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Effectiveness and Cash Flow Performance
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Source: *Strategic Management Journal,* Vol. 30, No. 12 (Dec., 2009), pp. 1310-1334
Published by: Wiley
Stable URL: https://www.jstor.org/stable/27735493
Accessed: 20-02-2021 09:52 UTC

PRODUCT-MARKET STRATEGY AND THE MARKETING CAPABILITIES OF THE FIRM: IMPACT ON MARKET EFFECTIVENESS AND CASH FLOW PERFORMANCE

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We report on two studies (a single and a multi-industry) that empirically investigate a nomological network of relationships between strategic business unit product-market strategy (differentiation, cost-focus, and product-market scope), marketing capabilities (architectural and specialized capabilities, as well as their integration), and business unit performance (market effectiveness and subsequent one-year objective cash flow), along with a series of controls. Addressing important lacunae in the resource-based view our main research objective is to augment understanding of how critical firm-level marketing capabilities enable the realization of strategy, thus, further advancing both the resource-based view and more recent capabilities theorizing. Specifically, we test seven hypotheses and find strong evidence that both architectural and specialized marketing capabilities, and their integration, positively mediate the product-market strategy and derived business unit performance relationship. In contrast to many extant studies, both survey and objectively measured data are combined, and because the secondary data collected contains both resource-level (input) data and subsequent one-year financial data, a higher level of confidence may be attributable to our findings. Copyright © 2009 John Wiley & Sons, Ltd.

INTRODUCTION

Under the resource-based view of the firm (RBV), resources drive the firm's ability to design, produce, market, and distribute its goods and services. The RBV has provided important theoretical foundations for understanding how heterogeneous

resources drive firm performance (e.g., Helfat, 2000). More recently, the focus of much RBV research has been on understanding the outcomes of resource deployment processes (e.g., Barney and Mackey, 2005; Sirmon, Hitt, and Ireland, 2007) often referred to as organizational capabilities (e.g., Kale and Singh, 2007; Slater, Olson, and Hult, 2006). Capabilities research has recognized that a firm's ability to deploy resources through organizational capabilities may be more important than absolute resource levels in driving performance (e.g., DeSarbo, Di Benedetto, and Song, 2007). This emerging research stream has enabled

theoretical explanations regarding how some firms overcome resource deficiencies by deploying their available resources in ways that outperform similar deployments by competitors (DeSarbo, Di Benedetto, Song, and Sinha, 2005), such as occurs, for example, when small firms create innovative new products that offer customers more value than those offered by larger competitors (Qian and Li, 2003).

An important part of the RBV-capabilities literature has highlighted the value of developing organizational capabilities as a means of implementing firm strategies (Slater *et al.*, 2006; Zott, 2003).[1] Beginning with Penrose (1959), strategic management research has postulated that the deployment of those capabilities that best serve to implement the firm's strategic plans yields both higher growth and improved performance. Yet, despite the theoretical and practical resonance of this issue, surprisingly little empirical work has assessed whether firm capabilities aid in implementing firm strategies, as capabilities theory predicts (DeSarbo, Di Benedetto, Jedidi, and Song, 2006). This deficiency was illustrated in a recent review of the RBV, which noted that only eight of 55 related articles appearing in leading management journals dealt with aspects of both strategy and capabilities (Newbert, 2007). Within those eight articles, only about half of the hypotheses tested were supported, leading the author to conclude that managers and academics know significantly less about how firm capabilities operate than had originally been believed.

Newbert (2007) points out other deficiencies in the RBV literature. Of key importance to theory development in the RBV is the issue of whether absolute resource levels, versus their deployment via firm capabilities, are more important in differentiating firm performance over time. This has been a long-standing criticism of the RBV literature where the role of specific resources in creating competitive advantage has overshadowed the process by which these resources are transformed into output that is of value (Srivastava, Fahey, and Christensen, 2001). It is the outcome of these processes that dictate whether or not resources provide the firm with the presence and relative worth of its capabilities (Collis and Montgomery,

1995). This issue, while frequently discussed in the RBV literature (DeSarbo *et al.*, 2007), has not been empirically examined in previous studies (Newbert, 2007). This omission is surprising given the important role this theoretical assumption plays in capabilities theory, which stresses the importance of resource deployment as a way of protecting competitive advantage from erosion.

An additional deficiency highlighted by Newbert (2007) relates to both theoretical and empirical research dealing with capabilities integration (e.g., Dutta, Narasimhan, and Rajiv, 1999; Grant, 1996; Teece, Pisano, and Schuen, 1997). Capabilities integration has been proposed as a key factor leading to superior performance and ultimately sustainable competitive advantage. However, capabilities integration has been investigated in only two of the 55 studies empirically examining elements of the RBV (Newbert, 2007), thus leaving a potential source of sustainable competitive advantage largely unresearched. Also absent from the RBV literature is any focus on marketing capabilities and strategy in previous RBV studies. No article within Newbert's (2007) list of empirical RBV research investigates any form of marketing capabilities as a vehicle for implementing strategy. This finding is particularly anomalous, given that strategic management research has historically recognized the important role marketing plays in determining firm performance (Hult, Ketchen, and Slater, 2005; Katsikeas, Samiee, and Theodosiou, 2006).

The opportunity to resolve these deficiencies provides the motivation for this study. To do this, we address critical gaps in both the theoretical and empirically based RBV literature. As a result, our research further informs capabilities and RBV theories and makes five distinct contributions to the strategic management literature. First, we investigate directly how two predicted, but not previously studied forms of marketing capabilities—known as specialized and architectural marketing capabilities—enable a firm's product-market strategy to be realized. To analyze these capabilities in the context of RBV theory, we test whether absolute marketing resource levels versus their deployment via specialized and architectural marketing capabilities are more important in driving firm performance. Second, we develop theory that supports the integration of specialized and architectural marketing capabilities as an idiopathic approach to preventing

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[1] The heritage of this literature can be sourced to a special issue of *Strategic Management Journal* (Henderson and Mitchell, 1997) where the debate began to develop.

imitation of firm capabilities and test how integration of these capabilities impacts firm performance. Third, we develop support for mid-range market performance outcomes as a mediator in the capabilities to firm financial performance linkage, thus lending support for not only RBV theory predictions of concurrent performance advantages, but also providing evidence that over time, specialized and architectural marketing capabilities and marketing capabilities integration enable sustainable competitive advantage. Fourth, we develop new theory providing evidence of important relationships between cost-based strategies and marketing capabilities and marketing capabilities integration. We demonstrate that both marketing capabilities and marketing capabilities integration are important to firms successfully implementing both cost leadership strategies as well as differentiation strategies. Fifth, we test our model using seemingly unrelated regression across two studies. Both studies accommodate a subsequent period performance time-lag and offer a robust test of these contributions that collectively augment our understanding of how critical firm-level marketing capabilities affect strategy to performance relationships, thus lending further credence to both the RBV and contemporary capabilities theory development.

THEORETICAL FRAMEWORK

Capabilities theory extensions to the RBV are based on the premise that resource deployments may be more effective drivers of sustainable competitive advantage than resources alone (e.g., Teece *et al.*, 1997, Teece, 2007). This is in contrast to the early work in the RBV that postulated that resource heterogeneity alone drove competitive advantage (e.g., Barney, 1991). As theory in this area has evolved, it has become increasingly clear that easily acquired resources, including business assets and standardized process solutions, will not serve as an enduring source of competitive advantage (Miller, 2003; Ray, Barney, and Muhanna, 2004). However, it is also clear that not all firms utilize commonly attainable resources equally well. Instead, firms combine standardized resources with internal knowledge in attempts to fit the pieces together in ways that are able to achieve strategic and operational goals. These idiopathic processes frequently create new organizational knowledge

that can be embedded in organizational capabilities that are relatively difficult for competitors to diagnose and/or replicate (Teece *et al.*, 1997) due to the tacit nature of the knowledge they contain (Nelson and Winter, 1982).

It is also important to recognize the constraining nature of organizational context, history, and strategic goals. According to Teece *et al.* (1997) a firm is constrained by the path it has traveled. In contrast to most microeconomic views of organizational adaptation, which postulate instantaneous action and reaction, capabilities theory indicates that learning takes time (Nelson and Winter, 1982). Thus, organizational adaptation will be a function of the industry conditions under which the firm is operating, the firm's strategy, and its responses to competitor moves over time. This blending of strategy, evolutionary economics, and capabilities theories indicates that while resources are the building blocks of capabilities, they are often underutilized unless guided by strategic imperatives (Ray *et al.*, 2004).

In the following sections, we build a theoretical framework using management strategy, RBV, and capabilities theory perspectives. This framework contributes to the strategic management literature by indicating how a firm can implement product-market strategies through the allocation of marketing resources leading to the development of specialized and architectural marketing capabilities. We then specify theoretical extensions regarding how these marketing capabilities can improve concurrent market performance and ultimately subsequent one-year objective financial performance outcomes above and beyond those explainable by marketing resources alone. We also specify theory relating to how the integration of these two types of capabilities influence both concurrent market performance and subsequent one-year financial performance. We then test this theoretical model in two studies, the first being a single industry study in which environmental impact is minimized, and the second being a multi-industry study providing evidence of generalizability. Our findings demonstrate support for capabilities as appropriate mechanisms for implementing product-market strategy leading to the attainment of superior concurrent market performance and ultimately leading to superior subsequent one-year objective financial performance. Lastly, by including appropriate control variables in each of

the two studies, our findings provide strong additional support for recent capabilities extensions to the RBV.

