



# Reports

---

Can Incumbents Introduce Radical and Disruptive Innovations?  
(04-100)

Vijay Govindarajan and Praveen K. Kopalle

Brand Orchestration (04-101)

Conference summary by Jill Avery and Mark DeFanti

**Market-based Assets and Capabilities, Business Processes, and  
Financial Performance (04-102)**

Sridhar N. Ramaswami, Mukesh Bhargava, and Rajendra Srivastava

The Difference Between Perceptual and Objective Performance  
Measures: An Empirical Analysis (04-103)

Kusum L. Ailawadi, Rajiv P. Dant, and Dhruv Grewal

The Impact of Values on Attitudes Toward Market Orientation  
(04-104)

Olivier Furrer, Christian Lantz, and Amandine Perrinjaquet

Are Physicians "Easy Marks"? Quantifying the Effects of Detailing  
and Sampling on New Prescriptions (04-105)

Natalie Mizik and Robert Jacobson

Innovation: The Case of the Fosbury Flop (04-106)

Jacob Goldenberg, Oded Lowengart, Shaul Oreg, Michael Bar-Eli,  
Shmuel Epstein, and Richard D. Fosbury

2 0 0 4

W O R K I N G  
P A P E R  
S E R I E S

I S S U E   O N E

N O .   0 4 - 0 0 1

**MSI**

# Reports

**Executive Director**

Leigh M. McAlister

**Research Director**

Ross Rizley

**Editorial Director**

Susan Keane

**Publication Design**

Laughlin/Winkler, Inc.

The Marketing Science Institute supports academic research for the development—and practical translation—of leading-edge marketing knowledge on issues of importance to business performance. Topics are identified by the Board of Trustees, which represents MSI member corporations and the academic community. MSI supports academic studies on these issues and disseminates findings through conferences and workshops, as well as through its publications series.

Marketing Science Institute  
1000 Massachusetts Avenue  
Cambridge, MA  
02138-5396

Phone: 617.491.2060  
Fax: 617.491.2065  
[www.msi.org](http://www.msi.org)

*MSI Reports* (ISSN 1545-5041) is published quarterly by the Marketing Science Institute. It is not to be reproduced or published, in any form or by any means, electronic or mechanical, without written permission.

The views expressed here are those of the authors.

*MSI Reports* © 2004  
Marketing Science Institute  
All rights reserved.

**Working Paper Series**

The articles that appear in *MSI Reports* have not undergone a formal academic review. They are released as part of the MSI Working Paper Series, and are distributed for the benefit of MSI corporate and academic members and the general public.

**Subscriptions**

Annual subscriptions to *MSI Reports* can be placed online at [www.msi.org](http://www.msi.org). Questions regarding subscriptions may be directed to [pubs@msi.org](mailto:pubs@msi.org).

**Single reports**

Articles in *MSI Reports* are available in downloadable (PDF) format at [www.msi.org](http://www.msi.org).

**Past reports**

MSI working papers published before 2003 are available as individual hard-copy reports; many are also available in downloadable (PDF) format. To order, go to [www.msi.org](http://www.msi.org).

**Corporate members**

MSI member company personnel receive all MSI reports (PDF and print versions) free of charge.

**Academic members**

Academics may qualify for free access to PDF (downloadable) versions of MSI reports and for special rates on other MSI print publications. For more information and to apply, go to "Qualify for academic membership" on [www.msi.org](http://www.msi.org).

**Classroom use**

Upon written request, MSI working papers may be copied for one-time classroom use free of charge. Please contact MSI to obtain permission.

**Search for publications**

See the searchable publications database at [www.msi.org](http://www.msi.org).

**Submissions**

MSI will consider a paper for inclusion in *MSI Reports*, even if the research was not originally supported by MSI, if the paper deals with a priority subject, represents a significant advance over existing literature, and has not been widely disseminated elsewhere. Only submissions from faculty members or doctoral students working with faculty advisors will be considered. "MSI Working Paper Guidelines" and "MSI 2002-2004 Research Priorities" are available in the Research section of [www.msi.org](http://www.msi.org).

**Publication announcements**

To sign up to receive MSI's electronic newsletter, go to [www.msi.org](http://www.msi.org).

**Change of address**

Send old and new address to [pubs@msi.org](mailto:pubs@msi.org).

2 0 0 4

W O R K I N G  
P A P E R  
S E R I E S

I S S U E O N E

N O . 0 4 - 0 0 1

# Market-based Assets and Capabilities, Business Processes, and Financial Performance

Sridhar N. Ramaswami, Mukesh Bhargava, and Rajendra Srivastava

*A market-sensing capability drives the critical business processes of new product development, customer relationship management, and supply chain management. A firm's ability to continuously sense, learn, and act on trends and events in its markets helps it achieve comparative advantage and superior financial performance.*

## Report Summary

What gives rise to comparative advantage in resources that contribute to improved process performance? What is the role of marketing in building and enhancing these resources?

To examine these questions, Ramaswami, Bhargava, and Srivastava propose a conceptual framework based on resource-based theory and the comparative advantage theory of competition. They seek to show how the marketing function contributes to business performance by bringing market-based assets and capabilities to bear on market-facing business processes (namely, new product development, customer relationship management, and supply chain management) with the aim of creating comparative advantages and superior financial performance.

They test their framework using a sample of 88 companies. Findings suggest that both supply chain and customer relationship management processes have an important impact on firms' financial performance. While marketing plays a

central role in customer relationship management, its impact on supply chain management is, although important, more limited.

Marketing also plays an important role in the new product development process; however, the latter does not impact the financial performance of the firms in the sample.

Further, the authors find that a market-sensing capability—a firm's ability to continuously sense, learn, and act on trends and events in its markets—is an important driver of all three business processes. That is, it enables organizations to achieve comparative advantage in a number of relevant resources or capabilities, including customer differentiation ability, focus on high-value customers, customer-nurturing capability, and supply chain leverage.

Overall, the framework provides a linkage between marketing, financial performance, and shareholder value. The results of this research will provide managers with strategic insights into optimal customer management, product development, and supply chain strategies. ■

### Sridhar N. Ramaswami

is Professor of Marketing, Iowa State University.

### Mukesh Bhargava

is Associate Professor of Marketing, Oakland University.

### Rajendra Srivastava

is Roberto C. Goizueta Chair in Electronic Commerce and Marketing, Goizueta Business School, Emory University.

## Introduction

The marketing function plays a critical role in the development and growth of market-based assets, such as brands and customer and distribution relationships (Srivastava, Shervani, and Fahey 1998) and capabilities such as market sensing (Day 2001), market responsiveness (Kohli and Jaworski 1990; Narver and Slater 1990), and customer nurturing (Day 1994, 2001). The resource-based view (RBV) of marketing suggests that a significant proportion of the market value of firms today is based on these intangible assets and capabilities rather than on tangible, book assets (Lusch and Harvey 1994; Srivastava, Shervani, and Fahey 1998). However, we need to continue to investigate (a) the processes by which market-based resources are translated into higher financial performance (Day and Wensley 1988; Bharadwaj, Varadarajan, and Fahy 1993; Hunt and Morgan 1995) and (b) the role of the marketing function in generating market-based resources. Knowing how marketing activities drive the performance of market-facing processes will clarify marketing's role in the creation of value and thus provide justification for allocating more resources to the marketing function.

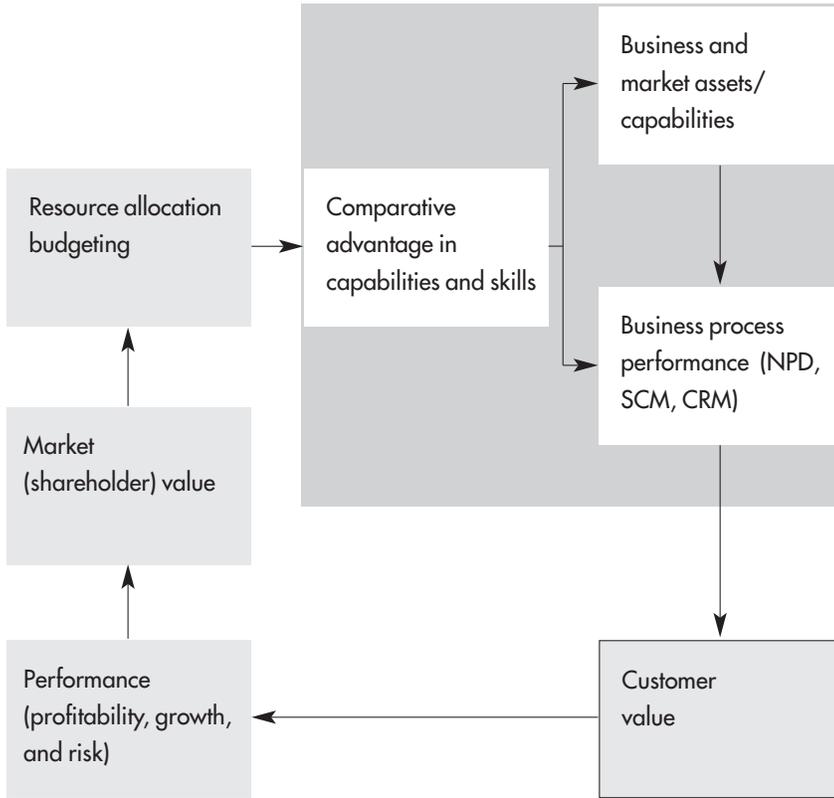
A primary objective of this study is to evaluate the importance of market-based resources/capabilities for creation of firm value and competitive advantage. We offer four basic premises in pursuit of this objective. First, financial performance and shareholder value are dependent upon an organization's success in three key cross-functional business processes, namely, new product development (NPD), customer relationship management (CRM), and supply chain management (SCM) (Hagel and Singer 1999; Srivastava, Shervani, and Fahey 1999). Second, success in these business processes is shaped by a firm's ability to establish a position of comparative advantage in a set of heterogeneous resources, or capabilities. Resource-based comparative advantage exists when the resource is rare and contributes to developing market

offerings that customers perceive as having superior value (Hunt and Morgan 1995).<sup>1</sup> When this value is sustainable, it creates a condition of competitive advantage that can yield extra-normal outcomes for the firm. Third, the assortment of advantage-yielding resources may vary for each of the three different business processes, as suggested by Day (1997) and Srivastava, Shervani, and Fahey (1999). Fourth, the marketing function may play a differential role in leveraging these resources. The study examines whether marketing plays a more important role in shaping resources that drive successful CRM performance than it does in shaping the resources that drive the success of NPD and SCM.

