.A., 1996. Brand capital and entry order. *Journal of Economics & Management Studies*, 5 (1), 107-129.

Vanderwerf, P. and Mahon, J.F., 1997. Meta-analysis of the impact of research methods on findings of first-mover advantages. *Management Science*, 43 (11), 1510–1519.

Venkatraman, N., 1989. The concept of fit in strategy research: Toward verbal and statistical correspondence. *Academy of Management Review*, 14 (3), 423-444.

Vickery, S.K., Droge, C. and Markland, R.E., 1993. Production competence and business strategy: Do they affect business performance? *Decision Sciences*, 24 (2), 435-455.

Wang, C.H., Lu, I.Y. and Chen, C.B., 2008. Evaluating firm technological innovation capability under uncertainty. *Technovation*, 28 (6), 349-363.

Wang, Y., Lo, H.P. and Yang, Y, 2004. The constituents of core competencies and firm performance: Evidence from high-technology firms in China. *Journal of Engineering and Technology Management*, 21, 249-280.

Wernerfelt, B., 1984. A Resource-Based View of the Firm. *Strategic Management Journal*, 5, 171-180.

White, G.P., 1996. A meta-analysis model of manufacturing capabilities. *Journal of Operations Management*, 14, 315-331.

Wilcox, J.B., Howell, R.D. and Breivik, E., 2008. Questions about formative measurement. *Journal of Business Research*, 61, 1219-1228.

Williams, M.L., Tsai, M.H. and Day, D., 1991. Intangible assets, entry strategies, and venture success in industrial markets. *Journal of Business Venturing*, 6, 315-333.

Wind, J. and Mahajan, V., 1997. Issues and opportunities in new product development: An introduction to the Special Issue. *Journal of Marketing Research*, 34 (February), 1-12.

Woodside, A.G., 2005. Firm orientations, innovativeness, and business performance: Advancing a system dynamics view following a comment on Hult, Harley, and Knight's 2004 study. *Industrial Marketing Management*, 34 (3), 275-279.

Zhao, X., Lynch, J.G. and Chen, Q., 2010. Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of Consumer Research*, 37 (August), forthcoming.

Zhou, K.Z. and Wu, F., 2010. Technological capability, strategic flexibility, and product innovation. *Strategic Management Journal*, 31, 547-561.

Figure 1
Conceptual model

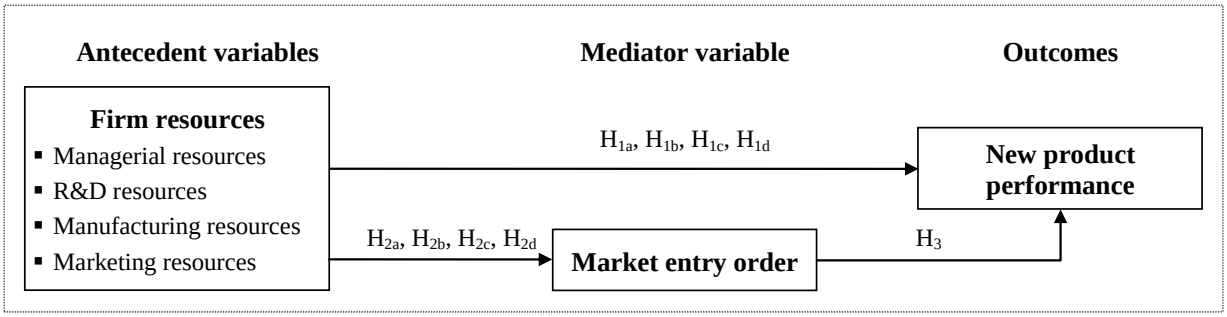


Table 1
Population and sample profile

Industry	Population (%)	Sample (%)	Proportion test
20. Food.	314 (18.9%)	31 (22.8%)	1.08
28. Chemical products.	376 (22.6%)	30 (22.1%)	-0.16
30. Rubber and plastic products.	196 (11.8%)	15 (11.0%)	-0.29
35. Machinery.	302 (18.2%)	24 (17.6%)	-0.16
36. Electrical and electronic machinery.	267 (16.1%)	20 (14.7%)	-0.45
37. Transport material.	206 (12.4%)	16 (11.8%)	-0.23
TOTAL	1661 (100%)	136 (100%)	

Industry	Average sales (in million euros)			Average number of employees		
	Population (s.d.)	Sample (s.d.)	Mean test	Population (s.d.)	Sample (s.d.)	Mean test
20. Food.	69.1 (110.0)	58.9 (56.2)	-0.51	321 (516)	324 (486)	0.04
28. Chemical products.	74.1 (126.9)	60.0 (69.0)	-0.61	249 (279)	260 (273)	0.22
30. Rubber and plastic products.	45.1 (144.1)	27.1 (22.7)	-0.48	246 (641)	182 (164)	-0.39
35. Machinery.	53.8 (135.5)	108.7 (284.5)	1.99	255 (480)	532 (1061)	2.83
36. Electrical and electronic machinery.	70.4 (149.5)	28.1 (21.7)	-1.27	338 (553)	172 (105)	-1.34
37. Transport material.	264.4 (900.8)	89.7 (152.9)	-0.78	766 (1900)	608 (1326)	-0.33
TOTAL	89.0 (346.3)	63.4 (137.9)	-0.86	342 (824)	341 (695)	-0.00