Product-market strategy and marketing capabilities

Peteraf and Bergen (2003) indicate that resource-based theory may best serve to add insight when focused on product-markets and the resource deployments needed to support activity in a product-market. The theoretical origins of this link dates to Miles and Snow (1978) who first indicated the complexity surrounding interrelationships between which capabilities accompany each strategy type. Following this, Snow and Hrebiniak (1980) and Hambrick (1983) established theoretically the direction of causation between strategy and functional capabilities where the 'apparent tendencies for the strategic types to develop different distinctive competencies, that is, capabilities...' (Hambrick, 1983: 10) was seen as a necessary precursor to explaining performance. Our theorizing is consistent with this pioneering research and more recent empirical work where it is the organization's strategy that largely dictates its capabilities (DeSarbo *et al.*, 2005).

The development of product-market strategies indicates that the firm has made important decisions regarding organizational goals. While different typologies and taxonomies of product-market strategy exist (DeSarbo *et al.*, 2006) most focus on three elements: differentiation, cost focus, and product-market scope. In the case of firms developing differentiation options concerning their product-market strategy, managers will have identified customer groups that desire distinctive benefits beyond those provided by non-differentiated products. In addition, these customers will exist in sufficient numbers to be profitably served and managers will have chosen to deploy their firm's resources so as to provide differentiation-based benefits to these customers, usually at a higher price than undifferentiated offerings (Day, 1999; Day and Wensley, 1988; Homburg, Krohmer, and Workman, 1999; Porter, 1980).

To successfully deploy resources in support of differentiation at the product-market level, firms need marketing capabilities that enable them to repeatedly deliver desired benefit bundles to customers (Noble, 1999). While different types of marketing capabilities have been explored in previous research (e.g., Vorhies and Morgan, 2005), according to the classification proposed by Grant (1996), firms exhibit hierarchies of capabilities formed by the integration of relevant knowledge. This hierarchy indicates that some capabilities are focused on tactical activities while others are focused on organizing resources for deployment. Thus, for this research we identify two distinct sets of marketing capabilities that are relevant to product-market strategy.

First, *specialized marketing capabilities* (cf. Grant, 1996) are the functionally focused capabilities built around the integration of the specialized knowledge held by the firm's marketing employees. These reflect task-specific marketing activities such as marketing communications, personal selling, pricing, product development, and, in goods-based industries, distribution. Specialized marketing capabilities are particularly important in firms emphasizing differentiation-based product-market strategy elements because the communication of benefits to current and potential customers is highly dependent on these firm capabilities (e.g., Boulding, Lee, and Staelin, 1994; Day and Nedungadi, 1994; Slater and Narver, 1993; Tripsas, 1997).

Second, *architectural marketing capabilities* (cf. Teece *et al.*, 1997) are the capabilities that direct the coordination of the specialized marketing capabilities, thus focusing resource deployments to achieve product-market goals. Both the specialized and architectural marketing capabilities of the firm are necessary enablers of product differentiation (Pasa and Shugan, 1996). Architectural marketing capabilities support differentiation strategies by collecting information from the market environment and developing marketing plans to act on the information collected from the market (Kohli and Jaworski, 1990; Morgan *et al.*, 2003). Then, coordination of resources and communication of plan requirements and objectives is needed to ensure that the requisite marketing resources are available when called upon (Narver and Slater, 1990). Architectural marketing capabilities provide the planning and coordination mechanism needed to ensure that marketing program-level activities, such as those represented in the firm's specialized marketing capabilities, are effectively deployed to implement the requirements of the firm's strategies (Noble and Mokwa, 1999). Therefore:

Hypothesis 1: The differentiation dimension of product-market strategy leads to higher levels of: (a) specialized marketing capabilities; and (b) architectural marketing capabilities.

Many strategy researchers agree that firms focusing on the cost-efficiency dimensions of product-market strategy do not need as high a level of marketing capabilities as do those firms emphasizing differentiation-based strategies (Slater and Olson, 2001; Woodside, Sullivan, and Trappey, 1999). Researchers have also found that firms cannot ignore the linkage between the cost dimensions of product-market strategy and marketing capabilities (Conant, Mokwa, and Varadarajan, 1990). In fact, to achieve the firm's cost-based strategy goals, it is necessary to have sufficient marketing capabilities so that customers can be made aware of the product offering and know where to obtain the good or service at competitive prices (Rust, Moorman, and Dickson, 2002; Slater and Olson, 2001). In addition, in many goods industries, the firm's selling organization typically plays a key role in securing adequate distribution.

It is likely that firms emphasizing cost advantages in their product-market strategies will devote less overall resources to developing marketing capabilities. As a result, these firms must be highly efficient marketers, generating positive results with a minimum of resource investment. In fact, Sheth, Sisodia, and Sharma (2000) further posit that for marketing to be a productive activity, it must be both efficient and effective; that is, it must 'generate loyal and committed customers at low cost' (Sheth, Sisodia, and Sharma, 2000: 56).

Miles and Snow (1978) imply that firms that are focused on cost should be preoccupied with marketing capabilities due to their need to stretch limited resources. The marketing literature supports this perspective as well (e.g., Day, 1999; Dutta *et al.*, 1999). For example, firms adopting a cost position support a significant positive relationship with market-linking capabilities and marketing capabilities (Song, Di Benedetto, and Nason, 2007). Therefore, while firms emphasizing differentiation-based strategies may have higher levels of absolute marketing capabilities than those firms emphasizing only the cost dimension in their product-market strategy, strategies aimed at attaining cost advantages will still rely on marketing

capabilities to deliver important marketing program elements to the marketplace (Golden, Johnson, and Smith, 1995). Consequently, for firms emphasizing cost advantages in their strategies, those who have higher levels of both specialized and architectural marketing capabilities will be better able to capitalize on gains attained (Conant *et al.*, 1990), than firms using the cost dimension that are without these marketing capabilities (Slater and Olson, 2001). Therefore:

Hypothesis 2: The cost dimension of product-market strategy leads to higher levels of: (a) specialized marketing capabilities; and (b) architectural marketing capabilities.

Past research has demonstrated that segmentation-based strategies are highly dependent on the marketing capabilities of the firm (Campbell-Hunt, 2000; Hamel and Prahalad, 1993). While different conceptualizations of product-market scope exist (e.g., Segev, 1989), the focus in this research is on understanding the degree to which firms are implementing strategies in multiple versus single or a few markets/market segments and how the firm's marketing capabilities are used to increase the likelihood of success (Campbell and Luchs, 1992).

Additional studies indicate that to execute a broad product-market strategy well, high levels of marketing capabilities are a prerequisite (e.g., Srivastava *et al.*, 2001). Day (1999) suggests that firms pursuing broad market coverage, such as Heinz and Kellogg's, succeed by investing in large-scale facilities, building strong brand names, and maintaining broad distribution networks. It is only by defending their multiple market segments against more niche-type players that broad market scope firms are able to compete; the key basis for doing so is their marketing capabilities. In the services area, Frei (2008) argues that service firms with broad market scope are only able to remain successful by becoming 'multi-focused'—competing in multiple segments with optimized marketing and service models for each segment. In each market segment, these multi-focused firms need high levels of market knowledge and segmentation capabilities along with the implementation skills needed to support the multiple brand offerings. Additional examples are available as well. Proctor & Gamble creates high levels of market segmentation that need both architectural

and specialized marketing capabilities to enable it to succeed. Similarly, the European retail giant Tesco recently found that increasing its product-market scope was testing its marketing capabilities to such an extent that it outsourced customer analytics for the Tesco Clubcard to research firm Dunn Humby. The improvement in its marketing capability is a major reason Tesco gives for increasing recent retail growth by 16 percent.

These examples from the literature and practice help demonstrate that firms need both specialized and architectural marketing capabilities in order to successfully implement multiple-segment strategies (Slater and Olson, 2001; Walker and Ruekert, 1987). Architectural marketing capabilities allow the firm to collect market information, plan segmentation approaches, and coordinate the deployment of necessary human and capital resources around segmentation strategies (Slater and Narver, 1993; Piercy and Morgan, 1994). Specialized marketing capabilities are required to enable the firm to develop offerings to meet the needs of the segments based on the marketing plan, target marketing communications to the buyers in the segments, implement appropriate pricing policies, develop promotions, and focus selling and distribution efforts to meet the unique needs of buyers in the segment (Day, 1994; Day and Wensley, 1988). Therefore,

> *Hypothesis 3: The scope dimension of product-market strategy leads to higher levels of: (a) specialized marketing capabilities; and (b) architectural marketing capabilities.*

Marketing capabilities and marketing capabilities integration—relationships with performance

Extant theory suggests that developing marketing capabilities to affect the outcomes of strategy can drive significant performance improvements (e.g., Conant *et al.*, 1990; Day and Wensley, 1988; Day, 1994; Slotegraaf, Moorman, and Inman, 2003; Slotegraaf and Dickson, 2004; Vorhies and Morgan, 2005; Walker and Ruekert, 1987). Firms that are better able to align their marketing capabilities with the demands of their product-market strategy should see performance advantages accrue over time (Noble and Mokwa, 1999). In addition, the RBV indicates that the internal mechanisms that enable alignment of firm capabilities with the

requirements of product-market strategies are difficult for competitors to diagnose, understand, and imitate (Cohen and Bacdayan, 1994; Hunt and Morgan, 1996). Thus, even if marketing capabilities are identified by competitors as a driver of superior performance, the ability of those competitors to distinguish precisely how resources are being deployed via firm specialized and architectural marketing capabilities will be constrained due to the tacit nature of capabilities, making imitation difficult (e.g., Bharadwaj, Varadarajan, and Fahy, 1993; Day, 1994).[2] The literature also contends that there may be no good direct substitute for marketing capabilities as a means of accomplishing strategy goals (e.g., Workman, Homburg, and Gruner, 1998; Moorman and Rust, 1999). Consequently, if the tenets of resource-based theory hold for marketing capabilities, we should expect that marketing capabilities: (i) increase a firm's ability to implement product-market strategy leading to better business performance; (ii) prevent imitation and substitution; and, (iii) help the firm sustain the performance advantages attained (Day, 1994).