The study makes key contributions to the emerging literature on market-based assets. First, by integrating the work of Hunt and Morgan (1995) with subsequent conceptualization by Srivastava, Shervani, and Fahey (1999), it provides a theoretical background for tracking the role of market-based capabilities in generating value for the firm. Second, the study provides the first empirical examination (to the best of our knowledge) of Hunt and Morgan's theory of comparative advantage. Finally, the study identifies key capabilities and capability assortments for enhancing business process performance, making it useful for practitioners.

The next section provides an overview of the resource-based view of marketing. In doing so, it shows that establishing comparative advantage in market-based capabilities is important for enhancing business process performance and for enhancing the role of these processes in sustaining financial performance. The following section outlines the research methodology, including details about the sample and survey instrument. The third section presents empirical results of a survey of senior marketing managers from a sample of firms. The last section discusses the implications of these preliminary findings for academic research and managerial practice.

Figure 1  
Resource-based View of Marketing



## Theoretical Framework

Although it may seem obvious that the marketing function creates value for a corporation, marketers, with few exceptions (e.g., Srivastava, Shervani, and Fahey 1998; Moorman and Rust 1999), have paid little attention to developing the conceptual or empirical links between market-based assets and capabilities and business processes. This study proposes to develop a conceptual framework—based on resource-based theory (Barney 1991) and the comparative advantage theory of competition (Hunt and Morgan 1995)—that will facilitate a broader understanding of this linkage.

This framework is summarized in Figure 1. It shows how market-based assets and capabilities are essential for executing core market-facing business processes. Superior performance in these processes can, in turn, result in better

financial performance. Subsequently, and iteratively, better financial performance should lead to higher market valuations and additional resources being committed to developing organizational capabilities. As it shows, resource allocation creates a comparative advantage in capabilities and skills that will further improve performance of core market-facing business processes, and the cycle continues. The present study identifies and evaluates the importance of a number of organizational capabilities and examines the degree to which marketing contributes to building such capabilities for the firm.

## Comparative advantage theory and business processes

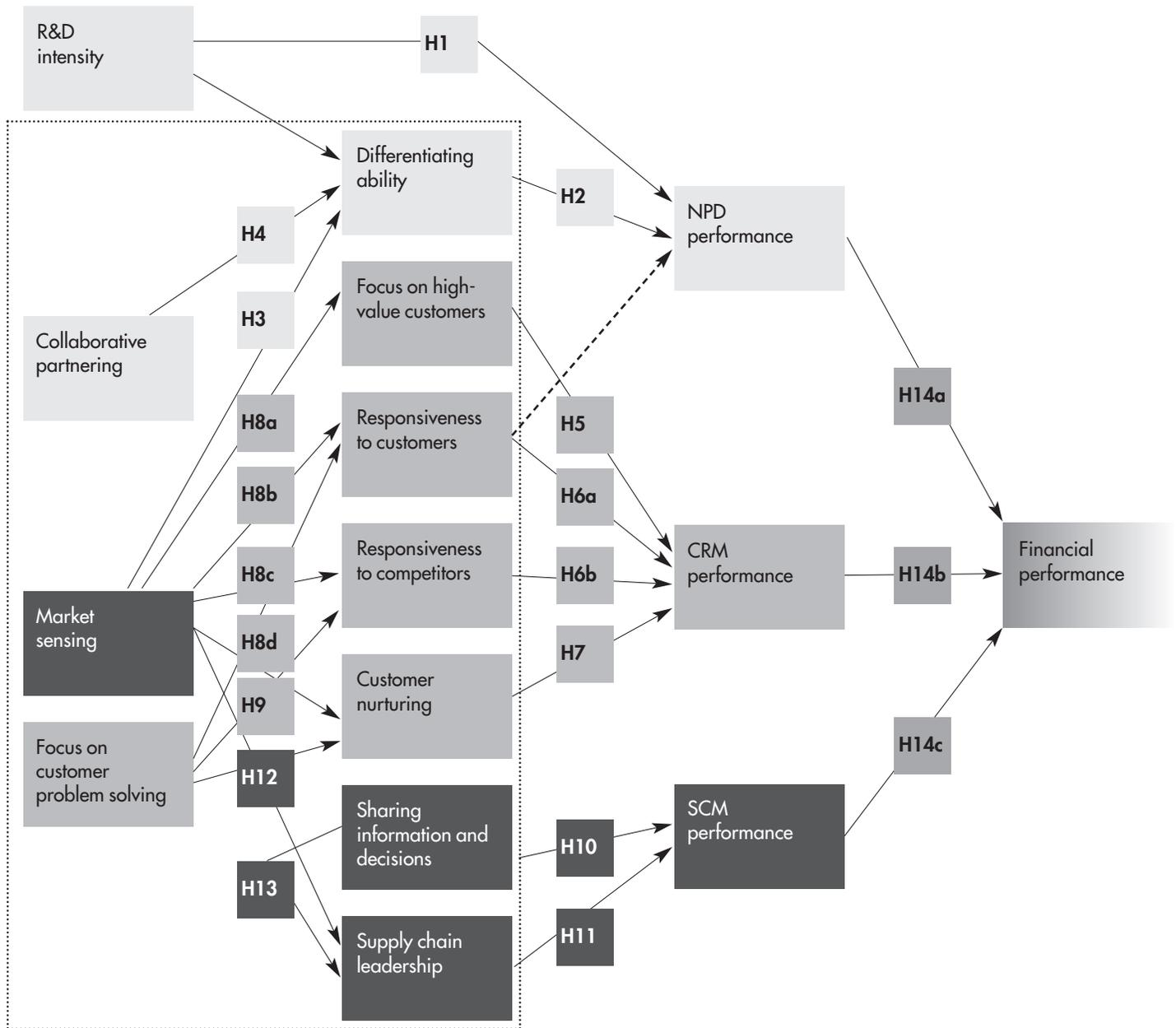
The study utilizes Hunt and Morgan's (1995) comparative advantage theory to link firm capabilities with business process performance. The linkage is based on three premises. First, every firm has a number of resources that it can use to improve business process performance. Second, to yield comparative advantage, a resource has to satisfy certain requirements, as specified in resource theory. Third, the assortment of resources relevant for successful business process performance varies for each type of process.

**Resources.** An asset is defined as any physical, organizational, or human attribute that enables the firm to generate and implement strategies that improve its efficiency and effectiveness in the marketplace (Barney 1991). Assets include “tangible and intangible entities available to the firm that enable it to produce efficiently and/or effectively a market offering that has value for some market segment or segments” (Hunt and Morgan 1995; p. 6). Tangible assets such as manufacturing and supply-chain infrastructure are typically valued and recorded in financial statements. Intangible assets, whether internal to the organization (e.g., experience, patents, etc.) or external (e.g., a strong customer orientation, channel collaboration) are more often unmeasured and thus not accounted for in financial statements. According to Hunt and Morgan (1995), capabilities regarding selection of target markets, product development,

Figure 2

**Comparative Advantage in Resources and Business Performance**

Hypothesized Model: Resources, Process Performance, and Financial Performance



Note: The constructs in the box measure comparative advantage

promotion, and channels of distribution constitute assets when they contribute to creation of market value for the firm.

**Comparative Advantage.** Comparative advantage in a resource or capability has three components—ability, rarity, and translatability.

Hunt and Morgan (1995) suggest that when a firm has a resource that is rare among competitors or unique to the firm itself, it has the potential to achieve comparative advantage in that resource. If multiple rivals possess the resource, its potential for comparative advantage is diminished (Srivastava, Shervani, and

Fahey 1998). Comparative advantage is realized when the firm uses the unique resource to create offerings that produce superior value to the customer. Srivastava, Shervani, and Fahey (1998) are of the opinion that intangible market-based capabilities are more likely to serve as a basis for long-term, sustained customer value. The challenge facing a firm's managers is therefore to identify, *ex ante*, a set of intangible market-based capabilities that will make it possible to establish a sustainable competitive advantage and thereby generate organizational rents.

### **Resource Allocation and Business Processes.**

The drivers of performance for each of the three processes—NPD, CRM, and SCM—are represented in Figure 2, which depicts our hypothesized model. This figure reveals that all three processes have unique as well as common drivers. Additionally, the drivers may be direct or indirect.

