

Resource configurations, generic strategies, and firm performance

Exploring the parallels between resource-based and competitive strategy theories in a new industry

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Abstract

Purpose – This paper, anchored in the resource-based view of the firm, attempts to develop linkages between firm-level resources, Porter's competitive strategy space and firm performance and explores them in the context of a new industry – the marketing technology industry.

Design/methodology/approach – In the marketing technology industry the authors classify resource configurations (generalists, specialists, innovators) which group firms with distinctive competences on similar resource dimensions. They then map these firm-level resource configurations onto their respective optimal strategies in the industry's competitive strategy space.

Findings – The major findings are: some firms that are close together in strategy space vary in performance; some firms that are close together in strategy space belong to quite different resource configurations; firms that belong to the same resource configuration (i.e. are close together in resource space and distant from others) vary in performance; given the origin (i.e. resource configuration) of a new entrant there exists an optimal strategy that can be theoretically defined; and corresponding to each resource configuration there seems to exist a unique optimal region in strategy space.

Originality/value – It is one of few attempts to empirically explore the parallels between firm level resource-based and industry level competitive strategies.

Keywords Competitive strategy, Management theory, Corporate strategy

Paper type Research paper

The names of the first three authors are listed in alphabetical order reflecting equal contribution, the fourth author contributed in the early stage of the project.

The authors are grateful for the comments of anonymous reviewers and the journal editors. They would also like to acknowledge the financial support provided for this research by the Swiss National Science Foundation, University of Illinois, Bureau of Economic and Business Research, and Warwick Business School. The authors would also like to thank Sonke Albers of the University of Kiel and the participants at a MSI conference and other university presentations for their insightful comments.

Introduction

The resource-based theory (RBV) literature (Barney, 1991; Grant, 1991; Penrose, 1959; Wernerfelt, 1984) explains firm performance in terms of firm level resource differences while the generic business strategy framework drawn from the theory of industry and competitive analysis (Porter, 1980; 1985) argues that the failure to choose between one of the generic strategies in the strategy space of potential competitive strategies can result in inferior performance (Campbell-Hunt, 2000). In this paper, we examine firm performance by drawing upon and integrating insights from the two theories, i.e. firm-level resources and industry/market-based competitive strategies rather than by simply using only one of them. Indeed, Collis and Montgomery (2008, p. 142) note that “the RBV inextricably links a company’s internal capabilities (what it does well) and its external environment (what the market demands and what competitors offer)”.

Following a literature review, we first develop hypotheses linking configurations based on resource position similarities (i.e. distinctive competences on similar resource dimensions), closeness in strategy space (i.e. the set of available strategies in an industry or market) and firm performance. We then test these hypotheses in the context of a new industry, namely, the marketing technology industry which supplies technologies specifically created for use in marketing applications. The process of finding strategic resource configurations is particularly important in new industries where stable or dominant competitive patterns may not yet be obvious or even have emerged yet (Porter, 1980).

Therefore, the paper is structured in the following manner. It first presents the theoretical development based on the existing literature and develops the research hypotheses. Second, the research methodology is described, specifying both the variables measured and the data collection procedures used. Third, the hypotheses are tested and the results discussed. Finally, conclusions about the potential movement of firms as the strategy space of competitive strategies evolves over time are reviewed, together with managerial implications of the research.

Literature review

The main theoretical frameworks are resource-based theory (Penrose, 1959) and the generic business strategy stream in competitive strategy (Porter, 1980). Since the context for the empirical study is a new industry, an important source is also research on the link between resources and strategies in new industries. The literature review thus consists of three key elements: firm-level resource-based theory, industry-level generic business strategy theory, and the resource-strategy link in new industries, which together provide the basis for examining linkages between firm-level resources and industry-level strategic configurations in attempting to explain performance differences among firms.

Resource-based theory

The focus of resource-based theory is on the relationship between firm resources and firm performance. Indeed, the traditional definition of strategy (Andrews, 1971; Ansoff, 1965; Hofer and Schendel, 1978), proposing that a firm should select that strategy which makes the most effective use of its core resources and capabilities to achieve above-normal rates of return (i.e. rents), is consistent with this viewpoint.

Following the seminal work of Penrose (1959), the resource-based view of the firm proposes that firms consist of bundles of productive resources and that different firms possess different bundles of these resources in competitive environments (Kor and Mahoney, 2000; Wernerfelt, 1984). More formally, a firm's current resources are defined as those assets which are tied semi-permanently to a firm like: brand names, in-house knowledge of technology, employment of skilled personnel, trade contacts, machinery, efficient procedures, capital, etc. Different types of resources including tangible assets, intangible assets and skills have been identified as underlying the distinctive or core competences of a firm (Prahalad and Hamel, 1990). These core competences can only achieve sustainable competitive advantage when underlying resources are valuable, rare, cannot be imitated, and have no substitutes (Barney, 1991; Grant, 1991; Peteraf, 1993; Wernerfelt, 1989).

Rumelt (1984) and Lippman and Rumelt (1982) argue that "isolating mechanisms" explain the sustainability of competitive advantage at the firm level. Together, with the concept of "uncertain imitability", isolating mechanisms refer to phenomena that limit the *ex post* equilibration of performance among firms. Isolating mechanisms result from causal ambiguities that arise from the inability of firms to fully understand the causes of efficiency differences and therefore to limit competition by entry or imitation. Isolating mechanisms involving the possession of rare, unique or non-imitable resources exist and include specialized assets, switching and search costs, team-embodied skills and unique resources, etc. Isolating mechanisms, referred to as intra-industry barriers by Wernerfelt (1984), provide a rationale for the sustainability of intra-industry performance differences among firms.