To date, the integration of firm capabilities has received little attention in the literature (Newbert, 2007). According to Grant (1996), capability integration provides an important mechanism for implementing the firm's strategy. As a result, while specialized and architectural marketing capabilities are believed to contribute individually to the successful implementation of product-market strategy, capability integration can arguably provide the firm with the most advantageous deployment of firm resources (Dutta *et al.*, 1999). This is due to the planning and strategizing nature of architectural marketing capabilities that enable the more effective deployment of marketing resources. Specialized marketing capabilities, without the appropriate control over deployment that is attributable to architectural marketing capabilities, may prove to be both inefficient and ineffective in terms of deploying marketing resources. Thus, although architectural marketing capabilities direct the coordination of specialized marketing capabilities, the latter also inform the former.

Previous strategic management studies have examined constructs analogous to capabilities integration in the form of: 'combinative capabilities'

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[2] We note that the RBV literature often conflates resources and capabilities. We contend that capabilities are 'imperfectly inimitable and hence lead to sustained advantage, while resources... may be imitated by others' (Dutta *et al.*, 1999: 550).

(Van den Bosch, Volberda, and de Boer, 1999), complementarity in capabilities (Song *et al.*, 2005), and 'configuration' (Henderson and Clark, 1990). Specialized marketing capabilities can be compared with Van den Bosch *et al.*'s (1999) 'systems capabilities' while a parallel can be drawn between architectural marketing capabilities and Van den Bosch *et al.*'s (1999) 'coordination capabilities.' Van den Bosch *et al.* (1999) distinguish between these two sets of capabilities but espouse that their synthesis creates 'combinative capabilities.' As a result, marketing capabilities integration reflects the combinative capabilities that derive from the integration of embedded marketing routines and practices that are used to generate a desired tangible or intangible output (cf. DeSarbo *et al.*, 2007).

Based on these perspectives, the integration of the marketing knowledge embedded in specialized and architectural marketing capabilities provides the best opportunity for properly aligning marketing resources with the demands of the various product-market strategies (Vorhies and Morgan, 2003). As a result, firms that are better able to integrate their specialized marketing capabilities with their architectural marketing capabilities should be able to demonstrate superior product-market strategy goal attainment. On the basis that capabilities are difficult to imitate or substitute, then it is characteristic that integrated marketing capabilities provide a formidable competitive advantage: 'Integrating marketing capabilities ... should lead to better performance because it is a complementary rather than supplementary combination. Such integration reconfigures competencies, reduces the resource deficiency, and generates new applications...' (Song *et al.* 2005: 262). This is explained further by Zahra, Sapienza, and Davidsson (2006): 'As firms exercise their capabilities in similar and dissimilar circumstances, they learn more about cause-effect relationships and how to achieve desired results. In short, the effects of intense, repeated exercise of routines is increased knowledge of cause-effect relationships and hence greater confidence in their use' (Zahra, Sapienza, and Davidsson, 2006: 927).[3]

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[3] We do not imply that marketing capabilities integration is in any way a dynamic capability. Rather, we follow Winter (2003) and Zahra *et al.* (2006) in that marketing capabilities (respectively referred to as 'ordinary' or 'substantive' capabilities) are used to generate a desired tangible or intangible output. In contrast, a

Performance outcomes

In this research, we are interested in two specific performance outcomes. The first, *market effectiveness,* deals with the degree to which the mid-range, concurrent, market-related performance goals of the organization is achieved. RBV and capabilities theories indicate that mid-range performance will be improved via proper resource deployments (cf. Ray *et al.*, 2004). Previous studies indicate that firms that are able to realize market share and sales growth, and improve their market position without sacrificing profitability (e.g., buying market share), should see increased financial performance in subsequent periods (Ittner, Larcker, and Randall, 2003).

To model financial performance in subsequent periods, an objective measure of financial performance, *cash flow,* is used. Cash flow has advantages as a measure of financial performance in that it is less influenced by accrual accounting methods and may be less sensitive to commonly used accounting manipulations. As a result, cash flow is better able to capture variation in organizational performance than other accounting-based measures (Otley and Fakiolas, 2000). To this end, we used subsequent one-year cash flow to help isolate the lagged effects from market effectiveness changes to firm performance that have been previously identified in the literature (Lubatkin and Shrieves, 1986).

We consider that firms exhibiting higher levels of specialized and architectural marketing capabilities will realize increased subsequent one-year cash flows. Furthermore, we believe that there will be a positive impact on subsequent one-year cash flows from the successful integration of marketing capabilities. However, based on previous research (Dutta *et al.*, 1999), we do not believe there will be direct effects. Past longitudinal research has indicated that increases in sales, market share, and market position take time to positively impact the bottom line (Kumar and Peterson, 2005). Thus, we propose that the relationships from specialized marketing capabilities, architectural marketing capabilities, and marketing capabilities integration to subsequent one-year cash flow will operate through market effectiveness. Therefore:

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dynamic capability describes the higher-order ability to change these substantive capabilities.

Hypothesis 4: Higher levels of specialized marketing capabilities will lead to higher levels of market effectiveness.

Hypothesis 5: Higher levels of architectural marketing capabilities will lead to higher levels of market effectiveness.

Hypothesis 6: Higher levels of marketing capabilities integration will lead to higher levels of market effectiveness.

To complete the causal chain, we therefore propose:

Hypothesis 7: Higher levels of market effectiveness will lead to higher levels of subsequent one-year cash flow.

For more information, see Figure 1.

RESEARCH DESIGN

To investigate these issues, we administered two studies. The first study was conducted among a sample of firms operating in the U.S. motor-carrier industry. For the second study we utilized a multi-industry approach to determine if the results from Study 1 were generalizable to a broader set of businesses.

Study 1 investigates firms from the motor-carrier industry. The motor-carrier industry represents a large and vitally important, business-to-business service industry (Silverman, Nickerson, and Freeman, 1997). As with all single industry studies, the restriction of this study to one industry is a somewhat mixed blessing: 'On the one hand, this context limits unobserved heterogeneity and makes possible more systematic and unbiased comparisons, there by enhancing internal validity. On the other hand, this context limitation, also suggests caveats in terms of generalizability' (Ahuja and Katila, 2004: 903).

For the first study, we do not assert generalizability beyond the U.S. motor-carrier industry from the data and considered sample homogeneity to be important so as to standardize, as far as possible, for exogenous factors (Dess, Ireland, and Hitt, 1990). This provides us with a more precise focus for examining the proposed nomological network of relationships. Moreover, recent

studies also reveal the richer insights that can be gained regarding capabilities and firm performance within a single industry context (Adner and Helfat, 2003; Ahuja and Katila, 2004; Brush and Artz, 1999; Hitt *et al.*, 2006; Miller and Shamsie, 1996). However, we recognize the inherent limitation that we cannot generalize to other industries or across industries from this approach. Also, single industry studies have often been recommended to help control for extraneous variation stemming from cross-industry effects (Spanos, Zaralis, and Lioukas, 2004) since sample homogeneity standardizes (Kalleberg *et al.*, 1990), as far as possible, the impact of contextual differences.[4] By investigating a single industry such as the motor-carrier industry, these effects can be controlled for (Harrigan, 1983). Furthermore, due to the fragmented nature of this industry, sufficient numbers of firms are available, many of which are single business-unit firms. Lastly, the availability of secondary data, which we use to assess firm financial performance and several control variables, helped determine that the motor-carrier industry could successfully be used to examine the theoretical relationships developed above.

Primary data for Study 1 were generated using a key-informant survey design and were supplemented with objective performance data from published secondary sources. We mailed questionnaires to top executives of 748 businesses randomly selected from 2,845 firms listed in Transportation Technical Service's (TTS) database of trucking firms. The TTS database contains motor-carriers comprising the bulk of the industry, listing carriers generating over 97 percent of total intercity freight revenues, according to 2001 data from the U.S. Bureau of the Census. Of the 748 firms randomly selected, surveys sent to 23 firms were deemed undeliverable and were eliminated from the sample. For the 725 deliverable surveys, 287 were completed and returned. After removing surveys that were incomplete or where the key respondents rated their own knowledge of their firm's product-market strategy, marketing capabilities, and firm performance as low (scoring below '5' out on a '1–7' rater reliability measure) a set of 270 surveys was retained, resulting in an effective response rate of 37 percent. Of

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[4] Interindustry differences have been found to explain up to eight percent of business unit returns (Rumelt, 1991), indicating the relative importance of such potentially confounding effects.

the responding firms, 22 percent reported sales of less than \$10 million, 27 percent reported sales of \$10–25 million, 18 percent reported sales of \$26–50 million, and 33 percent reported sales greater than \$50 million.