### **New product development (NPD) process**

Three criteria determine the effectiveness of a firm's NPD process: the number of new products developed, the extent to which these products are market winners, and the speed of development of these products. Why do some firms have more effective NPD processes than others? Is it because they are able to allocate more resources to research and development (R&D) activities that create organic growth opportunities? Or, is it because they are better able to combine their technology strengths with market-sensing capabilities to develop truly differentiated products? If the second answer is correct, it would imply that the marketing function has an important role to play in enhancing NPD performance. Let us examine each of these answers to the question in turn.

**R&D Intensity.** Previous research has tied a firm's innovation capacity to its level of R&D spending (Hitt, Hoskisson, and Kim 1997). There are two points of view regarding the impact of R&D spending on the performance of the NPD process. The first view is simplistic

and suggests that the greater the resources allocated to the R&D function, the higher the firm's capacity to develop new products that are winners (Hitt et al. 1991; Hitt et al. 1996). The most widely advanced arguments for this premise are that high R&D expenditure creates a barrier to entry, thereby precluding competition, and enables a firm to enter new product lines earlier (Jose, Nichols, and Stevens 1986). However, as managers increasingly focus on short-term results (and therefore on operational excellence or supply chain processes), they tend to reallocate resources away from R&D efforts that typically have a longer payout time period.

H1: The greater the R&D intensity, the better the firm's NPD performance.

**Differentiation Ability.** A second view suggests that it is not just the level of R&D spending, but also the capacity of a firm to design and develop differentiated products that determines NPD process performance (Dickson and Ginter 1987). Research shows that differentiated products have higher success rates and market share (Cooper 1994) and add value by lowering own-price elasticity (cf. Boulding, Lee, and Staelin 1994). Further, differentiated products are more responsive to advertising and promotions (Smith and Park 1992; Keller 1993), command greater buyer loyalty (Russell and Kamakura 1994), stimulate earlier trial and referrals (Zandan 1992), and counter competitive clones (Purohit 1994).

Srivastava, Shervani, and Fahey (1998) proposed that differentiated products could accelerate cash flows by increasing the responsiveness of the marketplace to marketing activity. When exposed to a differentiated brand, customers are more likely to try the brand, adopt the brand, and begin to refer the brand to others sooner than otherwise. Further, vulnerability of cash flows is reduced when loyalty and retention are increased. When a firm has a satisfied and loyal base of customers, the cash flow from these customers is less susceptible to competitive activity.

Organizations differ in their capacity to develop differentiated products, as we discuss below. We postulate here, however, that firms that have a comparative advantage in developing differentiated products will turn out a greater number of products that are market winners.<sup>2</sup> Thus,

H2: The greater a firm's comparative advantage in developing differentiated products, the better the firm's NPD performance.

Certain competencies contribute to a firm's ability to develop products that are differentiated from those of the competition. In this study, we are particularly interested in two market-based capabilities: market sensing, which is at the core of the market orientation concept (Kohli and Jaworski 1990), and collaboration with internal and external stakeholders.

**Market Sensing.** A firm's market-sensing capability is its ability to continuously sense, learn, and act on trends and events in its markets (Day 1994). Firms enjoying comparative advantage in market sensing typically do a better job of gathering, analyzing, and interpreting market information. Such firms learn from current and potential customers about their existing and latent needs and are able to act in an entrepreneurial manner to create superior customer value. According to Day (1994), firms that emphasize market sensing can (1) track key market conditions and learn from deviations from what is normal, (2) monitor competitors' products and policies and decide which are worth imitating, and (3) anticipate accurately the market's responses to programs designed to retain or acquire customers or thwart competitors.

Why is this capability important? Over time, all industries undergo substantial changes that are driven by customers, competitors, or technology suppliers (Achrol 1991). These changes put continuous pressure on businesses to augment their products and services to maintain or increase their value to customers (Slater and Narver 1995). Market sensing is valuable because it

directs the firm's attention to changing customer requirements and to emerging competitive threats and guides the firm in its efforts to develop a constant stream of differentiated new products ahead of current and emerging rivals' offerings. Therefore,

H3: The greater a firm's comparative advantage in market sensing, the greater will be the firm's comparative advantage in developing differentiated product offerings.

**Collaborative Partnering.** We propose that a firm's ability to create differentiated products is closely tied to its ability to integrate relevant internal (manufacturing, sales, and marketing) and external (customers and suppliers) stakeholders into NPD activities. In a large number of firms, R&D is isolated from the rest of the company and especially from marketing. The result is that many R&D departments have a tendency to become insensitive to market requirements. One way to address this problem is to use cross-functional teams (involving functions that are closest to the customer) inside the organization to link core competencies more closely with unmet customer demand at the outset of the NPD process.

Additionally, the firm can seek direct help from both customers and suppliers and gain access to important information and resources that few can afford to put together on their own. Overall, involving customers has two types of benefits. First, the products developed using customer inputs are likely to be more relevant and thus have a better chance of success. Second, the prospects for developing really unique products are increased as managerial judgments (that are not always accurate) can be replaced with more relevant customer inputs at every stage of product development—from concept to prototype to the final product.

Partnering with supplier firms helps in a different way—it results in a natural and rapid evolution toward networks of competencies. For instance, supplier networks can become involved

early in design and manufacturing decisions. In Japan, *kyoryoku kai*, or partner alliances, help bring companies together to meet a core competitive need. The strategic partners can identify and correct design errors, influence the design of the final product, and even take on the responsibility of co-designing parts and accessories for the final product. Based on the above discussion, we offer the following hypothesis:

H4: The greater a firm's comparative advantage in collaborating with internal and external partners, the greater its comparative advantage in developing differentiated products.

### Customer relationship management (CRM) process

In recent years, a variety of market forces such as commoditization of brands, more intense competition, growth in the number of advertising messages to which consumers are exposed on a daily basis, the advent of new marketing channels such as the Internet, and ever-rising customer expectations (Sheth and Parvatiyar 1995) have put increasing pressure on companies to come up with better ways of managing their relationships with customers. Not surprisingly, companies are turning to customer relationship management (CRM) solutions. CRM is a management approach that uses deep customer insights and analysis, drawn from individual customer interactions, to understand and predict consumer behavior and fulfill customer needs as completely as possible (Sheth and Parvatiyar 1995). CRM requires that organizations (a) identify and focus resources on high-value customers, (b) attract them by capturing and using knowledge about them to develop customized offerings and personalized communication, and (c) nurture them by maximizing the value of their relationship with the organization. We examine these requirements first before discussing two of their drivers—market sensing and a problem-solving orientation.

**Focus on High-Value Customers.** According to Smith (2001), focusing on high-value customers will lead to retention of the right

customers and ultimately increased profits. In markets hampered by customer churning, focusing on high-value customers (HVCs) has become a competitive necessity. Companies usually have a limited budget for customer retention and would like to spend it on those with the highest lifetime value. Greenyer (2003) suggests that a series of models can be used to identify the customers that have the highest probability of churning, as well as the ones who have the greatest potential lifetime value. The model outputs can then be used to predict which products and services will be of interest to the high-value customers—and to develop the best strategies to target them.

Organizations differ in their ability to gather customer information, design databases, and use analytics such as data mining to identify high-value customers. It should come as no surprise that organizations that have this capability and accomplish these tasks well will be in a better position to satisfy the needs of the HVCs in a personalized manner and maximize the chances of retaining them. Therefore,

H5: The greater a firm's comparative advantage in focusing on high-value customers (value differentiation), the better its CRM performance.

**Market Responsiveness.** Faster response to customer needs and competitive threats may enhance a firm's ability to retain customers. For example, Day (1994) reports that when a firm replaces a defective item before asking any questions and follows up with a phone call to make sure that the item is functioning properly, it has a positive impact on customer satisfaction and tightens the customer's connections to the firm. According to Day (1994), "these closer connections lead to stronger feelings of loyalty and the relationship created by this loyalty allows the company to develop customer-specific information and capabilities that are hard to match" (p. 151).

Another type of responsiveness pertains to the speed with which a firm is willing to make

product or service design changes in response to changes in customer needs and wants. For example, “event-driven” proactive marketing in response to customer family lifecycle changes has resulted in successful new practices in the insurance and financial sectors (Day 1994).

It should be pointed out that superior customer value can only be assessed in relation to the offerings of rival firms. Thus, in addition to being customer oriented, market-responsive firms should also be responsive to competitor’s actions. They need to know why rivals may be gaining an edge, must calibrate themselves against the best of class, and must become obsessed with beating their rivals (Day 1999).

Several factors have been identified for the variability in organizations’ ability to respond to customers and competitors—differences in the degree to which market information is broadly shared within the organization, how such information is mutually appreciated, and employees’ ability to understand clearly the application potential for such information (Day 1994). Regardless, responsiveness is a quality that will lead to higher levels of customer satisfaction and loyalty and favorable competitive advantage in the market. Thus,

H6: The greater the comparative advantage of a firm in its ability to respond to (a) customers and (b) competitors, the better its CRM performance.

**Customer-Nurturing Capability.** According to Theodore Levitt (1960), “the entire organization must be viewed as a customer creating and customer satisfying organism.” To achieve this objective, organizations need to consider customers as appreciating assets, just like more traditional investments shown on balance sheets. Instead of looking at a customer as a single sale, companies should consider the lifetime value of a customer. To maximize lifetime value, firms must nurture customers by providing them with greater value (Fenwick 2001). For example, for years Mercedes has had

a customer retention program that quantified the customer experience, both in costs to Mercedes and in benefits to the customer. This program came up with innovations now widely copied, such as 24-hour road service. Sometimes nurturing may take the form of packaging into the firm’s offering some unexpected surprises that create customer delight. This requires an attitudinal shift on the part of the organization: It must really care for the customer and show it through its actions.