Resource-based theory, therefore, identifies how firm performance and its sustainability depend on the uniqueness, rareness, and non-imitability of its resources. However, it does not adequately explain performance differences between firms that have the same levels of uniqueness, rareness, non-imitability and isolation of their resources (Cool *et al.*, 1994). For example, in an industry, several firms may have developed core competences in marketing and others in research and development. These core competences are idiosyncratic to each firm and can be equally rare, non-imitable, and difficult to substitute across firms. In such a situation, the resource-based theory cannot predict which firm would have a superior performance. However, certain competences may be more adapted in a particular industry environment – the notion of value in Barney's, 1991 paper. Therefore, if we know that in a particular industry, differentiation through marketing is superior to product differentiation, we could predict that firms with core competences in marketing are likely to outperform firms with core competences in research and development. Indeed, Mehra (1996) shows that a resource-based grouping of banks explained firm performance differences better than did a product market-based grouping. However, market-based groupings still provide a significant explanation of performance differences across two of the three performance measures that he used in his study. Thus, we can expect that together they may explain performance differences better. Indeed, Wernerfelt (1984), Grant (1991) and Barney (1991) suggest that an appropriate match between a firm's resource profile and its product-market activities should optimize its performance. More recently, a number of studies have started to empirically investigate the linkages between resources, strategy, and performance (Delios and Beamish, 2001; Kor and Mahoney, 2005; Kraatz and Zajac, 2001; Vories and

Morgan, 2003; Zajac *et al.*, 2000). In order to obtain the optimal match, it is, therefore, suggested that a matching between the firm's available resources (i.e. core competences) and the requirements of its product-market activities in terms of concepts such as generic strategies (Miles and Snow, 1978; Porter, 1980; 1985; Miller, 1986, 1987; Mintzberg, 1988) should be performed (Vories and Morgan, 2003).

Generic business strategies

According to Porter (1980), there are three potentially successful generic approaches to outperforming other firms in an industry: overall cost leadership, differentiation, and focus. He further explains that if sometimes a firm can successfully pursue more than one approach as its primary target, it is rarely possible. This is because the effective implementation of any of these generic strategies usually requires total commitment and supporting organizational arrangements that are diluted if there is more than one primary target.

In Porter's view the choice between one of these generic business strategies is strongly influenced (if not determined) by the five competitive forces that he identified in industries. This view that industry structure and positioning determines performance is an alternative to the resource-based theory argument which suggests that a firm's performance results from its distinctive resource endowment. The two theories may however be integrated to obtain a better explanation of interfirm performance differences (Hofer and Schedel, 1978). Cool and Schendel (1988, p. 209) clearly hypothesize that a firm's performance is dependent on the fit between its resource position and its strategy position when they say:

It can be argued that one condition for effective business strategy is that current strategy actions build on accumulated assets (resources and skills) to exploit a perceived market opportunity. If a firm's current actions are incongruent with its accumulated "stock" of assets, then it is likely to be less effective than other firms pursuing a similar strategy but with a good "fit" between current strategic investments and accumulated assets.

Indeed, Lawless *et al.* (1989) found significant differences in performance and capabilities within each of the industry strategic groups (McGee and Thomas, 1986) they identified. They also found evidence of a significant correlation between capabilities and performance within each group. They concluded that effects of firms' capabilities should be examined in order to increase the explanatory power of industry strategic groups in competitive performance. The approach identified here, therefore combines the perspectives resource-based theory and the generic business strategies theory, using a combination of the dimensional and nominalist interpretations (Campbell-Hunt, 2000).

In the nominalist approach, generic business strategies are taken to represent ideal "types" or benchmarks (Campbell-Hunt, 2000; Doty and Glick, 1994) in the industry's comprehensive strategy space. However, in this view, correspondence between real configurations and ideal types are both imperfect and variable (Rich, 1992), so that classification will be neither fully homogeneous nor mutually exclusive (Campbell-Hunt, 2000). This interpretation recognizes that firms are idiosyncratic and that firms' strategy configurations and performance may be different. Furthermore, the approach seeks only to describe a limited number of ideal types based on a few characteristics of business strategy configuration, selected for their importance to performance. It is useful, therefore, to combine this approach with the

dimensional approach, which defines the dimensions of the industry's strategy space in terms of the characteristics of business strategy configurations.

The dimensional approach interprets the characteristics of business strategy configurations as independent dimensions of a multivariate space encompassing most of the variation in business strategy configurations (Karnani, 1984; Miller, 1997; Miller and Dess, 1993; Vories and Morgan, 2003). Because all configurations are positioned relative to the dimensions of the space, the presence of one emphasis does not exclude the other (Miller and Dess, 1993; Parker and Helms, 1992). This interpretation of generic business strategies implies that every firm by virtue of its entry into an industry occupies a position in the strategy space for that industry.

The dimensional interpretation is, therefore, primarily concerned with defining the space in which business strategy configurations may be described. Some classification of configurations within this strategy space may be required, using one of the ranges of statistical approaches available for developing such configurations.

The nominalist approach, on the other hand, does not attempt comprehensive classification, but rather posits a small number of ideal types that can be positioned in the strategy space. Given this perspective, performance will improve as actual configurations approximate these ideals, or optimal strategy positions. Measuring the distance between the actual and ideal involves not only identifying the distinctive emphasis in terms of one ideal, but also measuring the proximity to competitors' standards in the other (Campbell-Hunt, 2000).

Resource-strategy link in new industries

New industries are examined in this research study because they are novel environments and, therefore, characterized by strategic positioning and resource uncertainties and complexities, i.e. the critical resources and optimal strategies are not clear. There are clearly different strategic approaches (Porter, 1980, p. 217), and managers have different expectations about the set of resources that will be required to prevail in the future (Amit and Schoemaker, 1993). It is clear that in new industries, there is no dominant logic (Prahalad and Bettis, 1986).

The lack of a dominant logic leads firms with distinctive competences on the same (or approximately the same) resource dimensions to enact different strategies. In a new industry, the identification of a unique mapping of distinctive competences to strategies (Itam and Numagini, 1992; Bogner *et al.*, 1998) may be obscured by high degrees of both uncertainty and complexity (Porac *et al.*, 1989). In these environments firms have such varying perceptions of the future that even firms with distinctive competences on similar resource dimensions may enact quite different strategies, with the consequence of many missing the "sweet spot" in strategy space that best fits their respective distinctive competences (Rosa and Spaniol, 2005).

In order to understand how such "sweet spots" may be identified, we need to understand the different backgrounds/origins of firms in the industry and how their distinctive competences and resource dimensions may have been formed. We start with the issue of the origin of firms in a new industry. The origin of a firm may be a signal of its distinctive competences, as suggested in the industrial organization literature (Agarwal *et al.*, 2004; Klepper and Simons, 2000; Stinchcombe, 1965). A firm's origin refers to whether the new venture was started by:

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- an individual or group of individuals as an independent venture; or
 - an established company.