Notwithstanding the rationale for adopting a single industry research design discussed above, in order to investigate the generalizability of findings from Study 1, we surveyed firms from the U.S. Fortune 500 for the second study reported herein. We do this to test the salience of these specific findings to a more diverse set of firms across multiple sectors, thereby extending the results beyond the business-to-business services context.[5] To administer this second study, we mailed questionnaires to top executives of 384 businesses listed in the Fortune 500 for which we could identify an appropriate contact person. For this data collection effort, we utilized precontact interviews via telephone to determine the proper respondent and to confirm the contact information of the respondent. During our contact with the respondents, we informed them as to the purpose of the study and its importance. Our desire was to locate a member of the top management team who would be knowledgeable about both the firm's product-market strategy and the firm's marketing capabilities. In most cases this individual was a senior or executive-level vice president. However, in several instances, the chief executive officer was identified as the appropriate contact to complete the survey. Of the identified contacts, we received a useable response from 85 firms, yielding a 22 percent response rate.

Measures

Product-market strategy

To measure the product-market strategies of the organizations in these studies, items were developed based on the differentiation, cost-focus, and product-market scope scales used by Doty, Glick, and Huber (1993). These scales measure the degree to which a firm's product-market strategy is based on differentiation; the degree to which the firm focuses on cost efficiencies; and the degree to which the firm operates in many (versus few) markets or market segments. *Specialized marketing capabilities* and *architectural marketing capabilities* were measured with items adapted from

Vorhies and Morgan (2003, 2005). These scales measure the degree to which firms engage in specified routine marketing activities (Day, 1994). We assessed marketing capabilities with scales measuring how well the respondent performed the marketing activities relative to their closest competitors (e.g., Conant *et al.*, 1990; Day, 1994; Grant, 1991). The measure of *marketing capabilities integration* was derived by creating an interaction term, multiplying the specialized and architectural marketing capabilities.

Market effectiveness and financial performance

We assessed market effectiveness using perceptual measures of attainment of market share growth, sales growth, and desired market position of the firm, with items gauging the degree to which the responding firm achieved its goals in those respective areas (e.g., Clark, 2000). For financial performance, we calculated firm cash flow return on assets (CFROA) using objective published financial data from secondary sources (e.g., Transportation Technical Services Inc., and 10-K reports) for a subsequent one-year period. Academic researchers and industry analysts have recently tended toward cash flow indicators of financial performance and away from earnings-based metrics (Dechow, Kothari, and Watts, 1998; Kroll, Wright, and Heiens, 1999). In contrast to earnings-based profitability measures, cash flow has several advantages that favor its use. First, cash flow is subject less to accrual accounting methods and the idiosyncrasies of accounting procedures (Ismail and Kim, 1989). Thus, cash flow is widely viewed in the accounting literature as an indicator of financial performance that is relatively free from the accounting manipulations often used to manage earnings or minimize corporate income taxes (e.g., Kim and Kross, 2005). Second, investments such as working capital and fixed capital are accounted for in cash flow calculations that are often considerable in an expanding business but can be masked in earnings reports (Rayburn, 1986). Third, managers can, and often do, adopt short-term horizons in their plans and strategies by focusing solely on profit performance. This inevitably can lead to problems in the viability of future activities and strategies and, although high profits can be indicative of good performance, this is often offset by making compromises on the longer-term competitiveness of the firm that cash flows detect

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[5] We thank the anonymous reviewers for this suggestion.

Table 1. Descriptive statistics Study 1

Variables	Mean	Standard deviation	Average variance extracted	Composite reliability	Loadings range
Objective performance					
CFROA $_{t+1}$	0.22	0.14			
Multi-item measures					
Market effectiveness	3.86	1.52	74%	0.90	0.84-0.89
Specialized marketing capabilities	3.57	1.19	78%	0.96	0.88-0.94
Architectural marketing capabilities	3.42	1.27	61%	0.86	0.63-0.86
Differentiation	5.22	0.92	50%	0.81	0.61-0.78
Cost-focus	5.33	1.04	50%	0.79	0.61-0.80
Product-market scope	4.91	1.54	59%	0.81	0.68-0.88
Other measures					
Marketing expenditures	12,858,588.47	8,714,946.05			
Number of marketing employees	52.50	92.93			
Total employees	1,372.66	3,058.18			
Truckload	0.78	0.42			
Intermodal	0.07	0.25			
General freight	0.44	0.50			
CFROA $_{t-1}$	0.23	0.13			

Notes: CFROA $_{t-1}$ is the cash flow from the period prior to collection of the survey data divided by total assets. CFROA $_{t+1}$ is the cash flow from the subsequent one-year period following the survey data collection divided by total assets.

more readily (Locander and Goebel, 1997). Fourth, following the growth in the bear market at the start of this decade, there is increasing consensus among the historically conflicting constituencies of the regulatory and financial communities that cash flow is the preferred measure of a firm's financial health (Bond, Klemm *et al.*, 2004).

To reduce the influence of organizational size on cash flow, we calculate CFROA by taking cash flow and dividing by the firm's total assets. This is necessary as absolute cash flow is larger in bigger firms and would distort the relationships of interest. Dividing by total assets removes the impact of firm size from this key variable and is recommended when using size sensitive data. In addition, we logarithmically transformed CFROA to normalize the variable. Finally, to capture the lag effects we believe may be present in the operation of our variables, we used cash flow with a subsequent one-year lag denoting this as CFROA$_{t+1}$. Scale items are presented in the Appendix, with descriptive statistics, correlations, and construct reliabilities presented in Table 1.

Study controls

Resource levels are an important consideration when investigating predictions based on the RBV. Two aspects of resource levels are relevant for this

research. First, firms with higher absolute levels of marketing resources may demonstrate an increased ability to develop superior marketing capabilities (Dutta *et al.*, 1999). Second, firms with higher absolute levels of marketing resources may generate superior performance outcomes in terms of higher levels of market effectiveness and financial performance due to their ability to do more market research, deploy more advertising, create more products, spend more on channel support, hire more salespeople, and the like (cf. DeSarbo *et al.*, 2005). To control for the potential confounding effects of absolute resource levels, we include marketing expenditures (divided by total revenue) and the number of marketing personnel (divided by total number of employees) employed by the firm, both logarithmically transformed in our model (e.g., Sloan, 1996).[6] Both these marketing resource-level measures were acquired from published secondary data sources.

Resource theorists also contend that larger firms may have more resources to devote to other forms of resource deployment in comparison with smaller

---

[6] To handle negative numbers for logged variables, such as cash flow, we used a procedure recommended by Morgan and Rego (2006). To preserve all the observations and the continuity of the transformed variables, the log transformation is applied to (cash flows +1) for positive values and to (−1/cash flows) for negative values.

firms (Shuman and Seeger, 1986). To control for the potential confound of firm size in the model, the total number of employees (as reported in published secondary data) was logarithmically transformed and used to represent the impact of firm size on financial performance.

Additional controls for Studies 1 and 2

Because Studies 1 and 2 were tested in different contexts, different control variables were used for each. In Study 1, three categorical control variables were included that may indicate the existence of potential intraindustry differences in terms of efficiency and markets chosen among the firms. These variables were: 1) the degree to which firms handled truckload versus less-than-truckload shipments—an important indicator of efficiency since firms focusing primarily on truckload shipments require less capital expenditures to handle freight shipments; 2) the degree to which the firm utilizes intermodal technology (e.g., shipping trailers on rail cars)—another operational efficiency measure; and 3) the degree to which firms handle only general freight versus specialized freight (such as refrigerated trailers or tankers), which can increase costs. Together, these control variables largely describe the types of firms that exist in the trucking industry and should help control for potential intra-industry heterogeneity.

The control variables for Study 2, which was a multi-industry study, focused on controlling for environmental heterogeneity (Hrebiniak and Snow, 1980). Four measures of environmental heterogeneity were utilized (DeSarbo *et al.*, 2005). The first, munificence (Dess and Beard, 1984), taps the degree to which resources are easily available in the firm's environment. The second environmental variable was competitive intensity and was included as it is likely that firms operating in highly competitive industry environments may need higher levels of marketing capabilities to operate (DeSarbo *et al.*, 2005). Third, market turbulence was included as it is also likely that firms operating in more turbulent markets may need higher levels of marketing capabilities to prosper (DeSarbo *et al.*, 2005). Fourth, technological turbulence was included to control for the impact of rapid technological changes that could negatively impact the effectiveness of marketing resource deployments (DeSarbo *et al.*, 2005). We also included two industry categorical variables

based on markets served (consumer versus business and goods versus services).

Controlling for prior period resources

Previous studies (e.g., Boulding and Staelin, 1995) have indicated that firms with higher levels of previous year financial resources may perform better due to simply having more resources to deploy. To control for this conceivable effect, we included the logarithm of the cash flow from the year prior to the study year (t − 1) to check for potential effects. In essence, we were concerned that firms with higher levels of free cash flow (normalized for firm size by dividing by total assets—called $CFROA_{t-1}$ in the tables) might simply be better able to deploy resources through the marketing capabilities we investigate due to having more cash to invest.

ANALYSIS AND RESULTS

Psychometric analyses

Before testing the hypotheses with data from the two studies, psychometric analyses were performed on the constructs using confirmatory factor analysis (CFA) and reliability analysis for each dataset. To ensure acceptable parameter estimate-to-observation-ratios in the CFA, the measures were divided into subsets of theoretically related variables (Bentler and Chou, 1987). All items were modeled to load on their corresponding factor, and all latent variables were allowed to correlate. In all cases, the items loaded well on the constructs they were intended to measure with little evidence of cross loadings. Construct reliability and average variance extracted (AVE) were calculated. The measures proved reliable, and the AVE was good. Discriminant validity was tested by setting the inter-factor correlation equal to one and comparing this result to the unconstrained measurement model. A further check on discriminant validity was performed by comparing the AVE to the squared interfactor correlations. In all cases, discriminant validity was supported. Results from these analyses for Study 1 are presented in Table 1 along with the means and standard deviations for the measures. Table 2 provides this information for the constructs used in Study 2. Tables 3 and 4 provide the correlations for these studies.