Organizations differ in their ability to nurture customers as organizational assets (Sheth and Parvatiyar 1995). Because customer nurturing takes time to develop, the potential exists for any organization to develop intimate relations with customers to the point that they may be relatively rare and difficult for rivals to replicate (Francis 2000). Accordingly,

H7: The greater the comparative advantage of a firm in nurturing customers, the better its CRM performance.

**Market Sensing.** Market sensing enables firms to gain a better understanding of different customer groups and their relevance for the firms’ products. Companies recognize that having the ability to sense and understand the needs of high-value customers is the first step in the customer lifecycle and a critical step in being responsive to customers’ needs. Responsiveness is the largest element in what customers score as a positive relationship. Relationship scores soar when responsiveness is combined with proactive relationship building—the latter arising from the market-sensing efforts of the firm.

Day suggests that a key and early step in the market-sensing process is the “active acquisition and distribution of information about the needs and responses of the market, how it is segmented, the intentions and capabilities of competitors” (1994, p. 43). This enables a market-sensing organization, in contrast to an organization that is oriented to internally driven optimization, to identify key events and

trends in the market before their competitors. It also enables firms to stay in touch with competitor moves and thus to respond to them quickly and effectively. Further, the closer a firm is to its customers and the greater its understanding of their motivations, the greater its ability to enhance value delivered to them.

H8: The greater a firm's comparative advantage in market sensing, the greater will be its comparative advantage in (a) focusing on high-value customers, (b) responding to customers, (c) responding to competitors, and (d) nurturing customers.

#### **Customer Problem-Solving Orientation.**

Firms can create critical competency by developing in their employees the willingness and ability to adopt a problem-solving stance with customers. On one level, that simply means the ability to target customers with the right product at the right time. But at a deeper level, it is an acknowledgement that customers want to interact with vendors who understand their problems and can customize solutions for them even when it means recommending a competitor's product. Such actions add value to the customer's relationship with the firm and thus influence the customer-nurturing process. Making an observation about the insurance industry, Day (1999) notes that customers are not trustful of insurance companies and agents, because they hear from them only when a premium is due. Day suggests that these firms should monitor changes in the customer's situation and offer proposals for changing coverage to make the insurance more useful for customers. Studies from the pharmaceutical industry indicate that companies that have adopted a "customer solutions" approach have been rewarded with increased loyalty from pharmacists.

H9: The greater a firm's comparative advantage in customer problem solving, the greater is its comparative advantage in nurturing customer relationships.

#### **Supply chain management process**

A supply chain process encompasses activities relating to production and delivery of products or services to customers. What factors contribute to higher SCM performance? First, because SCM performance depends upon the firm coordinating its actions with several external constituents, a critical determinant is its ability to share information and decisions with these constituents. Increased transparency is a necessary condition for implementing just-in-time (JIT) systems and improving responsiveness to changes in demand conditions. Second, it is not sufficient to establish a supply chain network; it is equally important to leverage the chain to create value for the chain's customers. Customer value creation should contribute to higher SCM performance.

**Sharing Information and Decisions.** For a supply chain to run smoothly, it is important that members of the chain share information and decisions so that the consequences of decisions can be understood in advance. Schalet (2001) identified two types of information that can be shared among supply chain members: demand and decisions. Transparency of demand information will ensure that suppliers are making available the right supplies (i.e., for those products in demand) at the right time. If demand information is not transparent, suppliers either manufacture too many low-demand products or few high-demand products. If a firm's ability to deliver is impaired because the supplier is late, customers may switch to a competitor's product. Transparency of decision information ensures that the suppliers are in the know and can adjust their policies accordingly. For example, supplier firms involved early in the design process have a better knowledge of the material and design requirements of the new product.

Overall, information transparency can enable a firm to reduce supply chain costs and create a competitive advantage stemming from stronger vendor relationships, as amply demonstrated by

Dell Corporation. If relationships are strong, the network may implement a JIT system, such that suppliers manufacture and supply products when an order is received, thereby reducing the amount of inventory that needs to be held (Morgan 1998). In addition, it allows for quicker response to changes in the demand environment (Dess et al. 1995) in ways that do not increase costs.

H10: The greater a firm's comparative advantage in sharing of information and decisions, the better the SCM performance.

**Supply Chain Leverage.** Organizations differ in their ability to lead and leverage the supply chain. Leveraging implies that a firm is able to use its relationships within the supply chain to enhance operational efficiencies and deliver better value to customers. The leveraging potential is closely related to a firm's leadership position within the supply chain network. For example, Cisco Systems has successfully organized and led a supply chain network that includes not just the first-tier suppliers but also suppliers from lower tiers. Cisco owes its leadership position in part to the high-quality relationships that it has established with customers down the supply line. In fact, companies such as Cisco and Dell have improved their margins by rationalizing their supply chain networks and gaining bigger discounts by buying more parts from each supplier (Hayes 2001). Thus,

H11: The greater the ability to leverage supply chain relationships, the better the SCM performance.

We propose that market sensing should contribute to a firm's ability to leverage supply chain relationships. Market sensing provides the firm with superior ability to handle uncertainties and to take advantage of opportunities. The firm can enjoy an advantage over its rivals if it can forecast trends and changes in its market environment more accurately. Further, possessing superior knowledge of its customer base, particularly those who form the backbone

(loyal, high-value potential), and gaining intimate knowledge about them affords a firm competitive advantage. Firms within the supply chain that have this capacity will also be firms that can take a leadership role in leveraging the supply chain to provide higher value to customers.

H12: The greater the comparative advantage of a firm in market sensing, the greater its ability to leverage supply chain relationships.

Sensing is only one part of the equation for good SCM. The other part is communication and sharing of the sensed information. To manage the supply chain network well, a firm should control uncertainties associated with supply chain operations. Uncertainties arise from the complexity of ongoing coordination of procurement and distribution activities across organizational boundaries and from the difficulties associated with specifying requirements precisely to partners in the alliance, a task that requires ongoing communication of demand information and decisions (Gulati and Singh 1998). Sharing information and decisions can thus reduce supply chain members' uncertainty level. Through transparency, that is, sharing information and decisions, organizations make elements of the supply chain system more predictable (Leifer and Mills 1996). Predictability allows supply chain members to achieve higher and more stable returns. Predictability also accords to the instrumental firm greater legitimacy to take on the leadership role within the supply chain network. Thus,

H13: The greater a firm's comparative advantage in sharing of information and decisions, the greater its ability to leverage supply chain relationships.

### **Linking business process performance to financial performance**

Ultimately, the competitive advantage arising from effective use of resources in each of the three business processes must be reflected in

superior financial performance. We predict that the impact of effectively managing these processes will be significant. For example, effective SCM processes can reduce costs in such areas as inventory management, warehousing, and transportation and enhance revenues through programs that assure higher product availability (Thomas 1999). Improvements in a company's distribution network can translate into increased sales. These improvements, in turn, may result in significant improvements to corporate profitability.

Similarly, effective CRM processes, because of their effects on customer satisfaction and retention, may lead to greater firm profitability. In a CRM study in the communication industry, Accenture examined 54 CRM capabilities in marketing, sales, and customer service and concluded that 11 specific areas had the greatest impact on a company's financial performance (Salz-Trautman 2000). In a similar study of the high-tech industry, results indicated that as much as 64% of the difference in return on sales between average- and high-performing companies could be explained by CRM performance (Sims 2000). Further, a similar study found that a high-tech company can gain as much as \$130 million in profits by improving its ability to manage customer relationships (CRM Advisor 2000). Overall, these two studies appear to make intuitive sense and seem to suggest that a focus on improving performance in CRM can separate the leaders from the rest of the pack in a competitive industry. Yet not all the CRM capabilities were equally important. The key drivers of increased financial performance were (1) understanding customer profitability and cost to serve, (2) articulating the "value proposition" to customers, (3) effectively managing product mix and bundling, and (4) focusing on HVCs. Some of these drivers are also included in the present study.

Finally, NPD performance should impact financial performance positively. The NPD process allows organizations to deliver to the marketplace a stream of new products with

meaningful benefits that consumers are willing to pay for. Additionally, NPD helps bring these products to the market at a faster pace. The effect of these benefits is to increase share of the market and provide scale economies to the firm. Through these benefits, the organization's financial performance will improve. Thus,

H14a: The greater the firm's NPD performance, the better its financial performance.

H14b: The greater the firm's CRM performance, the better its financial performance.

H14c: The greater the firm's SCM performance, the better its financial performance.

### **Marketing's role in the three business processes**

The Marketing Science Institute has recently focused attention on understanding the role the marketing function plays in making business processes efficient and effective. Srivastava, Shervani, and Fahey (1999) argue that the ability of marketers to influence marketplace performance depends upon the extent to which core business processes are infused with a marketing perspective. The question of interest, then, is what role marketing plays in helping develop the firm's comparative advantage in resources and in shaping the performance of the firm's business processes.