The former is referred to as an “independent” venture and the latter as a “parented venture” (Heflebower, 1951; Hines, 1957; Weiss, 1981). Since Hines’ (1957) article on the effectiveness of entry by already established firms, economists have generally stated that entry by parented firms is likely to be easier than entry by independents. Their logic was based on the advantages established firms have in obtaining information and access to capital, trained personnel, and markets. However, the results of Weiss’s (1981) study contradict the view that the advantages held by parented entrants lead to greater success. Comparing the performance of new businesses started by individual entrepreneurs, Weiss found that independent businesses reached profitability in half the time that it took firms started by large corporations in similar industry segments. The empirical study of McDougall *et al.* (1992) on the effect on new venture performance of strategy, industry structure, and origin also indicates that the effect of origin by itself is secondary. However, more recently, Agarwal *et al.* (2002, 2004) found that the access to parental pockets increases the probability of an entrant’s survival. Indeed, one of the reasons for these contrasting results is that in these studies, origin was only classified as independent or parented (small or large), without taking into account the kind of distinctive competences that the parent firm can bring to the new venture.

The importance of the parent and origin is shown in another series of studies from the perspective of the resource-based view of the firm. Chandler (1962) pointed out that resources accumulated from past business activities become the driving forces behind a firm’s diversification strategy. Core competencies may also become core rigidities and inhibit change (Kraatz and Zajac, 2001; Leonard-Barton, 1992). When core competencies have become core rigidities, a firm is a prisoner of its past and origin. Montgomery and Wernerfelt (1988) also provide a resource-based rationale for diversification. They suggest that diversification is driven by the excess capacity of productive factors and the failure of markets for these factors. Montgomery and Hariharan (1991) suggest that diversifying firms tend to enter industries whose resource requirements match their distinctive competences (also shown by Silverman, 1999) and that firms that are most likely to diversify are those that are rapidly growing and have broad resource bases. Such firms are likely to diversify, as it is more effective for the firms to deploy these resources in other markets than to rent them to others. Hariharan and Brush (1999) show that established firms will enter at a smaller scale because they already have the opportunity to substitute other resources and advantages for cost disadvantages that result from small scale. Agarwal *et al.* (2004) found that a firm’s learning trajectory, process of capability accumulation and mobilization over time, and its long run performance and survival, are all inextricably linked to its learning and capabilities at the time of founding. Therefore, from a resource-based view of the firm, we can expect that the type of distinctive competences inherited by a new venture from its parent should have a considerable and lasting influence on its performance.

Early studies by von Hippel (1977) and Miller and Camp (1985) found a strong relationship between venture success and the prior experience of the parent-corporation. Studies from the resource-based view (Montgomery and Wernerfelt, 1988; Montgomery and Hariharan, 1991; Silverman, 1999; Hariharan and Brush, 1999) found a strong

relationship between the type of resources of the parent-corporation and the industry entered. Lambkin's (1988) study of the order of entry and performance in new markets shows that the level of relationship of the firm to the parent explains the quality of different kinds of strategies. In Lambkin's study, the relationship to the parent is addressed in terms of the level and types of resources that a new business has available to it by virtue of its ownership characteristics and is measured by the size and the diversity of the parent firm's activities, the possibility of buying materials or selling output internally, and the opportunity to share existing production facilities or distribution channels.

In summary, the literature on success in new industries, shows conflicting empirical results, but provides some clear general directions for hypotheses development in this study. It indicates that firm origin can be viewed in terms of the resources accumulated from past business activities (Chandler, 1962) as well as the prior experience and distinctive competences of the parent-corporation (von Hippel, 1977; Lambkin, 1988; Miller and Camp, 1985) that are available to the new firm. According to the resource-based theory, a firm's most important resources and capabilities are those that are valuable, rare, durable, difficult to identify and understand, imperfectly transferable, not easy to replicate or to substitute, and over which the firm possesses clear ownership (Barney, 1991; Grant, 1991; Peteraf, 1993; Wernerfelt, 1989). Therefore, the classification of a firm's origin requires more than just the two simple categories of independent and parented. Such an enriched classification needs better specification of the distinctive competences available to a firm in a new industry. In particular, based on Chandler (1962), von Hippel (1977), Lambkin (1988) and Miller and Camp (1985), it may be inferred that firms may differ depending on whether they have distinctive competences on a large number of resource dimensions or have distinctive competences on a selective but critical resource dimension. Following Weiss (1981), it is important to differentiate those start-up firms that have been newly founded and launched to capitalize on the new industry opportunity as opposed to existing firms entering the new industry. Therefore, we propose that three configurations of firms exist in new industries, namely, generalists, resource specialists and start-ups:

- (1) *Generalists*. Firms that have distinctive competences on many of the resource dimensions that characterize the resource space in their original industry.
- (2) *Resource specialists*. Firms that have distinctive competences on only a few selected resource dimensions characterizing the resource space in their original industry.
- (3) *Start-ups*. Firms that have been created specifically for a new industry with specific distinctive competences on all the resource dimensions characterizing the resource space in the new industry.

Note that several different resource specialists may enter the same new industry from different original industries and therefore be specialized on different types of resources (e.g. marketing or technology or manufacturing). This set of configurations in turn, provides the underlying framework for the development of the study's research hypotheses.

The study's research hypotheses

Based on the literature summary, particularly that on new industries, we propose that corresponding to each resource configuration, there exists an optimal region in strategy space. If the knowledge of this optimal strategy position is public and acted upon as may be the case, for example, in a stable well-established industry, then a unique mapping between resource configurations and strategic configurations may be observed, as shown in Figure 1.

However, given the uncertainty and complexity of a new industry, there is not likely to be a clear understanding of what the optimal strategy position is for a given resource configuration. Owing to this difficulty in the perception of the optimal strategy position, we propose that firms belonging to the same resource configuration enter a new industry at various positions in strategy space, as shown in Figure 2, i.e. they test out alternative strategic positions in the strategy space.