Table 2
Construct definition and measures

Variable	Measures	Mean (s.d.)
New product performance [a]	Product's sales	3.69 (0.93)
	Product's market share	3.57 (0.98)
	Product's profitability	3.50 (0.79)
	Competitive position achieved	3.79 (0.98)
Market entry order [b]	Market entry order	2.75 (1.07)
Managerial resources [a]	Top managers' entrepreneurial spirit	3.71 (0.93)
	Business culture favourable to innovation	3.68 (1.00)
	Experience in the industry	3.68 (1.06)
R&D resources [a]	R&D experience	3.44 (0.97)
	R&D investment	3.41 (1.09)
	Degree of innovation in products	3.58 (1.05)
	Agility in new product design and development	3.45 (1.04)
	Patent ownership	3.87 (1.81)
Manufacturing resources [a]	Degree of innovation in production processes	3.44 (0.93)
	Quality of manufacturing facilities	3.82 (0.89)
	Efficiency of the production system	3.73 (0.84)
Marketing resources [a]	Firm's brand image	3.46 (1.01)
	Effectiveness of communication policy	2.99 (0.93)
	Effectiveness of the distribution policy	3.56 (0.79)
	Effectiveness of the sales force	3.63 (0.77)
	Quality of marketing information system	3.14 (0.81)
Firm size [a]	Relative firm size	2.82 (0.98)
New product relatedness [c]	Relatedness of the new product to the firm's product portfolio	4.01 (0.98)
Entry scale [d]	Entry scale relative to the size of the target market	3.12 (1.03)

[a] The indicators used to measure this construct are rated on a five-point scale, where 1 means 'extremely inferior to competitors' and 5 'extremely superior to competitors'.

[b] Construct measured with a four-point scale indicator, where 4 means the firm was the 'pioneer' in the selected product-market, 3 means the firm was 'one of the pioneers', 2 means the firm was an 'early follower', and 1 means the firm was a 'late entrant'.

[c] Construct measured with a five-point scale indicator, where 1 means 'very low relationship' and 5 'very high relationship'.

[d] Construct measured with a five-point scale indicator, where 1 means a 'sequential entry' and 5 means a 'full-scale entry'.

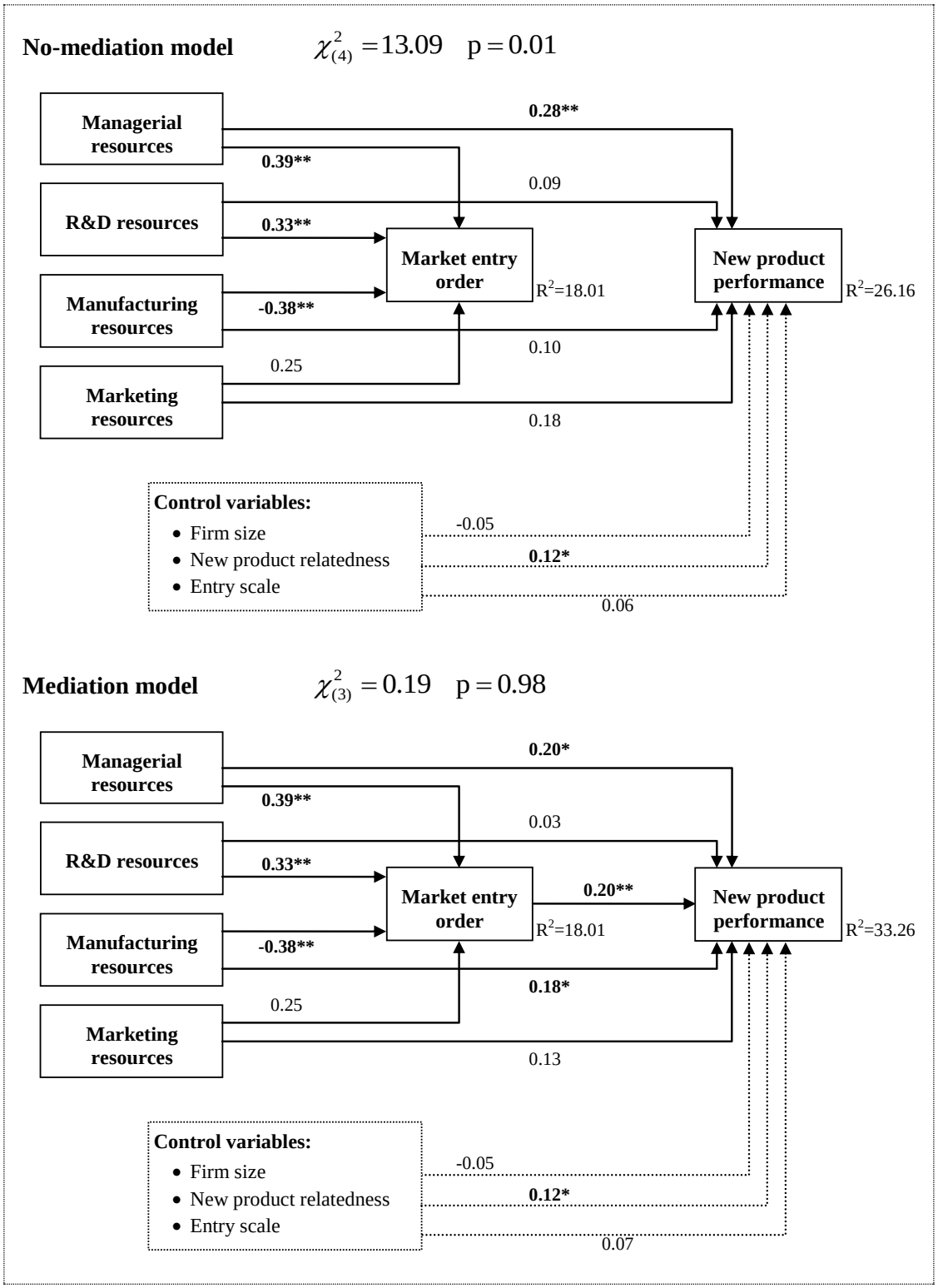
Table 3
Descriptive statistics and correlation matrix