We hypothesize that the key resource of interest for enhancing NPD performance is a firm's capacity to develop differentiated products. Differentiation ability, in turn, we suggest depends upon the firm's market-sensing ability and its skills in collaborating with customers and suppliers during product development. Marketing is the primary function responsible for market-facing activities such as sensing and customer research, so we expect it to play an important role in developing the advantages that determine the performance of the NPD process.

When CRM was first developed, the initial focus of companies was on improving channel

Table 1  
Sample Description

| Type of firm      | Number of firms | Percentage of firms |
|-------------------|-----------------|---------------------|
| Retail            | 5               | 5.7                 |
| Consumer services | 9               | 10.2                |
| B to B            | 50              | 56.8                |
| Consumer          | 14              | 15.9                |
| Other             | 10              | 11.4                |

| Size of firm              | Number of firms | Percentage of firms |
|---------------------------|-----------------|---------------------|
| Less than 50 employees    | 5               | 5.7                 |
| 50–250 employees          | 13              | 14.9                |
| 251–500 employees         | 6               | 6.9                 |
| 501–1,000 employees       | 6               | 6.9                 |
| More than 1,000 employees | 57              | 65.5                |

| Years in business  | Number of firms | Percentage of firms |
|--------------------|-----------------|---------------------|
| Less than 1 year   | 1               | 1.1                 |
| 1–5 years          | 9               | 10.2                |
| 6–15 years         | 15              | 17.0                |
| More than 15 years | 63              | 71.6                |

| Marketing structure                                       | Number of firms | Percentage of firms |
|---|-----------------|---------------------|
| No marketing department                                   | 7               | 8.0                 |
| One overall marketing department                          | 36              | 41.4                |
| One marketing department for each strategic business unit | 44              | 50.6                |

| Process responsibility | Number of firms | Percentage of firms |
|------------------------|-----------------|---------------------|
| CRM                    | 52              | 59                  |
| SCM                    | 32              | 36                  |
| NPD                    | 52              | 59                  |

efficiency and customer satisfaction, and marketing's role was to assist these efforts through product sales and customer acquisition.

However, in the mid-1990s, when relationship building became more important than customer acquisition, marketing began to play a more central role within the CRM process. Relationship building required a restrictive focus on identifying key or high-value customers and generating insights into their needs and preferences to enable more personalized interactions and longer-term nurturing. While marketing plays a critical role in developing these skills, it

has to rely on help from other functional areas such as operations (for customer support and service), information management (for data analysis), and manufacturing and product supply (for on-time delivery). However, given that the focus of these activities is the customer, marketing can play a leadership role in enhancing CRM process performance.

Finally, because the SCM process is more under the control of distribution and logistics departments, we predict that marketing will have a less important role to play in enhancing SCM performance.

H15: Marketing will have a more important role to play in influencing the performance of NPD and CRM processes than in influencing the performance of the SCM process.

## Research Methods

### Sample and procedure

Because the type of data required for testing our hypotheses was strategic in nature, we defined our population as top management personnel in the marketing function. Inquiries were made to identify the marketing individual (vice president, director, manager) within an organization most appropriate to respond to the survey designed for the study. A personal invitation to participate in the study was then made directly to that individual. The survey participant was promised a benchmarking copy of the findings of the study in return for participation. Some of the factors that contributed to greater participation were the strategic focus of the study, perceived usefulness of the study, novelty of the survey measures, and the personal invitation.

We used a purposive sampling methodology to select firms for inclusion in the study. A sampling frame of firms was developed for four big cities in the midwestern and southern parts of the United States. The key marketing informant in each firm was contacted in person or by telephone. Upon agreement to fill out the survey, the instrument was handed over or mailed to the individual. The total number of participants reached for the survey was 190. Of these, complete survey responses were obtained from 88 respondents, yielding a response rate of 46%.

The sample profile of responding firms is reported in Table 1. Respondents were primarily in business-to-business firms (56.8%) that have a separate marketing department (92%). These firms are large in size, with 65.5% employing more than 1,000 employees. They are also well established, with 71% having been around for more than 15 years. Of the respondents, 59% were involved in the CRM process,

59% were involved in the NPD process, and 36% were involved with the SCM process.

### Measurement

Table 2 includes a complete description of the measures used in the study. Similar to the procedure used by Moorman and Rust (1999), if the organization had only one strategic business unit (SBU), respondents were asked to focus on the overall firm when providing responses. However, if the organization had multiple SBUs, the primary SBU was chosen for the study and the selected respondent was asked to provide responses using this SBU as the unit of analysis.

**Comparative Advantage.** The conceptual framework identified a number of capabilities or resources that drive business process performance: market sensing, focus on customer problem-solving, focus on high-value customers, customer nurturing, sharing information with suppliers, leveraging supply chain relationships, collaborative partnering, responsiveness to customers, responsiveness to competitors, developing differentiated products, and R&D intensity. The hypotheses are framed in such a way that comparative advantage in these resources is expected to drive NPD, CRM, and SCM process performance. Since the measurement of comparative advantage is complex, it will be illustrated with an example for just one of the above resources—namely, market sensing. Organizations may differ in their ability to sense the market, including customers and competitors. How well a firm does market sensing (in its own opinion) is termed “resource ability.” For this resource to provide comparative advantage to a firm, it must be rare (i.e., other firms must not be as good at market sensing), and the firm must have the capacity to use the information received from market sensing to develop products and services that provide superior value to customers (Hunt and Morgan 1995). Therefore, comparative advantage in a resource incorporates three facets: resource ability, rarity of the resource, and use of the resource to create superior customer value.

Table 2  
Reliability Analysis\*

| Construct/Item   | Cronbach alpha | Item-to-total correlation |
|--|----------------|---------------------------|
| <b>Develop differentiated products (DP)</b>  | .80            |                           |
| 1. Our products are difficult for competition to copy.   |                | .816                      |
| 2. Our product designs are unique.   |                | .852                      |
| 3. Our products do not have a significant advantage over those of our competitors. (R)                                     |                | .778                      |
| <b>Market sensing (MS)</b>   | .82            |                           |
| On a 5-point scale (1 = very poor; 5 = very good), how would you rate your company's...                                    |                |                           |
| 1. ability to track changes in customer needs and wants?   |                | .812                      |
| 2. analysis of customer satisfaction with your products?   |                | .824                      |
| 3. surveillance of competitors?  |                | .734                      |
| 4. collection of strategic information about customers and competitors for use in strategic planning?                      |                | .817                      |
| <b>Collaboration with partners (CP)</b>  | .73            |                           |
| 1. We use cross-functional teams (e.g., involving R&D, manufacturing, sales, and marketing) in designing new products.     |                | .902                      |
| 2. We use trans-organizational teams (e.g., involving customers, suppliers, and complements) while designing new products. |                | .902                      |
| <b>Focus on high-value customers (HVC)</b>   | .73            |                           |
| 1. We continuously refine our customer base by eliminating low-value customers.  |                | .660                      |
| 2. We make a conscious attempt to minimize catering to price-sensitive customers.  |                | .746                      |
| 3. We focus our sales resources on high-value customers.   |                | .706                      |
| 4. Our products are positioned at the high end of the price-quality continuum.   |                | .634                      |
| 5. We like to personalize services to our major customers.   |                | .671                      |
| <b>Market responsiveness: customers (CUSR)</b>   | .86            |                           |
| On a 5-point scale (1 = very poor; 5 = very good), how would you rate your company's...                                    |                |                           |
| 1. quickness of response to meeting changes in customer needs and wants?   |                | .811                      |
| 2. response to customer complaints?  |                | .857                      |
| 3. efforts to make product/service changes to overcome customer dissatisfaction with existing products?                    |                | .890                      |
| <b>Market responsiveness: competitors (CMPR)</b>   | .72            |                           |
| On a 5-point scale (1 = very poor; 5 = very good), how would you rate your company's...                                    |                |                           |
| 1. speed of dissemination of information in-house about competitors?   |                | .882                      |
| 2. response to competitive moves in the marketplace?   |                | .882                      |
| <b>Customer nurturing (CN)</b>   | .85            |                           |
| 1. Our firm recognizes customers as assets.  |                | .791                      |

Table 2 continued

| Construct/Item  | Cronbach alpha | Item-to-total correlation |
|---|----------------|---------------------------|
| 2. Our firm is willing to spend dollars to nurture our customers.   |                | .735                      |
| 3. Our competitors envy our customer support capabilities.  |                | .763                      |
| 4. We have designed systems to understand and serve our customers better.   |                | .697                      |
| 5. We look upon CRM as the most important business process for driving financial performance.   |                | .766                      |
| <b>Customer problem-solving orientation (PS)</b>  | .66            |                           |
| 1. We educate the customer on the kind of product (even if it is not ours) that would best suit their needs.                                      |                | .861                      |
| 2. We do not mind disagreeing with a customer in order to help him make a better decision.  |                | .861                      |
| <b>Sharing information with suppliers (SHR)</b>   | .83            |                           |
| 1. Our component suppliers often place some of their personnel on our product development teams.  |                | .922                      |
| 2. We share demand knowledge with key component suppliers.  |                | .922                      |
| <b>Supply chain leverage (SCL)</b>  | .85            |                           |
| 1. We play a lead role in integrating products and services across vendors in developing customer solutions.                                      |                | .825                      |
| 2. We actively leverage our "customer ownership" in negotiating with other members (suppliers, distributors, and complements) of the value chain. |                | .851                      |
| 3. We are considered a partner-of-choice by our strategic partners.   |                | .827                      |
| 4. We actively manage strategic alliances to enhance the value of our products and services to our customers.                                     |                | .736                      |

\* All items were measured using a 5-point (strongly disagree-strongly agree) scale unless otherwise mentioned.