Based on our earlier discussion of the environment of new industries, it is not likely that there is a commonly accepted or known relationship defining the appropriate position in strategy space for a given position in resource space. And, it is likely that each entrant will have a unique perception of its appropriate positioning in strategy space (Porter, 1980) given its vision of the future. Thus, we expect that the overlap between resource configuration membership and strategic configuration membership will be low in a new industry. More formally:

- H1. In a new industry, some firms that possess the same resource configurations will have different strategy positions.
- H2. In a new industry, some firms that have similar strategy positions will possess different resource configurations.

The literature points out that due to differences in perception and abilities to develop distinctive competences; and in exploiting opportunities in competition, firms belonging to the same resource configuration may have different performance levels (Rumelt, 1984; Bogner *et al.*, 1998).

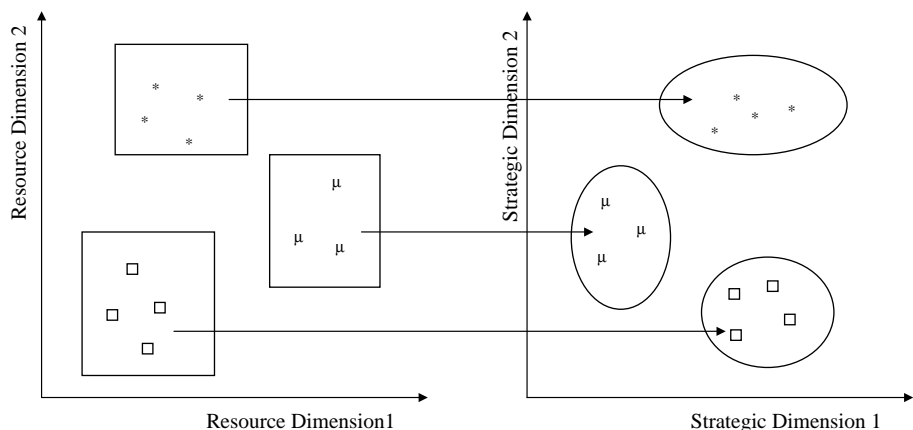


Figure 1.
Relationship between
strategic configurations
and resource
configurations

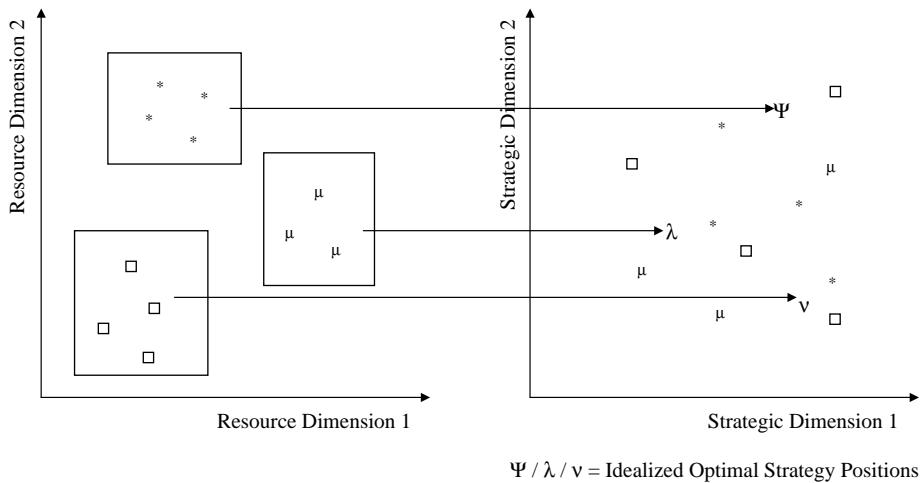


Figure 2.
Relationship between
strategic configurations
and resource
configurations in a new
industry

Therefore, we expect the following hypothesis holds true:

- H3.* In a new industry, there will be significant variation in performance even among members of the same resource configuration.

From the resource-based theory literature and the strategic configurations literature, it is further expected that, for any given region in resource space there exists a region in strategy space that leads to maximal performance. This optimal strategy region is similar to the “ideal” strategy point described by Day *et al.* (1987). However, given the measurement error likely to occur in practice, we suggest the existence of a best strategy space region as opposed to a single ideal point. Specifying point-to-point mapping is likely to be beyond the scope of measurement typically available in strategy studies. However, for model estimation purposes and to develop testable hypotheses, we assume that the optimal region be represented by a heuristic “ideal” point. More formally:

- H4.* In a new industry, for each resource configuration, there exists an “optimal” strategy position.

If, as for *H4*, there exists an optimal strategy position for each resource configuration, then by definition, a firm’s performance will decrease as its distance from the optimal position increases. Following Day *et al.* (1987), we expect the functional form of the relationship to be as given by the next hypothesis:

- H5.* The performance of a firm is inversely proportional to its distance in strategy space from its resource configuration’s optimal position in strategy space.

It follows that firms that are members of the same resource configuration must have the same performance only if they have the same strategy.

From the previous hypotheses, it can be deduced that the closeness in strategy space is not sufficient to ensure that firms will have the same performance. If they

belong to two different resource configurations their performance will be different. More formally:

- H6.* Two firms that are close in strategy space but are members of different resource configurations will have different performance.

Research methodology of empirical study in a new industry: the marketing technology industry

To test these hypotheses, we first developed a questionnaire survey (available from the authors) to collect data from a new industry, which we call the marketing technology industry.

A new industry: the marketing technology industry

The marketing technology industry is composed of firms that produce and/or sell at least a component of a marketing technology entity, i.e. a technological product specifically made for marketing applications (Alexandre *et al.*, 2000). Following van Wyk (1996), we consider that a technology entity is a “set of means” – skills/process, hardware/devices, or software/algorithms – created by people to facilitate human endeavor. A marketing technology entity is a technology entity that is specific for marketing applications. Order handling process and coupon redemption processes are examples of marketing technology processes; scanner, pupil meter, and people meter are examples of marketing technology devices; and the ASSESSOR (Silk and Urban, 1978; Urban *et al.*, 1983) and pricing decision support systems (Dockner and Jørgensen, 1988) are examples of marketing technology algorithms.

The marketing technology industry is relatively new and dynamic (Alexandre *et al.*, 2000; Ranchhold *et al.*, 2001). Linkages between marketing and technology distinctive competences underlie business models in this industry and a range of firms from both marketing and technology backgrounds have attempted to enter this industry as well as numerous start-ups.