Table 2. Descriptive statistics Study 2

Variables	Mean	Standard deviation	Average variance extracted	Composite reliability	Loadings range
Objective performance					
CFROA $_{t+1}$	0.09	0.06			
Multi-item measures					
Market effectiveness	3.79	1.45	83%	0.91	0.85-0.97
Specialized marketing capabilities	4.94	0.74	58%	0.90	0.51-0.92
Architectural marketing capabilities	5.39	0.75	63%	0.91	0.58-0.96
Differentiation	5.37	0.84	55%	0.88	0.55-0.88
Cost-focus	5.52	0.93	71%	0.91	0.74-0.90
Product-market scope	4.74	1.38	63%	0.83	0.67-0.97
Other measures					
Marketing expenditures	216,991,053.00	90,293,865.60			
Number of marketing employees	807.12	2231.41			
Total employees	27,648.91	67,974.15			
Munificence	4.42	1.37	56%	0.71	0.62-0.82
Competitive intensity	5.54	1.15	51%	0.75	0.62-0.81
Market turbulence	4.16	1.13	58%	0.80	0.56-0.86
Technological turbulence	6.05	1.73	65%	0.91	0.54-0.84
CFROA $_{t-1}$	0.08	0.06			
Goods-based product	0.57	0.49			
Consumer markets	0.55	0.50			

Notes: CFROA $_{t-1}$ is the cash flow from the period prior to collection of the survey data divided by total assets. CFROA $_{t+1}$ is the cash flow from the subsequent one-year period following the survey data collection divided by total assets.

Hypothesis testing results

Having determined the measures to be psychometrically robust, we tested the hypotheses using seemingly unrelated regression (SUR) to simultaneously model the focal relationships. There are a number of benefits to using this modeling approach (Zellner, 1962). First, it allows us to model our data in a way that reflects the processes by which marketing capabilities are believed to impact market and financial performance and to simultaneously model the ways that product-market strategy influences specialized and architectural marketing capabilities and marketing capability integration. Second, a system of equations produces more efficient estimates when the error terms of the regressions are correlated, as is the case in our studies. Finally, due to the need to include several categorical variables, a structural equation model was ruled out due to the inability to model multiple categorical variables in a practical manner (Bollen, 1989), as well as the inability to model an interaction term as an endogenous variable (e.g., Ping, 1995). As a result, seemingly unrelated regression was selected as the appropriate method (Greene, 1998). The system of regressions equations estimated simultaneously is detailed below for each study.

Study 1 SUR equations:

$$
\begin{aligned}
\text{LogCFROA}_{t+1} = {} & \beta_0 \\
& + \beta_1 \times \text{MKTEFFECT} + \beta_2 \times \text{SPECMC} \\
& + \beta_3 \times \text{ARCHMC} + \beta_4 \times \text{MCINTEG} \\
& + \beta_5 \times \text{DIFF} + \beta_6 \times \text{COST} \\
& + \beta_7 \times \text{SCOPE} + \beta_8 \times \text{LogMKTGEXP} \\
& + \beta_9 \times \text{LogMKTGEMPL} + \beta_{10} \times \text{LogSIZE} \\
& + \beta_{11} \times \text{TL} + \beta_{12} \times \text{INTERMOD} + \beta_{13} \\
& \times \text{GENFREIGHT} + \beta_{14} \times \text{LogCFROA}_{t-1} \\
& + \varepsilon_{CFROAt+1}
\end{aligned}
$$

$$
\begin{aligned}
\text{MKTEFFECT} = {} & \beta_0 \\
& + \beta_1 \times \text{SPECMC} + \beta_2 \times \text{ARCHMC} \\
& + \beta_3 \times \text{MCINTEG} + \beta_4 \times \text{DIFF} \\
& + \beta_5 \times \text{COST} + \beta_6 \times \text{SCOPE} + \\
& + \beta_7 \times \text{LogMKTGEXP} + \beta_8
\end{aligned}
$$

Table 3. Correlations Study 1

Variables:	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13
X1 CFROA $_{t+1}$ (log)													
X2 Market effectiveness	0.14+												
X3 Specialized marketing capabilities	-0.03	0.43**											
X4 Architectural marketing capabilities	0.01	0.51**	0.57**										
X5 Differentiation focus	-0.04	0.37**	0.46**	0.51**									
X6 Cost focus	0.09	0.35**	0.39**	0.47**	0.55**								
X7 Product-market scope	0.12*	0.24**	-0.24**	-0.26**	0.57**	0.29**							
X8 Marketing expend./total revenue (log)	-0.03	-0.11+	-0.02	-0.07	0.01	0.04	-0.03						
X9 Marketing empl./total empl. (log)	-0.02	0.06	-0.03	-0.03	0.01	0.06	0.01	-0.20**					
X10 Total employees (log)	0.01	-0.02	-0.01	-0.02	0.05	0.03	-0.04	0.28**	0.36**				
X11 Truckload	-0.03	0.06	-0.10+	-0.10+	-0.01	0.07	0.01	0.13*	0.04	-0.20**			
X12 Intermodal	-0.13*	0.02	0.03	0.05	-0.04	-0.03	-0.03	0.14*	-0.06	0.20**	-0.33**		
X13 General freight	0.12*	-0.02	0.14*	0.15*	0.05	-0.01	0.08	-0.14**	0.06	0.05	-0.60**	-0.22**	
X14 CFROA $_{t-1}$ (log)	0.28**	0.15*	0.09	-0.01	-0.06	-0.02	0.08	0.03	-0.03	0.14*	0.04	-0.09	0.02

* $p \leq 0.05$
** $p \leq 0.01$
\+ $p \leq 0.10$

Notes: CFROA $_{t-1}$ is the cash flow from the period prior to collection of the survey data divided by total assets. CFROA $_{t+1}$ is the cash flow from the subsequent one-year period following the survey data collection divided by total assets.

Table 4. Correlations Study 2

Variables:	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16
X1 CFROA $_{t+1}$ (log)																
X2 Market effectiveness	0.11*															
X3 Specialized marketing capabilities	0.12*	0.14**														
X4 Architectural marketing capabilities	−0.08	0.18*	0.47**													
X5 Differentiation focus	0.15**	0.19**	0.43**	0.37**												
X6 Cost focus	0.07	0.20**	0.28**	0.39**	0.35**											
X7 Product-market scope	−0.06+	−0.08	0.27**	0.21**	0.30**	0.07										
X8 Marketing expend./total revenue (log)	−0.01	−0.10*	−0.08	−0.01	0.04	−0.12*	−0.06									
X9 Marketing empl./total empl. (log)	0.09	−0.10*	0.04	0.03	0.10*	0.13**	0.01	0.23**								
X10 Total employees (log)	−0.11	0.11*	−0.11*	−0.07	−0.03	0.22**	0.04	−0.26**	0.39**							
X11 Munificence	0.12*	0.23**	−0.06	−0.15**	0.20	0.11*	0.32**	−0.07	−0.01	−0.03						
X12 Competitive intensity	0.03	−0.07	0.17**	0.11*	0.03	0.12*	0.04	−0.03	−0.21**	0.07	0.19**					
X13 Market turbulence	0.04	−0.01	0.11*	−0.23**	0.29**	0.13**	0.41**	0.01	−0.14**	0.17**	0.20**	0.21**				
X14 Technological turbulence	−0.03	0.27**	0.14**	−0.30**	0.43**	0.27**	0.18**	−0.01	0.02	0.11*	0.36**	0.27**	0.36**			
X15 CFROA $_{t-1}$ (log)	0.73**	−0.02	0.02	−0.01	0.12*	−0.03	−0.01	0.01	0.05	−0.06	0.07	−0.10*	0.02	−0.12*		
X16 Goods-based product	0.07	0.01	−0.09+	−0.10*	0.17**	−0.03	0.15**	0.20**	0.38**	−0.20**	−0.10	−0.10*	0.10*	−0.17**	0.12*	
X17 Consumer markets	−0.11*	0.07	−0.08	−0.15**	−0.03	−0.30**	0.01	0.10*	−0.10+	−0.01	−0.02	0.30**	−0.09+	0.02	−0.04	0.17**

* p ≤ 0.05
** p ≤ 0.01
+ p ≤ 0.10

Notes: CFROA $_{t-1}$ is the cash flow from the period prior to collection of the survey data divided by total assets. CFROA $_{t+1}$ is the cash flow from the subsequent one-year period following the survey data collection divided by total assets.

$$\times \text{LogMKTGEMPL} + \beta_9 \times \text{LogSIZE}$$
$$+ \beta_{10} \times \text{TL} + \beta_{11} \times \text{INTERMOD}$$
$$+ \beta_{12} \times \text{GENFREIGHT} + \beta_{13}$$
$$\times \text{LogCFROA}_{t-1} + \varepsilon_{MKTEFFECT}$$

$$\text{SPECMC} = \beta_0 + \beta_1 \times \text{DIFF}$$
$$+ \beta_2 \times \text{COST} + \beta_3 \times \text{SCOPE}$$
$$+ \beta_4 \times \text{LogMKTGEXP}$$
$$+ \beta_5 \times \text{LogMKTGEMPL}$$
$$+ \beta_6 \times \text{LogSIZE}$$
$$+ \beta_7 \times \text{TL} + \beta_8 \times \text{INTERMOD}$$
$$+ \beta_9 \times \text{GENFREIGHT}$$
$$+ \beta_{10} \times \text{LogCFROA}_{t-1}$$
$$+ \varepsilon_{SPECMC}$$

$$\text{ARCHMC} = \beta_0 + \beta_1 \times \text{DIFF}$$
$$+ \beta_2 \times \text{COST} + \beta_3 \times \text{SCOPE}$$
$$+ \beta_4 \times \text{LogMKTGEXP}$$
$$+ \beta_5 \times \text{LogMKTGEMPL}$$
$$+ \beta_6 \times \text{LogSIZE}$$
$$+ \beta_7 \times \text{TL} + \beta_8 \times \text{INTERMOD}$$
$$+ \beta_9 \times \text{GENFREIGHT}$$
$$+ \beta_{10} \times \text{LogCFROA}_{t-1}$$
$$+ \varepsilon_{ARCHMC}$$