Variables	Mean (s.d.)	1	2	3	4	5	6	7	8	9
1. New product performance	3.63 (0.74)		0.36**	0.43**	0.25**	0.28**	0.31**	-0.02	0.14	0.14
2. Market entry order	2.75 (1.07)	0.38**		0.30**	0.27**	-0.04	0.17*	0.02	-0.01	0.02
3. Managerial resources	3.69 (0.70)	0.44**	0.32**		0.39**	0.39**	0.40**	-0.07	0.06	0.18*
4. R&D resources	3.56 (0.77)	0.28**	0.29**	0.41**		0.34**	0.21*	0.24**	0.02	0.09
5. Manufacturing resources	3.66 (0.72)	0.30**	-0.01	0.41**	0.36**		0.42**	0.13	-0.08	0.10
6. Marketing resources	3.35 (0.61)	0.33**	0.20*	0.42**	0.23**	0.44**		0.18*	-0.06	0.15
7. Firm size	2.82 (0.98)	0.01	0.05	-0.04	0.26**	0.16	0.20*		0.04	0.03
8. New product relatedness	4.01 (0.98)	0.16	0.02	0.09	0.05	-0.05	-0.03	0.07		-0.16
9. Entry scale	3.12 (1.03)	0.17	0.05	0.20*	0.11	0.13	0.17*	0.05	-0.13	
10. Autonomy (marker variable)	4.44 (1.60)	-0.05	-0.07	0.10	-0.15	0.03	-0.02	-0.05	-0.08	0.06

Level of significance: ** p <0.01 (two-tailed); * p<0.05 (two-tailed).

Note: Zero-order correlations appear below the diagonal; correlations adjusted for potential common method bias (Lindell and Whitney 2001) appear above the diagonal.

Figure 2
Path analysis results (unstandardized beta coefficients and significance level)



Significance level: ** p <0.01 (two-tailed); * p<0.05 (two-tailed)

Table 4
Summary of total, direct and indirect effects

Causal sequence					Total effect A→C	Direct effect A→C	Indirect effect A→B→C	Effect description
A		B		C				
Managerial resources	→	Market entry order	→	New product performance	0.28 (0.00)[a] [0.07;0.49][b]	0.20 (0.05) [0.00;0.41]	0.08 (0.01) [0.02;0.17]	Partial mediation
R&D resources	→	Market entry order	→	New product performance	0.09 (0.28) [-0.07;0.27]	0.03 (0.72) [-0.14;0.19]	0.07 (0.01) [0.02;0.13]	Complete mediation
Manufacturing resources	→	Market entry order	→	New product performance	0.10 (0.32) [-0.08;0.29]	0.18 (0.05) [0.00;0.36]	-0.08 (0.00) [-0.16;-0.03]	Suppression
Marketing resources	→	Market entry order	→	New product performance	0.18 (0.13) [-0.05;0.42]	0.13 (0.24) [-0.09;0.36]	0.05 (0.09) [-0.01;0.13]	No mediation

[a] Unstandardized parameters and two-tailed significance level based on the bias corrected (BC) confidence intervals determined through bootstrapping.
[b] 95% BC confidence interval [lower boundary; upper boundary].