Sample

The questionnaire method of data collection used in this study relies on key informants’ perceptions to indicate the firms’ strategy based on informants’ recall of information about resources, strategies and strategic positions. The advantages and disadvantages of this approach in terms of the use of informants and of the use of their perceptions to study strategy have been widely debated in the literature (Aaker *et al.*, 1995). The resolution to the debate hinges on determining who best represents the organizational characteristics that are of interest. In the strategic management literature researchers often have relied on top management’s assessment of firm strategy. Shortell and Zajac (1990) and, more recently, James and Hatten (1995) demonstrated convergent validity using perceptual and archival measure of strategic orientations, thus supporting the use of perceptual data.

The sampling method used is a combination of convenience sampling and the snowball method. This method is based on a judgment sample that relies on the researcher’s ability to locate an initial set of respondents with the desired characteristics; these individuals are then used as informants to identify still others with desired characteristics. We, therefore, mailed questionnaires to 313 firms that we had identified as being in the marketing technology industry based on:

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- searching the internet;
 - commercial literature on marketing automation; and
 - marketing news advertisements.

We received 52 completed and usable questionnaires back, for an overall response rate of 16.61 per cent. This rate is similar to rates reported in the literature, which ranges from 5.9 to 22 per cent (Gatignon and Robertson, 1989; Gatignon and Xuereb, 1997). We also received six responses stating that they were not in the marketing technology industry, yet wanting a copy of our findings. Given the emerging nature of this “industry”, the response rate is quite reasonable in terms of current research norms. Indeed, the median sample size reported in previous studies of new ventures is 57 (Carter *et al.*, 1994), and Mehra’s (1996) study of resource and market-based groups in the US banking industry involved a sample of 45 banks. We also checked, to the extent possible, that there was no significant difference in firm profiles between respondents and non-respondents.

Identification of resource configuration membership

Technology-related capabilities have been shown to enable firms to achieve superior performance (Clark and Fujimoto, 1991; Teece *et al.*, 1997). Likewise, marketing-related capabilities have been established as important resources for market-driven organizations (Day, 1990, 1994; Zander and Zander, 2005). Technology- and marketing-related capabilities are complementary and their interaction has been shown to have a significant impact on performance (Song *et al.*, 2005). Based on exploratory interviews with managers, we broadened our initial configuration of generalists, resource specialists and start-ups in order to identify four types of firms in the marketing technology industry based on their resource configurations. To enter this industry, two kinds of specialist distinctive competences are particularly important: the knowledge of technology and the knowledge of marketing and marketing techniques. The strengths of marketing specialists that enter the marketing technology industry reside in their knowledge of the marketing field, and the strengths of technological specialists reside in their technological knowledge. A firm can be created to enter the marketing technology industry directly, or it can be a division or a subsidiary of an existing firm coming from the marketing industry, or the technology industry or from another industry. Based on their origins firms are therefore classified into the four resource configurations as follows:

- (1) Generalists (G) are organizations that have decided to enter the new industry of marketing technology to leverage their distinctive competences in both market knowledge and technology development. These organizations are likely to be divisions or subsidiaries of large firms and the marketing technologies introduced by them to the marketing technology market are likely to have been first developed for in-house use.
- (2) Marketing specialists (MS) are organizations with a marketing origin; they are divisions or subsidiaries of large marketing firms. These organizations enter the marketing technology industry by adapting new technologies for marketing applications. These organizations possess knowledge about the “marketing” market, but to enter the new industry, they must acquire skills in new technologies.

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- (3) Technology specialists (TS) are organizations with a technological origin; they are divisions or subsidiaries of large technological firms. For those organizations, entering the marketing technology industry means developing their technology for a new market – the marketing market.
 - (4) Marketing technology innovators (MTI) are new firms with a range of skills that are solely devoted to marketing technology. They were founded by one or a group of individuals to develop business in the marketing technology industry and are endowed with distinctive competences specific to this particular industry whether marketing or technology based.

To identify the resource configurations that a firm targeted, respondents were asked to identify the entry scenario that best described their firm's entry into the marketing technology industry (i.e. we assumed that their ex-ante reasons for entry were clear). Five alternative scenarios were proposed to allow the respondent to choose the most appropriate one for their firm/unit: the firm/unit is:

- (1) a newly established one especially for the marketing technology industry;
- (2) one extending available technology in an existing firm to a new application for the marketing technology industry;
- (3) one extending available marketing capabilities of an existing firm to the new (for the firm) marketing technology industry;
- (4) a unit established by a firm to create a new (for the firm) technology for the marketing technology industry; and
- (5) a unit established by a firm to sell technology/services first created for internal use.

Among the 52 firms of our sample, six are categorized as G (scenarios 4 and 5), eight as MS (scenario 3), 16 as TS (scenario 2), 21 as MTI (scenario 1), and one has an unidentifiable origin (omitted in the statistical analyses). This distribution is consistent with the statement of Porter (1980, p. 218) that: "The emerging phase of the industry is usually accompanied by the presence of the greatest proportion of newly formed companies . . . that the industry will ever experience." This is also consistent with the first-mover advantage literature (Lieberman and Montgomery, 1988; 1998), that proposes that pioneering is likely to be a desirable strategy for firms whose relative skills are in new product development, whereas firms with relative strengths in marketing and manufacturing may prefer to enter later; after the initial market and technological uncertainties have been resolved. Robinson *et al.* (1992) tested for differences in resources and capabilities among entrants at alternate stages of the industry life-cycle. They found that market pioneers had significantly different skill and resource profiles than later entrants. Firms with greater marketing and manufacturing skills tended to be followers.

Generic business strategy

The dimensions of business strategy in this study were based on Miller's (1986, 1987) extensions of Porter's (1980, 1985) framework. Miller (1986, 1987) identified four dimensions of business strategy: product orientation (PO) (product/service innovation), marketing orientation (or differentiation), scope (niche vs related diversification), and conservative cost control (low cost, "harvester", cost leadership). These dimensions are

similar to those of Porter (1980, 1985), except that differentiation is split between product/service innovation and marketing differentiation. These four strategic dimensions are not mutually exclusive (Campbell-Hunt, 2000; Karnani, 1984; Miller and Dess, 1993). Firms can be high on both innovation and breadth; and a broad strategy is consistent with both innovation and conservative cost control (Miller, 1986; 1987).