Comparative advantage is computed for each resource included in the study as a multiplicative term given by the following equation:

$$\text{Comparative Advantage} = \text{Resource Ability} \times \text{Resource Rarity} \times \text{Translation of Resource into Customer Value} \quad (1)$$

The rarity of a resource was measured by asking the following question: "To what extent do you believe each competency or skill (that follows) is unique to your firm/business unit when compared with your most relevant competitors?" The response values ranged from a 1 for "not at all" to a 4 for "very unique." Similarly, the translation component was measured by the question "To what extent has your firm/busi-

ness unit been able to translate each competency or skill into offering products or services that provide superior value to customers?" The responses, also on a 4-point scale, ranged from "never" (1) to "always" (4). More information about these two factors is presented in Appendix 1. The following three sections detail how a firm's resource ability is measured for each of the business processes. Scale items used for these resources are detailed in Table 2.

It should be reiterated that while the resource ability scales have multiple items, the rarity and translation scales are made up of single items. The comparative advantage (CA) score for each resource is thus a multiplicative term of the average scale value for the ability component

and the scores on the single items for the rarity and translation components.

**NPD Resources.** NPD performance is hypothesized to be a function of comparative advantage in developing differentiated products and R&D intensity. Please note that the CA concept has three components as defined in Equation 1, and only the measurement details regarding a firm's resource ability (the first component) will be discussed in the next three sections. The product differentiation ability measures the uniqueness of products of the firm or SBU. It focuses on whether a firm's products are truly differentiated and distinctive. This ability is measured with the help of a three-item scale drawn from measures recommended by Storey and Easingwood (1998) and Sengupta (1998). This scale has good internal consistency property ( $\alpha = .80$ ; see Table 2). R&D intensity is measured as the proportion of annual sales that is spent on research and development.

Comparative advantage in product differentiation, in turn, is hypothesized to depend upon a firm's CA in market sensing and CA in collaborating with customers and suppliers. Market sensing is measured with the help of four items that capture a firm's ability to track market data and integrate that data with the firm's strategic-planning process. The Cronbach alpha for this scale is .82. Collaboration refers to the degree to which a firm or SBU uses cross-functional teams internally and trans-organizational teams externally in the design and development of new products. The two-item scale, drawn from Harmsen, Grunert, and Bove (2000), has an inter-correlation of .63.

**CRM Resources.** The study focuses on five drivers of CRM performance—focus on high-value customers, customer responsiveness, competitor responsiveness, customer nurturing, and problem-solving orientation of the firm. Since no previous study has empirically examined the impact of a firm's ability to identify and serve high-value customers, we developed a new scale for this study. Five items were developed

focusing on whether the firm makes a conscious attempt to serve high-value customers, to avoid serving low-value customers, and to personalize services to the more profitable customers. The five-item scale has an acceptable Cronbach alpha of .73. Market responsiveness refers to the firm's ability to respond quickly to customer needs and competitor strategies based on what it senses. Five items proposed by Harmsen, Grunert, and Bove (2000) were used to measure this construct. A factor analysis of the five items indicated a two-factor structure—responsiveness to customers (three items,  $\alpha = .86$ ) and responsiveness to competitors (two items,  $\alpha = .72$ ). Customer nurturing refers to whether a firm views its customers as assets and is willing to invest in them for the future. A five-item scale developed for this concept had high internal consistency ( $\alpha = .85$ ). Finally, problem-solving orientation refers to whether the firm is focused more on solving customers' problems than on selling its products and services. A two-item scale was developed to measure this concept. The correlation between the two items was .45.

**SCM Resources.** Driving SCM performance are the ability to share information and decisions among supply chain members and the ability to leverage supply chain relationships. A three-item scale was developed to measure sharing; one item was dropped due to low correlation with the remaining two items. The two items remaining showed a high correlation (.70). Ability to leverage supply chain relationships is influenced by the leadership role the firm assumes with supply partners. A good supply chain leader not only creates value for itself and its customers, it also can create value for its partners. The prospect of added value reinforces partner members' desire to be a part of the supply chain network. This concept was measured using four items ( $\alpha = .85$ ).

**Business Process Performance.** There are two ways to measure process performance—objective, secondary measures and subjective managerial perceptions. The latter approach is used in the present study for several reasons, the

Table 3

### Path-Model Coefficients Capturing Effects of Market-based Resources on Financial Performance of Firms

|   |   | Path Coefficient <sup>b</sup> | t-value     | r <sup>2</sup> |
|---|---|-------------------------------|-------------|----------------|
| <b>Dependent variable: NPD performance (PNPD)</b>                         |   |                               |             | <b>.25</b>     |
| H1  | CA in customer responsiveness (CUSR) → PNPD       | .18                           | 1.65        |                |
| H2  | R&D intensity (RD) → PNPD                         | .25                           | 1.83        |                |
|   | CA in product differentiation (DP) → PNPD         | <b>.32</b>                    | <b>2.75</b> |                |
| <b>Dependent variable: CA<sup>a</sup> in product differentiation (DP)</b> |   |                               |             | <b>.33</b>     |
| H3  | CA in market sensing (MS) → DP                    | <b>.66</b>                    | <b>2.86</b> |                |
| H4  | CA in collaboration (CP) → DP                     | -.30                          | -.97        |                |
|   | R&D intensity (RD) → DP                           | .03                           | .23         |                |
| <b>Dependent variable: CRM performance (PCRM)</b>                         |   |                               |             | <b>.50</b>     |
| H5  | CA in focus on high-value customers (HVC) → PCRM  | <b>.40</b>                    | <b>2.81</b> |                |
| H6a   | CA in responsiveness to customers (CUSR) → PCRM   | .01                           | .09         |                |
| H6b   | CA in responsiveness to competitors (CMPR) → PCRM | -.14                          | -.93        |                |
| H7  | CA in customer nurturing (CN) → PCRM              | <b>.44</b>                    | <b>2.08</b> |                |
| <b>Dependent variable: CA in focus on high-value customers (HVC)</b>      |   |                               |             | <b>.52</b>     |
| H8a   | CA in market sensing (MS) → HVC                   | <b>.57</b>                    | <b>5.61</b> |                |
| <b>Dependent variable: CA in responsiveness to customers (CUSR)</b>       |   |                               |             | <b>.52</b>     |
| H8b   | CA in market sensing (MS) → CUSR                  | <b>.56</b>                    | <b>5.96</b> |                |
| <b>Dependent variable: CA in responsiveness to competitors (CMPR)</b>     |   |                               |             | <b>.66</b>     |
| H8c   | CA in market sensing (MS) → CMPR                  | <b>.63</b>                    | <b>6.37</b> |                |
| <b>Dependent variable: CA in customer nurturing (CN)</b>                  |   |                               |             | <b>.76</b>     |
| H8d   | CA in market sensing (MS) → CN                    | <b>.58</b>                    | <b>2.99</b> |                |
| H9  | CA in problem solving (PS) → CN                   | .17                           | .67         |                |
| <b>Dependent variable: SCM performance (PSCM)</b>                         |   |                               |             | <b>.49</b>     |
| H10   | CA in sharing demand information (SHR) → PSCM     | .05                           | .41         |                |
| H11   | Supply chain leverage (SCL) → PSCM                | <b>.68</b>                    | <b>4.95</b> |                |
| <b>Dependent variable: Supply chain leverage (SCL)</b>                    |   |                               |             | <b>.50</b>     |
| H12   | CA in market sensing (MS) → SCL                   | <b>.47</b>                    | <b>4.30</b> |                |
| H13   | CA in sharing demand information (SHR) → SCL      | .15                           | 1.06        |                |
| <b>Dependent variable: Financial performance (FP)</b>                     |   |                               |             | <b>.54</b>     |
| H14a  | NPD performance (PNPD) → FP                       | -.01                          | -.11        |                |
| H14b  | CRM performance (PCRM) → FP                       | <b>.47</b>                    | <b>2.94</b> |                |
| H14c  | SCM performance (PSCM) → FP                       | <b>.32</b>                    | <b>2.13</b> |                |

<sup>a</sup> comparative advantage

<sup>b</sup> Coefficients in **bold** are statistically significant at  $p = .05$  and coefficients in *italics* are significant at  $p = .10$

most important being that respondents were unwilling to share objective performance information at the business process level and creation of valid measures of performance across industries was difficult (Moorman and Rust 1999). In support, previous studies

have found a strong correlation between subjective measures and their objective counterparts (Dess and Robinson 1984). When measuring a firm's performance, respondents were asked to rate relative to their firm's or SBU's stated objectives.

Table 4

### Correlation Between Subjective Process Performance Measures and Objective Financial Data

| Objective Financial Measure        | Process Performance Measure |                   |                   |
|------------------------------------|-----------------------------|-------------------|-------------------|
|                                    | NPD                         | CRM               | SCM               |
| Return on assets                   | -.259                       | .048              | .110              |
| Earnings before interest and taxes | -.241                       | -.291             | -.073             |
| Sales growth                       | .179                        | .401 <sup>b</sup> | .465 <sup>a</sup> |
| Cash flow growth                   | .002                        | .399 <sup>b</sup> | .378 <sup>c</sup> |
| Growth in market value             | .136                        | .354 <sup>c</sup> | .394 <sup>b</sup> |

<sup>a</sup>  $p < .01$

<sup>b</sup>  $p < .05$

<sup>c</sup>  $p < .10$

Performance was measured for the three core business processes—NPD, CRM, and SCM. Because a good NPD process is associated with developing a number of new products that are market winners and enhancing speed of product development, these metrics were used to evaluate NPD performance. The scale items used were internally consistent ( $\alpha = .82$ ). CRM performance is related to the firm's performance on customer satisfaction and retention, ability to charge a price premium for products, number of customer relationships, and reputation or image ( $\alpha = .85$ ). Finally, SCM performance assesses the firm's performance on inventory cost and demand volatility ( $\alpha = .78$ ).