Study 2 SUR equations:

$$\text{LogCFROA}_{t+1} = \beta_0 + \beta_1$$
$$\times \text{MKTEFFECT} + \beta_2 \times \text{SPECMC}$$
$$+ \beta_3 \times \text{ARCHMC} + \beta_4 \times \text{MCINTEG}$$
$$+ \beta_5 \times \text{DIFF} + \beta_6 \times \text{COST}$$
$$+ \beta_7 \times \text{SCOPE} + \beta_8 \times \text{LogMKTGEXP}$$
$$+ \beta_9 \times \text{LogMKTGEMPL}$$
$$+ \beta_{10} \text{LogSIZE} + \beta_{11}\text{MUNIF}$$
$$+ \beta_{12}\text{COMPINT} + \beta_{13} \times \text{MKTTURB}$$
$$+ \beta_{14} \times \text{TECHTURB}$$
$$+ \beta_{15} \text{LogCFROA}_{t-1}$$

$$+ \beta_{16} \times \text{GOOD} + \beta_{17}$$
$$\times \text{CONSUMER} + \varepsilon_{CFROAt+1}$$

$$\text{MKTEFFECT} = \beta_0$$
$$+ \beta_1 \times \text{SPECMC} + \beta_2 \times \text{ARCHMC}$$
$$+ \beta_3 \times \text{MCINTEG} + \beta_4 \times \text{DIFF}$$
$$+ \beta_5 \times \text{COST} + \beta_6 \times \text{SCOPE} +$$
$$+ \beta_7 \times \text{LogMKTGEXP}$$
$$+ \beta_8 \times \text{LogMKTGEMPL}$$
$$+ \beta_9 \times \text{LogSIZE} + \beta_{10} \times \text{MUNIF}$$
$$+ \beta_{11} \times \text{COMPINT} + \beta_{12} \times \text{MKTTURB}$$
$$+ \beta_{13} \times \text{TECHTURB} + \beta_{14}$$
$$\times \text{LogCFROA}_{t-1} + \beta_{15} \times \text{GOOD}$$
$$+ \beta_{16} \times \text{CONSUMER} + \varepsilon_{MKTEFFECT}$$

$$\text{SPECMC} = \beta_0 + \beta_1 \times \text{DIFF}$$
$$+ \beta_2 \times \text{COST} + \beta_3 \times \text{SCOPE}$$
$$+ \beta_4 \times \text{LogMKTGEXP}$$
$$+ \beta_5 \times \text{LogMKTGEMPL}$$
$$+ \beta_6 \times \text{LogSIZE} + \beta_7 \times \text{MUNIF}$$
$$+ \beta_8 \times \text{COMPINT} + \beta_9 \times \text{MKTTURB}$$
$$+ \beta_{10} \times \text{TECHTURB} + \beta_{11}$$
$$\times \text{LogCFROA}_{t-1} + \beta_{12} \times \text{GOOD}$$
$$+ \beta_{13} \times \text{CONSUMER} + \varepsilon_{SPECMC}$$

$$\text{ARCHMC} = \beta_0$$
$$+ \beta_1 \times \text{DIFF} + \beta_2 \times \text{COST}$$
$$+ \beta_3 \times \text{SCOPE} + \beta_4 \times \text{LogMKTGEXP}$$
$$+ \beta_5 \times \text{LogMKTGEMPL}$$
$$+ \beta_6 \times \text{LogSIZE} + \beta_7 \times \text{MUNIF}$$
$$+ \beta_8 \times \text{COMPINT} + \beta_9 \times \text{MKTTURB}$$
$$+ \beta_{10} \times \text{TECHTURB} + \beta_{11}$$
$$\times \text{LogCFROA}_{t-1} + \beta_{12} \times \text{GOOD}$$
$$+ \beta_{13} \times \text{CONSUMER} + \varepsilon_{ARCHMC}$$

Study 1 results

The simultaneous system of equations for Study 1 was modeled using standardized data to reduce

Table 5. System of equations (SUR) results Study 1

	Equation 1 Specialized marketing capabilities		Equation 2 Architectural marketing capabilities		Equation 3 Market effectiveness		Equation 4 CFROA $_{t+1}$ (log)	
	Standardized estimate (t-value)		*Standardized estimate (t-value)*		*Standardized estimate (t-value)*		*Standardized estimate (t-value)*	
Independent variables:								
Market effectiveness							0.15	(2.02)
Specialized marketing capabilities					0.18	(2.46)	−0.08	(−0.98)
Architectural marketing capabilities					0.30	(3.83)	0.09	(0.95)
Marketing capabilities integration					0.18	(3.47)	−0.01	(−0.12)
Differentiation	0.39	(5.11)	0.38	(5.23)	0.09	(1.19)	−0.02	(−0.24)
Cost-focus	0.19	(2.89)	0.29	(4.58)	0.07	(1.07)	0.11	(1.40)
Product-market scope	−0.05	(−0.71)	−0.05	(−0.77)	0.03	(0.41)	0.08	(1.03)
Control variables:								
Log (marketing expenditures/total rev.)	−0.04	(−0.61)	−0.04	(−0.69)	−0.12	(−2.04)	−0.01	(−0.09)
Log (number of marketing employees/total employees)	−0.03	(−0.50)	−0.06	(−0.98)	0.03	(0.43)	−0.08	(−1.10)
Total employees (log)	−0.09	(−1.27)	−0.09	(−1.43)	0.01	(0.21)	−0.04	(−0.51)
Truckload	−0.05	(−0.62)	−0.06	(−0.93)	0.09	(1.38)	−0.03	(−0.42)
Intermodal	0.04	(0.63)	0.04	(0.65)	0.05	(0.82)	−0.14	(−2.06)
General freight	0.14	(1.92)	0.11	(1.63)	−0.04	(−0.68)	0.16	(2.00)
CFROA $_{t-1}$ (log)	0.06	(0.90)	0.04	(0.83)	0.17	(3.18)	0.24	(3.70)
Individual equation R^2	0.29		0.35		0.38		0.15	
System weighted R^2	0.26							

Notes: CFROA $_{t-1}$ is the cash flow from the period prior to collection of the survey data divided by total assets. CFROA $_{t+1}$ is the cash flow from the subsequent one-year period following the survey data collection divided by total assets.

the effects of the units of measurement that varied across the constructs in the model. R^2 values ranging from 0.15 to 0.38 and the overall system R^2 of 0.26 suggest that our independent variables account for significant variance in the dependent variables for the firms in our sample (please see Table 5). Testing Hypothesis 1 demonstrated support for the predicted relationship between differentiation product-market strategy elements and specialized marketing capabilities (β = 0.39, t = 5.11) and architectural marketing capabilities (β = 0.38, t = 5.23). Testing Hypothesis 2 demonstrated support for the predicted relationship between the cost aspect of product-market strategy and specialized marketing capabilities (β = 0.19, t = 2.89) and architectural marketing capabilities (β = 0.29, t = 4.58). Testing Hypothesis 3 showed no significant relationship between the market scope aspect of product-market strategy and specialized marketing capabilities (β = −0.05, t = −0.71) nor

architectural marketing capabilities (β = −0.05, t = −0.77).

Similar good results were identified when testing the predictions for the relationships between the three marketing capabilities and market effectiveness. Hypothesis 4, which predicted that higher levels of specialized marketing capabilities will be related to market effectiveness was supported (β = 0.18, t = 2.46). Hypothesis 5, which predicted higher levels of architectural marketing capabilities would be related to market effectiveness was supported (β = 0.30, t = 3.83). Hypotheses 6 was supported by a relationship between marketing capabilities integration and market effectiveness (β = 0.18, t = 3.47). Finally, Hypothesis 7, which predicted that increased market effectiveness would lead to higher levels of subsequent one-year cash flow was supported (β = 0.15, t = 2.02).

Further support for these hypotheses was found by including direct relationships between the three

marketing capabilities variables and subsequent one-year cash flow (CFROA $_{t+1}$). Results show no significant direct relationships between specialized marketing capability and subsequent one-year cash flow ($\beta = -0.08$, t $= -0.98$); architectural marketing capability and subsequent one-year cash flow ($\beta = 0.09$, t $= 0.95$); nor marketing capability integration and subsequent one-year cash flow ($\beta = -0.01$, t $= -0.12$). We also included paths from the three product-market strategy variables to market effectiveness and subsequent one-year cash flow (CFROA $_{t+1}$) to control for the possibility of other organizational influences.[7] As Table 5 shows, we found no impact of the product-market strategy elements on either market effectiveness or subsequent one-year cash flow (CFROA $_{t+1}$).