In order to measure these four strategy dimensions in our exploratory study, we used the variables suggested by Dess and Davis (1984) in their operationalization of Porter's generic strategies and commonly adopted in strategy studies. Based on the findings of Dess and Davis, we selected three variables, to be parsimonious, for each of the strategy dimensions. For PO we selected:

- (1) product/service quality control;
- (2) developing/refining existing product/services; and
- (3) advertising.

For market orientation we selected:

- reputation within the industry;
- innovation in marketing techniques and methods; and
- experienced/trained personnel.

For scope[1] (Scope) we selected:

- capability to manufacture/deliver specialty product/services;
- innovation in manufacturing/service delivery processes; and
- product/services in high-price market segments.

And for conservative cost control (Cost) we selected:

- competitive pricing;
- procurement of raw materials; and
- maintain high-inventory levels.

The importance of each of these variables was evaluated by each respondent on a five-point scale ranging from not at all important to extremely important as in Dess and Davis.

With this target structure in mind we ran a factor analysis with a varimax rotation. The results are presented in Table I.

The eigenvalues and percentage of variance (before rotation) are: PO: 3.460 (28.8 per cent); Cost: 1.919 (16.0 per cent); MO: 1.600 (13.3 per cent); Scope: 1.149 (9.6 per cent), and the total of the explained variance is 67.7 per cent. The coefficient α values ranged from 0.63 to 0.78. The resultant factor structure corresponds to the target structure and thus to the structure suggested by Miller (1986, 1987). The factor scores of each firm were used in further analysis to represent its strategy.

Performance

Measuring the performance of new businesses presents special difficulties. New businesses have only short histories and are usually not expected to show much profit

Strategic variables	PO	Strategy dimensions		
		Cost	MO	Scope ^a
Product/service quality control	0.840	-0.119	0.099	0.132
Developing/refining existing products/services	0.706	-0.108	0.053	0.337
Advertising	0.698	0.321	0.239	0.053
Competitive pricing	0.086	0.781	0.169	0.005
Procurement of raw materials	0.130	0.727	-0.192	0.309
Maintain high-inventory levels	-0.370	0.719	0.228	-0.006
Reputation within industry	0.255	0.082	0.847	0.118
Innovation in marketing techniques and methods	-0.114	-0.024	0.815	0.284
Experienced/trained personnel	0.220	0.167	0.806	-0.053
Capability to manufacture/deliver specialty products/services	0.076	0.105	-0.027	0.797
Innovation in manufacturing/service delivery processes	0.126	0.002	0.251	0.783
Products/services in high-price market segments	0.319	0.142	0.121	0.561
Eigenvalue (after rotation)	2.105	1.837	2.300	1.886
Percentage of common variance (100 percent)	25.9	22.6	28.3	23.2
Percentage of total variance (67.7 per cent)	17.5	15.3	19.2	15.7
Cronbach's α	0.70	0.63	0.78	0.65

Table I.
Competitive strategy:
factor structure

Note: ^aScope is an inverted scale

during the early years. Miller *et al.* (1988) have described some of the limitations involved in using traditional performance measures (return on investment, cash flow, market share gain and return to stockholders) to evaluate new ventures. Following Chandler and Hanks (1993), three items were used to measure growth:

- (1) Perceived growth in market share.
- (2) Change in cash flow.
- (3) Sales growth and three items to measure business volume:
 - earnings including the salary of the founder;
 - sales; and
 - net worth.

A performance index was computed using factor analysis without rotation (principal component analysis). Only the first factor, that represents 61.6 per cent of the variance, has been retained for the construction of the index. Table II gives the coefficients of correlation between the index and the different performance variables.

Research study results

The presentation of the results is organized as follows: first, we show that, in a new industry, some firms that belong to the same resource configuration will have different strategy positions (*H1*) and that some firms that have similar strategy positions will belong to different resource configurations (*H2*). Second, we show, having found support for *H1* and *H2*, that firms belonging to the same resource configurations may have different performance levels (*H3*), and that an optimal strategy position exists for

Performance variables	Loadings
Market share	0.749
Cash flow	0.760
Annual sales growth	0.776
Annual sales	0.820
Annual earnings	0.813
Net worth	0.788
Number of firms	40 ^a
Eigenvalues	3.695
Percentage of variance	61.6
Cronbach's α	0.69

Table II.
Performance: factor structure

Note: ^aThe number of firms is not equal to 52 due to some non-responses

the firms coming from each resource configuration (*H4*). Third, we evaluate the parameters of three different models of firm's performance and show that according to these models, a firm's performance depends on resource configuration membership (*H5*) and that firms with the same strategy but belonging to different resource configurations will have different performance (*H6*).

Descriptive differences between resource configurations

H1 states that in a new industry, some firms that belong to the same resource configuration will have different strategy positions. *H2* states that in a new industry, some firms that have similar strategy positions will belong to different resource configurations. To test these hypotheses, we compare the positions in the strategy space of the firms belonging to the different resource configurations and their dispersion. Table III shows the average values (and standard errors) for the four different strategic dimensions.

To test *H2* and *H3*, we use the *F*-test statistic from a multivariate analysis of variance (MANOVA). In a MANOVA, the within-group variance measures the internal homogeneity (*H1*) and the between-group variance measures the external heterogeneity (*H2*). To support *H1* the within-group variance has to be high and to support the *H2* the between-group variance has to be small. The multivariate *F* is the ratio of the between to the within group variance. A significant *F* means that the between-group variance is larger than the within-group variance, and then that *H1* and

Strategy dimensions	Resources groups			
	G (<i>n</i> = 6)	MS (<i>n</i> = 7)	TS (<i>n</i> = 16)	MTI (<i>n</i> = 21)
P-O	0.039 (0.371)	0.048 (0.153)	-0.038 (0.331)	-0.028 (0.208)
Cost	0.021 (0.291)	0.025 (0.459)	0.293 (0.288)	-0.202 (0.194)
M-O	-0.757 (0.793)	0.285 (0.184)	-0.006 (0.213)	0.093 (0.183)
Scope ^a	0.115 (0.291)	0.766 (0.299)	-0.163 (0.256)	-0.084 (0.221)

Notes: ^aScope is measured on a reversed scale: a positive score on this dimension means a niche strategy, and a negative score stands for a broad range of operations; means (standard errors)

Table III.
Strategies by resource configurations

H2 have to be rejected. The results of the MANOVA gives a Wilks $\Lambda = 0.787$ and an $F = 0.902$ that is not significant ($p = 0.547$).