**Financial Performance.** The study adapted a measure used by Moorman and Rust (1999) to measure financial performance. This measure has the following components: (1) return on assets, (2) net profits, (3) sales and market share. Together, the items showed good reliability ( $\alpha = .91$ ). Additionally, objective financial measures were collected from COMPUSTAT tapes. Objective data were obtained for: profitability (return on assets, earnings before interest and taxes), sales, cash flow, and market value. For each measure, the average growth for the last three years was computed. A limitation of the objective data is that information is not available for firms that are not public; even for some of the publicly listed firms complete

information was not available. The net result was that objective data were available only for 30 of the 88 firms in the sample.

A discussion of measurement validity—reliability analysis, discriminant validity, and method analysis—can be found in Appendix 2.

## Findings

### Overall fit of the hypothesized path model

Initially, we estimated the hypothesized model of Figure 2 using path analysis. No problems were encountered in estimation, and convergence was achieved without any boundary conditions. The resultant model fit statistics were as follows: chi-square with 67 degrees of freedom = 122.79 ( $p = .0006$ ); goodness-of-fit index (GFI) = .85; comparative fit index (CFI) = .91; normed fit index (NFI) = .86. The modification indices suggested the addition of a path between responsiveness to customers and NPD performance (shown in Figure 2 by a dotted line since it was not hypothesized a priori). After adding this path, the fit statistics improved as follows: chi-square with 66 degrees of freedom = 115.25 ( $p = .0002$ ); GFI = .87; CFI = .92; and NFI = .88. Considering the sample size, these statistics provide reasonably strong support for the fit of the data to the hypothesized model.

### Path coefficients and test of hypotheses

The standardized parameter estimates for this model are reported in Table 3. Overall, it appears that the final model provides a reasonable explanation for the endogenous constructs, as the range of variance explained is between 25% and 76%. Hypotheses 1 and 2 focus on R&D intensity and CA in developing differentiated products, respectively, as predictors of NPD performance. Both hypotheses are supported. Additionally, the modification index recommended the inclusion of a path between a firm's CA in responding to customers and its NPD performance.

H3 and H4 examine the degree to which CA in market sensing and collaboration influences a

firm's CA in product differentiation. Results provide a significant coefficient for market sensing (H3), while the path between CA in collaboration and CA in product differentiation (H4) is nonsignificant. R&D intensity is used as a covariate in this equation to examine if firms are able to develop CA in product differentiation by increasing investment in R&D. The nonsignificant coefficient for this covariate suggests that guidance provided by market sensing is more important for the development of differentiated products than is the amount of R&D expenditure, thus reinforcing the notion that working smarter (based on information) is more effective than working harder (spending more resources).

H5, H6, and H7 investigate the determinants of CRM process performance. Results suggest that CRM performance is influenced by a firm's ability to focus on high-value customers (H5) and nurture them (H7). The coefficients for responsiveness to customers and competitors (H6a and H6b) are not significant.

H8 postulates that one source of a firm's strength in these CRM predictors is its CA in market sensing. There is overwhelming support for this postulate. CA in market sensing is related to a firm's ability to focus on high-value customers (H8a), to be responsive to customer needs (H8b) and competitor actions (H8c) ( $b = .63, p < .01$ ), and to nurture customers (H8d). However, contrary to H9, another strength—customer problem solving—was not found to be associated with a firm's ability to nurture customers.

With regard to determinants of SCM process performance, H10 and H11 hypothesized that sharing demand information and acting as a supply chain leader would contribute to better SCM performance. While the results support H11, there is no support for H10. Additionally, sharing demand information with suppliers also does not appear to have an indirect impact on SCM performance, as its hypothesized relationship (H13) with supply chain leadership is

nonsignificant. On the other hand, market sensing has an indirect impact on SCM performance because of its significant positive association with supply chain leadership, as hypothesized in H12.

Finally, of the three business processes, both CRM and SCM have a positive and significant association with the financial performance of firms. The path coefficient for the CRM process is higher than that of the SCM process. On the other hand, the NPD process performance is not related to financial performance of firms. These results support H14b and H14c, while not supporting H14a.

### **Validation of the performance relationship**

We collected objective performance data—growth in profitability (return on assets, EBIT), sales, cash flow, and market value—for some of the survey participants using COMPUSTAT tapes. For each measure, we computed the average growth for the period 1999–2001. Because of limitations in sample size (only 30 data points out of a sample of 88), we computed a simple univariate correlation between each process performance measure and the objective financial measures. The correlation numbers are reported in Table 4. While the NPD process performance measure is unrelated to any of the financial measures, the CRM and SCM process performance measures exhibit positive and significant associations with sales growth, cash flow growth, and growth in market value. These results validate the study findings.

### **Marketing's role in the three business processes**

Table 5 presents three pieces of information about each capability: how unique the capability is, the extent to which a firm has the capacity to translate the capability into value-yielding products and services, and the role played by marketing in creating the capability. It appears that customer nurturing and developing differentiated products are the top two unique resources, while customer nurturing and collaboration skills provide the most value to

Table 5

**Managerial Perceptions of Capability Uniqueness, Value, and Marketing's Role**

| Capability  | Uniqueness Score <sup>a</sup> | Value Score <sup>b</sup> | Marketing's Role <sup>c</sup> |
|---|-------------------------------|--------------------------|-------------------------------|
| Market sensing  | 2.18                          | 2.34                     | 2.80                          |
| Collaboration (interfunctional, customers, suppliers) | 2.44                          | 2.71                     | 2.46                          |
| Developing differentiated products                    | 2.46                          | 2.48                     | 2.98                          |
| Focus on high-value customers                         | 2.42                          | 2.46                     | 2.78                          |
| Responsiveness to market (customers and competitors)  | 2.24                          | 2.51                     | 2.52                          |
| Customer nurturing                                    | 2.72                          | 2.79                     | 2.88                          |
| Customer problem solving                              | 2.16                          | 2.29                     | 2.65                          |
| Sharing demand information                            | 2.34                          | 2.62                     | 1.98                          |

<sup>a</sup> Uniqueness of capabilities is measured on a 4-point scale (1 = not at all unique, 4 = very unique).

<sup>b</sup> This measures the extent to which a firm has been able to translate each capability into value-yielding products and services. Uses a 4-point scale (1 = never, 4 = always)

<sup>c</sup> Measures the role of marketing in creation of each capability using a 4-point scale (1 = no role, 4 = critical role)

firms. It also seems that the marketing function plays an important role in generation of most of the capabilities under study. Marketing appears to play a more important role in capabilities that are relevant for the CRM and NPD processes. For example, marketing has the most impact on a firm's ability to develop differentiated products, an NPD capability (mean = 2.98). It also has an impact on capabilities that influence CRM processes either directly or indirectly—including customer nurturing, market sensing, and a focus on high-value customers. These results are in broad agreement with H15.

## Discussion

Both marketing theorists (c.f. Hunt 2000) and proponents of the resource-based view (RBV) have raised questions that are fundamental to organizational survival: What gives rise to comparative advantage in resources? What resources contribute to improved process performance? What is the role of marketing in building and enhancing these resources? But, surprisingly, with a few notable exceptions (e.g., Bharadwaj, Varadarajan, and Fahy 1993; Capron and Hulland 1999), marketing scholars have

not empirically examined the role of marketing in developing comparative advantage in resources. Further, leading RBV proponents (Wernerfelt 1984; Barney 1991; Grant 1991; Hunt 2000; Day 2001), have not fully articulated the *processes* by which market-based resources are converted into competitive advantage.

The present paper addresses this gap; following Day (1994, 1997) and Srivastava, Shervani, and Fahey (1999), we focus on market-facing or core operating processes that are related to the development and delivery of products or solutions—NPD, SCM, and CRM. We examine the role of marketing and the impact of market-based capabilities within each of these business processes. In doing so, we integrate the comparative advantage theory of competition proposed by Hunt and Morgan (1995) with the market-based approach to business performance proposed by Srivastava, Shervani, and Fahey (1999). Further, through the empirical part of the study, we show that (1) developing comparative advantage in capabilities contributes to higher shareholder value and that (2) the marketing function plays an important role in the development of capabilities that are central to the performance of CRM and SCM

processes. Before discussing the study's contributions in greater detail, we would like to acknowledge the limitations of the study.

### Limitations

Several limitations of our study are noteworthy. First, because the study is based on cross-sectional data, we advise caution in drawing cause-effect inferences. The results should not be interpreted as proof of causal relationships, but rather as lending support for a prior causal scheme. The development of a time series database and testing of the capability drivers in a longitudinal framework would provide more insight into probable causation. Second, the study is based on a small sample of 88 firms. The study is therefore likely to yield results that are conservative. Any significant effects found in smaller samples will become more apparent in larger samples. Third, the study did not provide an exhaustive account of all resources that affect business process performance. Future studies could extend our study by including additional resources in the conceptual model. Despite these limitations, our results offer useful insights into the relevance of RBV for business process performance. We discuss key findings of the study and draw managerial implications from them in the next section.