Study 2 results

The simultaneous system of equations for Study 2 (shown above) was also modeled using standardized data to reduce the effects of the units of measurement that varied across the constructs in the model. Because the number of observations was relatively low when compared to the parameters being estimated, we utilized a bootstrapping technique (Shrout and Bolger, 2002) for estimating the standard errors for the SUR model (Efron and Tibshirani, 1993). To build our bootstrapped datasets, we randomly selected from the original data with replacement. We then submitted each bootstrap sample to SUR and saved the regression coefficients. This process was repeated 1,000 times (Efron and Tibshirani, 1993). We then calculated the standard deviation from these 1,000 SUR runs and used these values to create the t-values shown in Table 6.

The results of this analysis demonstrate R^2 values ranging from 0.23 to 0.60 with the overall system R^2 of 0.40 suggesting that our independent variables account for significant variance in the dependent variables for the firms in our sample (see Table 6). Testing Hypothesis 1 again demonstrated support for the predicted relationship between the differentiation product-market strategy element and specialized marketing capabilities ($\beta = 0.39$, t $= 7.52$) and architectural marketing capabilities ($\beta = 0.20$, t $= 3.73$). Testing Hypothesis 2 in Study 2 also demonstrated support for the predicted relationship between the cost aspect of

product-market strategy and specialized marketing capabilities ($\beta = 0.17$, t $= 3.36$) and architectural marketing capabilities ($\beta = 0.29$, t $= 5.50$). Testing Hypothesis 3 in Study 2 showed significant relationships between the market scope aspect of product-market strategy and specialized marketing capabilities ($\beta = 0.27$, t $= 5.71$) and for the predicted relationship with architectural marketing capabilities ($\beta = 0.13$, t $= 2.57$).

Similar results were identified in testing the relationships between specialized marketing capabilities, architectural marketing capabilities, and marketing capabilities integration and market effectiveness. Hypothesis 4, which predicted higher levels of specialized marketing capabilities would be related to higher market effectiveness was supported ($\beta = 0.14$, t $= 2.15$). Hypothesis 5, which predicted that higher levels of architectural marketing capabilities would be related to higher levels of market effectiveness was also supported ($\beta = 0.18$, t $= 2.83$). Hypothesis 6 was supported by a relationship between marketing capabilities integration and market effectiveness ($\beta = 0.13$, t $= 2.02$). Finally, Hypothesis 7, which predicted that increased market effectiveness would lead to increased subsequent one-year cash flow was supported ($\beta = 0.12$, t $= 3.27$).

As with Study 1, further support for these hypotheses was found by including direct relationships between the three marketing capabilities variables and cash flow. Results show no significant direct relationship between specialized marketing capability and subsequent one-year cash flow ($\beta = 0.07$, t $= 1.60$). No significant relationship was found between architectural marketing capabilities and subsequent one-year cash flow ($\beta = -0.05$, t $= -1.10$) or between marketing capability integration and subsequent one-year cash flow ($\beta = -0.03$, t $= -0.73$). Once again to control for the possibility of other organizational influences, we included paths from the three product-market strategy variables to market effectiveness and subsequent one-year cash flow (CFROA $_{t+1}$). As Table 6 shows, we found no impact of the differentiation product-market strategy element on either market effectiveness or subsequent one-year cash flow (CFROA $_{t+1}$). However, we did find evidence that cost leadership aspects of product-market strategy do impact market effectiveness ($\beta = 0.13$, t $= 2.31$) and that the scope aspect of product-market strategy

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[7] We thank the anonymous reviewers for this suggestion.

Table 6.   System of equations (SUR) results Study 2

	Equation 1 Specialized marketing capabilities		Equation 2 Architectural marketing capabilities		Equation 3 Market effectiveness		Equation 4 CFROA $_{t+1}$ (log)	
	Standardized estimate (t-value)		*Standardized estimate (t-value)*		*Standardized estimate (t-value)*		*Standardized estimate (t-value)*	
Independent variables:								
Market effectiveness							0.12	(3.27)
Specialized marketing capabilities					0.14	(2.15)	0.07	(1.60)
Architectural marketing capabilities					0.18	(2.83)	−0.05	(−1.10)
Marketing capabilities integration					0.13	(2.02)	−0.03	(−0.73)
Differentiation	0.39	(7.52)	0.20	(3.73)	0.04	(0.64)	0.06	(1.28)
Cost-focus	0.17	(3.36)	0.29	(5.50)	0.13	(2.31)	0.07	(1.61)
Product-market scope	0.27	(5.71)	0.13	(2.57)	−0.09	(−1.60)	−0.12	(−3.03)
Control variables:								
Log (marketing expenditures/total rev.)	0.07	(1.73)	−0.01	(−0.03)	−0.09	(−1.82)	0.02	(0.60)
Log (number of marketing employees/total employees)	0.02	(0.38)	0.09	(1.76)	−0.14	(−2.50)	0.04	(1.02)
Total employees (log)	−0.12	(−2.63)	−0.11	(−2.26)	0.11	(2.15)	−0.07	(−2.03)
Munificence	−0.12	(−2.84)	−0.04	(−0.94)	0.19	(3.65)	0.08	(2.09)
Competitive intensity	0.29	(6.07)	0.16	(3.07)	−0.23	(−3.82)	0.07	(1.72)
Market turbulence	−0.10	(−1.95)	0.07	(1.31)	−0.09	(−1.54)	0.11	(2.59)
Technological turbulence	−0.09	(−1.63)	0.04	(0.68)	0.18	(2.87)	−0.20	(−4.31)
CFROA $_{t-1}$ (log)	0.03	(0.70)	−0.01	(−0.22)	−0.03	(−0.57)	0.73	(21.67)
Goods-based product	−0.08	(−1.59)	−0.15	(−2.94)	0.11	(1.92)	−0.02	(−0.38)
Consumer market	−0.10	(−2.00)	−0.03	(−0.58)	0.16	(3.31)	−0.05	(−1.51)
Individual equation R^2	0.39		0.32		0.23		0.60	
System weighted R^2	0.40							

Notes: CFROA $_{t-1}$ is the cash flow from the period prior to collection of the survey data divided by total assets. CFROA $_{t+1}$ is the cash flow from the subsequent one-year period following the survey data collection divided by total assets.

negatively impacts subsequent one-year cash flow (CFROA$_{t+1}$) ($\beta = -0.12$, $t = -3.03$).[8]

To provide empirical evidence for the absence of endogenous effects, we conducted the Durbin-Wu-Hausman test for endogeneity on both the Study 1 and Study 2 models. Consistent with our theoretical argument, we find that the error term of the specialized marketing capabilities equation is not significant when entered in the market effectiveness equations for either Study 1 or Study 2. Likewise, the error term of the architectural marketing capabilities equation is not significant

when entered in the market effectiveness equations in either Study 1 or Study 2. These results imply that specialized and architectural marketing capabilities are exogenous variables as specified and that the results are unbiased with respect to endogeneity. We conducted the same tests for the cash flow at t + 1 equation and again find that both specialized and architectural marketing capabilities are exogenous.

In further support of our hypotheses, we see little indication of significant effects in our two studies from the relevant control variables included in these analyses. We checked for the impact of previous period financial resources by including the logarithm of the cash flows from the year immediately prior to the study year (t − 1). In essence, we were concerned that firms with higher levels of free

[8] We also tested for differential effects in our SUR equations testing Hypotheses 1–3 and Hypotheses 4–6. We found no significant differences between our coefficients at the 0.05 level in either study. We thank an anonymous reviewer for this suggestion.
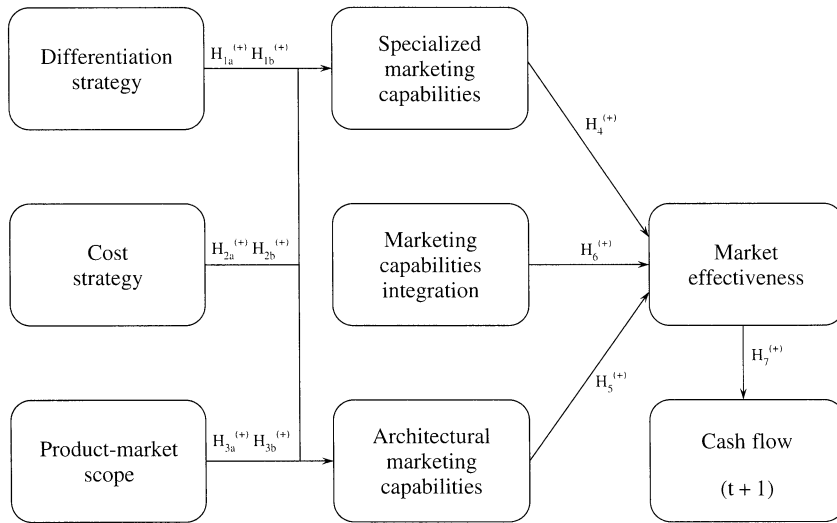
Figure 1.   Product-market strategy, marketing capabilities, and firm performance

cash flow (normalized for firm size by dividing by total assets—called $CFROA_{t-1}$ in Tables 5 and 6) might simply be better able to deploy resources due to having more cash to invest in the business. While $CFROA_{t-1}$ is statistically significant in both studies, it does not disturb the findings of either study. Thus, we believe our findings are robust to this issue. We also note that in Study 1 (Table 5), we see a positive impact from the general freight variable on the subsequent one-year cash flow and a negative impact of intermodal operations on subsequent one-year cash flow. Thus, it appears that general freight firms produce higher cash flows than specialized motor carriers, a finding that is not surprising given the higher capital requirements of the specialized freight carriers.