The support for *H1* and *H2* in our data buttresses our idea that in the first stages of the development of a new industry, due to uncertainty and ambiguity, the exact relationship between resources and strategy is not known by the potential entrants.

To test *H3* which states that the performance of firms that belong to the same resource configuration will vary widely, we use the same reasoning as Lawless *et al.* (1989): If all firms in the same resource configuration have identical performance, then each firm's individual performance score will fall within a 95 per cent confidence interval around respective configuration mean. If more than 5 per cent of firms fall outside the confidence interval, then the hypothesis is supported. Table IV shows the average values and 95 per cent confidence intervals for the four resource configurations.

For all of the four configurations, more than 5 per cent of the firms lie outside the interval thus supporting the hypothesis. Our result for resource configurations corresponds to that of Lawless *et al.* (1989), who also found significant differences in performance for strategic configurations among manufacturing firms.

Optimal strategies of resource configurations

H4 states that for each resource configuration there exists a best or optimal strategy region. To test this hypothesis, we first need to identify the optimal strategy region for each resource configuration, and then show that these regions are different.

Consistent with previous configuration studies, we identified the highest performing firms of each resource configuration to calibrate their locations in strategy space as the optimal strategy region (Doty *et al.*, 1993; Drazin and van de Ven, 1985; Venkatraman, 1990). We operationalize the location of the optimal strategy region for each resource configuration as the location of the median strategy position of the above average members of each resource configuration[2]. We call this position the "heuristic optimal strategy point". Above-average players, in each configuration, are those with a performance above the overall (industry) average performance. The reason for the use of medians instead of means is that medians are more robust than means especially for small samples. Table V gives the heuristic optimal strategy point for each resource configuration.

To test *H4*, we calculated the distance of the furthest heuristic optima on each dimension as a percentage of the range observed on that dimension for all the firms in the sample as an indicator of the operational significance. These percentages from

Performance	Resource groups			
	G ($n = 6$)	MS ($n = 7$)	TS ($n = 16$)	MTI ($n = 21$)
Means	-0.198	-0.782	0.108	-0.039
Confidence interval (95 per cent)	± 1.869	± 1.277	± 0.516	± 0.474
Different from mean ^a (per cent)	16.67	14.29	43.75	71.43

Table IV.
Performance by resource configurations

Notes: ^aPercentage of firms in each configuration whose normalized performance value are out of the 95 per cent confidence interval around the mean; about 5 per cent of the firms lying outside the interval indicate significant within configuration variation of performance

lowest to highest are: 17.5, 46, 48.7, and 64.3 per cent. These values imply that the differences between the heuristic optima are operationally significant.

Firm performance

We have argued that a firm’s performance is a function of its resource configuration membership and the gap between its actual strategy and the optimal strategy of its configuration. This gap between actual strategy and optimal strategy is measured by the Euclidean distance (strategic distance – SD) in strategy space between the firm’s position and the heuristic optimal strategy point for its resource configuration (Drazin and van de Ven, 1985; Venkatraman, 1990; Vories and Morgan, 2003). This SD is calculated by the following formula:

$$SD_{fn} = \sqrt{\sum_{i=1}^4 (S_{fn} - S_{in}^+)^2}$$

where SD_{fn} is the SD of the firm f of the resource configuration n , S_{fn} is the score of the same firm on the strategic dimension i , and S_{in}^+ is the heuristic optimal strategy point for the resource configuration n on the strategic dimension i .

To evaluate the relationship between the performance and the distance to the optimum, we used a model similar to the model Day *et al.* (1987) used to validate their strategy map. The model, presented in equation (1), is an OLS regression between firm’s performance and SD with the performance ($Perf_n^+$) at the heuristic optimal strategy point added and a zero intercept. $Perf_n^+$ is the median performance of the above-average firms of each resource configuration n . The rationale for this zero intercept constraint is that at the heuristic optimal strategy point, a firm should have a performance equal to $Perf_n^+$:

$$Perf_{fn} = \beta \cdot SD_{fn} + Perf_n^+ + \epsilon \tag{1}$$

The performance at the heuristic optimal strategy point calculated for the different resource configurations, respectively, are 0.829 for the G, 0.180 for the MS, 0.506 for the TS, and 0.574 for the MTI. These results show that the different optimal strategies are not equally profitable. The optimal strategy for MS is the least profitable, while the best optimal strategy appears to be that of the G.

The model fits the data very well with an R^2 equal to 0.703[3] (F -Value 80.117, p -value < 0.001) and the β -coefficient is equal to -0.521 (p -value < 0.001). That result supports our $H5$, which states that within a resource configuration the

Strategy dimensions	Resource groups			
	G	MS	TS	MTI
P-O	0.439	-0.173	0.033	0.255
Cost	0.322	-10.383	-0.521	-0.569
M-O	0.927	0.334	-0.682	0.653
Scope ^a	0.050	10.991	0.465	-0.264

Note: ^aScope is an inverted scale

Table V.
Resource configurations’ heuristic optimal strategy points

performance of a firm is inversely proportional to its distance in strategy space from its resource configuration's optimal position.

To test *H6*, we compute the theoretical performance (based on the model of equation (1)) of the heuristic optimal strategy point of each resource configuration as if they are members of other configurations. The results are presented in Table VI. This table should be read in the following way: each column gives the theoretical performance of firms of a resource configuration following the optimal strategy of another resource configuration noted by superscript a.

The results in Table VI support *H6* that firms having the same strategy position but belonging to different resource configurations exhibit performance differences. These results also show that a member of a resource configuration that tries to achieve the optimal strategy of another resource configuration will obtain a poorer performance compared to that obtained by the members of its own resource configuration that follow the strategy optimal for their resource configuration.