In Study 2, the control variables exert a somewhat greater influence. First, we note that previous period cash flow ($CFROA_{t-1}$) influenced subsequent one-year cash flow ($CFROA_{t+1}$) significantly. We also note that the number of marketing employees/total employees influenced market effectiveness negatively, which may be an indication of overbuilding marketing departments. We also observed the differential impacts due to organizational size across the four equations, and we report the differential impacts of the four environmental variables on the four dependent variables in the study in Table 6. Of the four environmental variables, perhaps the influence of competitive intensity is the most interesting as it negatively impacts market effectiveness, but the effect

appears to be somewhat counteracted by increasing specialized and architectural marketing capabilities that would ultimately have a positive impact on market effectiveness. Lastly, we note that the industry-type controls (goods-based product and consumer market) also demonstrated differential impacts across the dependent variables. Given the multi-industry nature of the sample, it is not surprising that these control variables have a bearing on the results. Of note is the positive impact of serving a consumer market on market effectiveness and the negative impact of serving goods-based markets on architectural marketing capabilities. Overall, these control variables do not appear to have directly impacted the proposed relationships we model and, therefore, lend credence to our empirical findings. Additionally, we found little impact from potential multicolinearity as the variance inflation factors were all 2.59 or lower in both studies.

CONCLUSIONS AND IMPLICATIONS

In this study, we examine four issues related to firm capabilities that have as yet been neglected within the strategic management literature. Primarily, we provide unique insight into the role that specialized and architectural marketing capabilities play in enabling firms' product-market strategies, and we present valuable new information related to how the integration of such capabilities

explains variation in firm performance. Additionally, we assess whether market-based performance outcomes stemming from marketing capability development impact firm future financial position, and attempt to ascertain whether the advantages derived from marketing capabilities and their integration are accruable across the gamut of business-level strategies. As a result of our examination of these issues, we extend the RBV in several meaningful ways. As identified by Newbert (2007), past research articles attempting to verify RBV principles have produced sparse and inconsistent results when addressing the linkage between strategy and firm capabilities; despite the importance of marketing to the firm's industry position, no research has addressed marketing capabilities as a business strategy facilitator. Furthermore, though RBV theorists have posited that capabilities integration is a necessary condition for optimum deployment of resources, empirical examination of capabilities integration has been extremely scant. Thus, our research represents a step toward a greater understanding of the role of capabilities integration in long-term firm-level initiatives.

The primary contribution of this research is the yielded insight into capabilities theory predictions regarding the ability of firm marketing capabilities to enable the realization of product-market strategy leading to increased market and financial performance. In examining the results of the two studies, we find strong evidence that marketing capabilities and their integration do facilitate business strategy outcomes. This conclusion is supported by strong evidence from Study 1 that indicates that for the firms in our sample both specialized and architectural marketing capabilities are influenced by differentiation and cost aspects of business strategy, and that these types of marketing capabilities and their integration are significant drivers of market effectiveness. Study 2 supports these conclusions across a multi-industry sample and additionally substantiates the prediction that specialized marketing capabilities are influenced by product-market scope.

Given the consistency of these findings across the two studies, we find evidence supporting the prior theoretical predictions indicating that resource-level differences alone may not sufficiently explain performance variance across firms. As Study 1 shows, for the firms in our sample the resource deployments represented by the firms'

specialized and architectural marketing capabilities serve as much stronger predictors of market effectiveness than did two key marketing resources: marketing expenditures, which showed a negative relationship with market effectiveness; and marketing employee resource levels, which were not related to market effectiveness. Study 2 also demonstrates the importance of resource deployments versus resource levels. The marketing capability-based resource deployments studied herein together appear to be better predictors of market effectiveness than the number of marketing employees, which showed evidence of a negative relationship with market effectiveness, and marketing expenditures, which showed a positive relationship with market effectiveness. Taken together, the results from the two studies support capabilities theory predictions concerning resource deployments as a source of enduring performance advantage. Given that marketing capabilities are believed to be both idiosyncratic and path dependent (Day, 1994), imitation would be difficult, and thus marketing capabilities should represent a key differentiator for firms to retain competitive advantage.

Confidence in the results of the study is increased by several important aspects of the research design. First, because the study combines both survey and objectively measured data, it reduces the possibility for common methods bias in research outcomes attributable to methodological procedures rather than the focal phenomena itself. Second, because the secondary data collected contained both resource-level (input) data and subsequent one-year financial data, a higher level of confidence may be held that the specialized and architectural marketing capabilities studied here do, in fact, influence strategy in the manner predicted. Third, because we conducted both single industry and multi-industry studies, the generalizability of our findings is improved. Fourth, because we specifically test for potential endogeneity, our results should allay concerns that alternative explanations for market and financial outcomes stemming from spurious externalities explanations are present.

While this study has several distinctive strengths, limitations resulting from trade-off decisions required in all empirical research are present. First, our study is limited, to a certain extent, by the method employed, which leads to issues of causal inference. The hypotheses were tested with data generated via survey and matched with

objective financial and operating data from secondary sources. Thus, while this research design is not strictly cross-sectional, which greatly reduces potential problems associated with common method bias, the study still suffers from a relatively short-term focus. Also related to causal inference is the direction of the causal links in our models, especially between product-market strategy and capabilities. While the strategic management literature discussed above predominantly views strategy as the antecedent to firm capabilities, we performed interviews with top managers early in the design of Study 1. Interviews with 15 chief marketing officers revealed that marketing capabilities were viewed as being both enablers and constrainers of strategic initiative. Interestingly, follow-up questions revealed that most interviewees felt that capabilities could be changed, if needed, to fit with the requisite strategic initiative. Furthermore, most of the firms in which our interviewees worked viewed budgeting as a function of strategic initiative, thus, setting a causal priority. This background work is generally consistent with the extant literature, but the sequencing of these constructs is not unequivocally accepted and thus, this issue could serve as an interesting point for future research. We also note that a firm with high profitability is potentially able to reinvest more resources in capabilities in a subsequent period than firms with lower profitability.[9] This reflects the 'tautology argument' an oft-cited criticism of the RBV literature (Priem and Butler, 2001). Since previous period cash flow data were available, we were able to control for some of this impact. However, this remains an area that may require specific investigation to further clarify this issue. Future research could complement our findings by utilizing longitudinal research designs that incorporate empirical estimations of the effect of strategic changes on marketing capability improvements and on firm performance at different points in time.

Second, the marketing capabilities studied are measured at a relatively high level of abstraction. Development of fine-grained measures of marketing capabilities would increase our knowledge about these specific marketing processes and how to best improve them. Third, investigation of other firm capabilities along with marketing

capabilities would enable managers to make better investment 'trade-off' decisions about how and where to deploy valuable and scarce resources to best improve business performance. Fourth, this study does not offer a measure of competitive advantage but instead employs two measures of performance. Although market effectiveness does capture an intermediate outcome between marketing capabilities and cash flow, alternative measures that explain which forms of competitive advantage can be realized might usefully expand on these findings. Finally, additional validation of these results in different contexts, with different types of firms and utilizing holdout samples could provide additional insights regarding the boundary conditions and predictive validity of these results. Future research should compensate for these issues and address such shortcomings.

ACKNOWLEDGEMENTS

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APPENDIX: CONSTRUCTS AND MEASUREMENT ITEMS

Differentiation (Seven point scale with 'Strongly Disagree' and 'Strongly Agree' anchors)

Source: Doty *et al.* (1993)

The following questions concern the degree to which you emphasize the following in your business strategy.

How strongly do you agree or disagree with each of the following statements. Our business strategy is to focus on ...

- the development of new markets relative to competitors
- offering 'specialized' services (e.g., flatbed, refrigerated, etc).
- innovation in service delivery
- providing the highest quality service possible
- developing new services
- providing unique services not offered by competitors

Cost-focus (Seven point scale with 'Strongly Disagree' and 'Strongly Agree' anchors)

Source: Doty *et al.* (1993)

The following questions concern the degree to which you emphasize the following in your business strategy.

How strongly do you agree or disagree with each of the following statements. Our business strategy is to focus on ...

- leadership in developing new operating procedures relative to competitors
- operating efficiency relative to competitors
- an emphasis on overall organizational efficiency
- providing low cost services

Product-market scope (Seven point scale with 'Strongly Disagree' and 'Strongly Agree' anchors)

Source: Doty *et al.*, (1993)

The following questions concern the degree to which you emphasize the following in your business strategy.

How strongly do you agree or disagree with each of the following statements. Our business strategy calls for ...

- serving more diverse sets of customer than our competitors
- offering a broader range of services than our competitors
- development of *(sic)* specific market niches (reverse scored).

Specialized marketing capabilities (Seven point scale with 'Not very well' and 'Very well' anchors)

Source: New Scale

How well does your organization perform the following activities relative to competitors...

- advertising and promotion
- public relations
- personal selling
- pricing
- new service development
- distribution (only measured in Study 2)

Architectural marketing capabilities (Seven point scale with 'Not very well' and 'Very well' anchors)

Source: New Scale

How well does your organization perform the following activities relative to competitors...

- environmental scanning
- market planning
- marketing skill development
- internal coordination and communication

Market effectiveness (Seven point scale with 'Not very well' and 'Very well' anchors)

How well has your firm achieved its performance goals in terms of ...

- market share growth
- sales growth
- desired market positions

Cash flow (Objective data from TTS in Study 1 and annual reports for Study 2)

- CFROA $_{t-1}$ is the cash flow from the period prior to collection of the survey data divided by total assets
- CFROA $_{t+1}$ is the cash flow from the subsequent one-year period following the survey data collection divided by total assets