Discussion and implications

In general, the results of this exploratory study support our hypotheses. We show that interfirm performance differences may be explained by the distance of each firm to the optimal strategy position corresponding to its resource configuration. We also propose a set of resource configurations and identify the optimal generic strategy for each such configuration. While our theoretical arguments were made without a specific industry or type of industry in mind, our empirical results are based on a new industry. We discuss the implications in particular for new industries noting that the exact relationship between resources and strategy is not known by entrants to a new industry.

In summary, our major findings in a new industry context are:

- Some firms that are close together in strategy space vary in performance.
- Some firms that are close together in strategy space belong to quite different resource configurations.
- Firms that belong to the same resource configuration (i.e. are close together in resource space and distant from others) vary in performance.
- Given the origin (i.e. resource configuration) of a new entrant there exists an optimal strategy that can be theoretically defined.
- Corresponding to each resource configuration there seems to exist a unique optimal region in strategy space.

Resource configurations optimal strategy positions	Resource configurations			
	G	MS	TS	MTI
G ^a	0.829	-0.588	-0.164	0.308
MS ^a	-1.237	0.180	-0.881	-1.100
TS ^a	-0.487	-0.555	0.506	-0.295
MTI ^a	0.053	-0.709	-0.227	0.574

Notes: ^aThis table should be read in the following way: each column gives the theoretical performance of firms of a resource configuration following the optimal strategy of another resource configuration; confidence interval at 5 per cent: ± 0.118

Table VI.
Performance consequences of mismatch between resources and strategy

Our results may be viewed as emerging from the context of uncertainty and complexity prevailing in a new industry. Firms that enter a new industry, based on our analysis, do not seem to have a clear understanding of the match between their distinctive competences and the competitive demands of the market. They seem to be focused on differentiating themselves from all the others – as is evidenced by an almost uniform distribution of firms in strategy space. Would they be better off by engaging in clustered competition as might be implied by Porter (1998)? If so, how should they cluster? It is possible that the “smarter” firms would be worse off as the others who copy them might erode their profits through fast second-mover strategies. Or, alternatively, the presence of network externalities will enhance the performance of an entire cluster. Based on our results, it is suggested that for a set of resource-based strengths there is a corresponding optimal strategy space region. In other words, there is an optimal type of opportunity that fits the strengths of each individual firm.

One of the objectives of this paper has been to theoretically identify and empirically validate the appropriate strategy for a firm with distinctive competences on a given resource dimension. However, it is perhaps equally important to consider how firms should change given their initial entry and the resulting performance (Bogner *et al.*, 1996). Extant theory would suggest (Fiegenbaum *et al.*, 1996) that firms would identify reference points or benchmarks and adjust toward these reference positions. Typically, the extant research focuses on adjustments to be made in strategy space. That is, a firm is said to look at the firms that are close to it in strategy space and to adjust its strategy in the direction of the firm with superior performance. In a new industry, based on our findings, it would be a mistake to focus just on the strategy space unless it is carried out by identifying and imitating the position in resource space of the reference firm as well. Thus, the cognitive field that must be viewed, in searching for the right reference point, is that of the map of resource-strategy relationships. Based on such a map, any change to improve performance may be carried out in two principal ways.

Firms can adjust their strategy (Kaatz and Zajac, 2001; Snow and Hambrick, 1980; Zajac *et al.*, 2000) toward the optimal strategy region of their respective resource configuration which acts as a reference point (Bamberger and Fiegenbaum, 1996; Fiegenbaum *et al.*, 1996), or modify their distinctive competences to fit another optimal strategy (strategy change, Snow and Hambrick, 1980; Zajac and Shortell, 1989). The first choice corresponds to a move in strategy space and the second to a move in resource space. The choice between these two kinds of moves may be made by comparing the height of the mobility barriers (Caves and Porter, 1977; Mascarenhas and Aaker, 1989; Sudharshan *et al.*, 1991), which prevent moves in strategy space, to the height of the isolating mechanisms (Lippman and Rumelt, 1982; Rumelt, 1984), or resource barriers (Wernerfelt, 1984), which prevent moves in resource space.

For a firm with high endowments on many resource dimensions it should be easier to adapt its strategy rather than to modify its core competences (Cohen and Levinthal, 1990; Penrose, 1959). Such firms having a competitive advantage in terms of resources have to adapt their strategy to leverage their advantages. For firms with low endowments on their resource dimensions, it may be easier to acquire or develop competences (Makadok, 2001) rather than adapt their strategy towards the respective optimal position. For these firms, which are weak in terms of competences, it may be preferable to build their competences to match their strategy rather than to adapt their strategy to these weak resources. For firms with large endowments on one or few

resource dimensions and small endowments on the others, the choice between strategy adaptation and strategy change will depend on the competitive advantage offered by their strengths and the sustainability of this advantage.

As a result of firm moves, as an industry matures, the resource configuration members will tend to cluster together in terms of their positions in strategy space (Bamberger and Fiegenbaum, 1996; Fiegenbaum *et al.*, 1996). When the resource bundle of a firm and its strategic positioning proves to be successful, then it is emulated in competition by cross-firm learning (Aharoni, 1993). Resource configurations, therefore, can be viewed as cognitive communities (Osborne *et al.*, 2001; Peteraf and Shanley, 1997; Porac *et al.*, 1989; Porac and Thomas, 1990; Reger and Huff, 1993) in which members learn and develop knowledge that can serve to define expected relationships and behaviors (Bogner *et al.*, 1998). Therefore, the resource grouping and strategic grouping will overlap substantially as learning occurs. So, over time, performance differences across members of a resource configuration should decrease.

Our principal managerial implications are the suggested match between resource configurations and the optimal strategy position. As a special case, it indicates that a firm entering a new industry should assess its distinctive competences, and choose the optimal strategy that corresponds to its resource position, and not try to imitate the strategy of a firm that is a high performer but has distinctive competences on a different set of resource dimensions.

Notes

1. Scope is measured on a reversed scale: a positive score on this dimension means a niche strategy, and a negative score stands for a broad range of operations.
2. Other potential referential strategy positions (industry average, group average, median of industry above average) were tested, but the median strategy position of the above average members of each resource group gave the best results in terms of model performance.
3. R_r^2 is the raw-moment version of R^2 recommended by Aigner (1971) for zero intercept regressions.

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