### Comparative advantage theory

A substantive contribution that the study makes is to incorporate the concept of comparative advantage (CA) proposed by Hunt and Morgan (1995) into a conceptual framework to explain marketing's impact on business process performance. The CA theory is simple in its prescription—comparative advantage in resources leads to sustainable competitive advantage in the marketplace (which in turn leads to better financial performance). Using this premise, our study identified and tested how well key cross-functional organizational capabilities (i.e., resources) enhanced three types of business processes and investigated marketing's role in building such capabilities, including market sensing and responsiveness, customer nurturing, problem-solving orienta-

tion, differentiation ability, competitive focus, collaboration with customers and suppliers, and supply chain leadership. Although some have been examined in previous studies, the point of departure for the present study was that it examined their relative influences by incorporating all of them in a single study. Additionally, none of these capabilities has been used previously to predict business process performance; instead, the focus has been on final organizational outcomes such as financial and market performance.

Another significant contribution of the study is its operationalization of the CA concept. CA is a complex construct that incorporates several properties of a resource—namely, ability, rarity and translation. No previous study known to the authors has developed a summary measure that includes all of these dimensions. Our study is unique in its development of such a summary measure and in using it to evaluate the impact of CA on business process performance.

Our study is also unique in its ability to capture the role that the marketing function plays in building organizational capabilities. For marketing to be proactive and instill a market perspective in an organization, it must be seen as contributing to business processes' generation of customer value. For this to happen, marketing managers need to assess what marketing-generated data can serve as inputs to specific activities within each core process, to integration of activities within each process, and to coordination among them (Srivastava, Shervani, and Fahey 1999). Srivastava, Shervani, and Fahey (1999) go one step further to contend that "articulation of these types of connections is a sine qua non of marketing success in the emerging marketing era" (p. 33). Our study was able to identify broadly the capabilities that are behind the success of business processes and organizational perceptions of marketing's role in building them. The study has identified areas in which marketing's contribution is weak; it can be used to help design action plans to strengthen those areas for the future. The last column of Table 5

provides data on areas of strength and weakness for the marketing function. We now turn our attention to the study's findings on drivers of each business process.

### **Business process drivers**

The study finds that NPD performance is influenced primarily by CA in customer responsiveness and secondarily by CA in product differentiation and R&D intensity. This result underscores the need for organizations to become customer centered rather than remain product centered, a prescription that is consistent with previous research. For example, Slater and Narver (1995) found that the customer-driven business is well positioned to anticipate the developing needs of customers and to respond to them by adding innovative products and services. Similarly, Cooper (1994) and Ottum and Moore (1997) showed that greater understanding of the market environment contributes to lower incidence of new product failures.

Results also show that becoming customer centered is a function of the market-sensing ability of the firm. Although companies on the average do not fare well at translating market sensing into customer value (mean = 2.34 in Table 5), those who do well manage to be more responsive to customer needs. The relatively lower importance of achieving CA in product differentiation suggests that developing winning products depends less on products being unique and differentiated and more on how well they meet customer needs.

With respect to CRM performance, the study findings are surprising and thought provoking. CRM performance is based on consumers' perceptions of loyalty and satisfaction. Results show that these are influenced by a firm's ability to focus on high-value customers and nurture them. The surprising result is the absence of relationships between responsiveness to customers and competitors and CRM performance. One main area of focus of the responsiveness concept is quickness of response to changed market conditions. Our result seems to suggest that quick

responses may not matter as much as targeting a high-potential group and nurturing them. It is possible that customers expect organizations to be responsive to their needs and hold them to a higher standard. This higher standard may be more likely to be met when organizations take a nurturing stance toward their customers. Interestingly, responsiveness was more important for NPD performance, implying that it can contribute to developing more new products and products that are winners, but it may not be needed for increasing satisfaction and loyalty of customers. This last result is contrary to findings of research on marketing orientation, which have clearly shown performance effects. It is possible that the more fully specified model used in the present study yielded effects that were less strong than those observed in earlier studies that used less fully specified models. Also, it appears that responsiveness to customers and competitors may represent preconditions for staying in the game but may not result in competitive CRM advantages.

As for SCM performance, it is influenced primarily by a firm's ability to assume a leadership role within the supply chain. In a leadership role, firms enjoy greater levels of control not only in selecting the most suitable supply chain partners, but also in developing systems that are focused on creation of customer value. These systems may, for example, attempt to keep supply and demand in sync or increase supply chain efficiencies and pass on the lower costs to customers. To meet these objectives, supply chain members must have a high degree of information transparency. Information transparency has been identified as an important coordination mechanism directly affecting the inventory and production levels of all parties in the supply chain (Gavirneni, Kapurscinski, and Tayur 1999). It appears that market sensing has a significant effect on organizational ability to maintain supply chain leadership. Organizations that do a better job of market sensing are probably ahead of others in their ability to predict demand information. When an organization possesses this skill, other supply chain members

may be willing to support its efforts to take a leadership role within the chain.

### Marketing's role

The key drivers of business process performance are market sensing, customer responsiveness, identification of high-value customers, and the nurturing of customers. All of these drivers focus primarily on a firm's customers. Although the whole organization shares the responsibility for meeting customers' needs and goals, customers interact primarily with personnel from marketing and customer service. Thus the marketing function should have an important role to play in enhancing business process performance. When study participants were asked specifically if this was the case, they gave somewhat mixed responses. The mean response for the four key drivers was in the range of 2.52 to 2.88 on a 4-point scale (where 3 = important and 4 = critical), suggesting that, on the average, the marketing function plays an important but not a critical role in developing these capabilities. One possible reason for these middling scores may be acknowledgement of the fact that developing these capabilities requires organization-wide participation. For example, a customer-nurturing capability is influenced not only by marketing but also by customer service, design and engineering, distribution, and IT. In the absence of norms that can assess the strength of the numbers obtained in this study, we do not know whether these middling scores are good or sufficient. But we can stipulate that marketing appears to have a more dominant role in customer nurturing than it does in customer responsiveness. Overall, the study has one important message: Once the drivers of business process performance are identified, marketing can examine the process more closely to discover ways in which it can play a more important role and thereby increase its stake in organizational success. From a process perspective, it appears that while marketing plays a central role in CRM, its impact on the SCM process is, although important, more limited. Marketing also plays an important role in the NPD process.

### Importance of market sensing

It appears that market sensing is an important driver of all three business processes. Our empirical findings show that market sensing enables organizations to achieve comparative advantage in a number of relevant resources or capabilities, including product differentiation, focusing on high-value customers, customer responsiveness, customer nurturing, and supply chain leverage. Our results thus are consistent with Day's observation that market sensing and market-relating capabilities are at the heart of market-driven companies. Day had suggested that intimate knowledge of customers and markets gives such companies a powerful advantage over rivals. Day also shows how failure to align the organization to the market can result in loss of market and product leadership. The popular press has reported numerous instances of companies evolving from a product- to a market-driven organization and sharpening their focus on new market opportunities. Young (1998), for example, had this to say for a multinational petroleum firm:

*"In the past we've concentrated solely on production, and until now that has been the best policy. Our organization served us well in the past, but now we're more mature. We plan to become a market-driven organization rather than a production-driven organization. In the future the market will determine our production."* (p. 50)

Interestingly, while market-sensing ability is important, companies are involved in practices that make achieving this capability difficult. First, more and more companies are outsourcing the customer database maintenance function. This is even true in organizations with a traditional bias toward in-house tracking and warehousing of customer information. Outsourcing adds a layer between the firm and the customer and makes the firm's understanding of its customers less complete. Second, the silo mentality that still prevails within organizations means that marketing is seen as the most responsible for interacting with customers.

Other functions use this as a reason for not wanting to interact with customers, even though their interaction could contribute to better sensing of customer needs. Third, there is still a large gap between attitude and action with respect to market sensing. While most companies are thinking and talking a lot about sensing and relating to customers better, plenty remains to be done in understanding how that can become a reality. Fourth, companies have postponed capital budget projects after the dot-com bust. Acquiring mission-critical IT at the lowest possible cost is a challenge for most firms. Web-based systems that make it possible to become intimate with customers in real time come at a big cost that most companies cannot afford at this juncture. Finally, many organizations now have at their disposal a wide variety of data that in theory can reveal far more about customer behavior than was previously thought possible. This potential has unfortunately created an agonizing paradox: The more data resources available, the harder it is for the organization to understand its customers. The reason for this paradox is that technology for generating, capturing, and storing data has far outpaced the human capacity to understand, analyze, and exploit it for maximum impact.

Organizations need to improve their analytic expertise to exploit the information potential present in data generated from market sensing.

### Impact of processes on financial performance

Results in Table 4 show that CRM and SCM performance are associated with growth in cash flow, sales revenues, and market value. Thus the study is able to clearly link CA in several drivers of business processes to the market value of the firm. With the marketing function's role in building these drivers also established, the path is cleared to make the claim that marketing contributes to value creation at the firm level. The lack of a relationship between NPD performance and financial performance suggests that the NPD process, although yielding benefits, may also involve costs that can make efficiency of the NPD process more difficult. Overall, to our knowledge, this represents one of the few empirical studies that examines the role of marketing in business processes and financial outcomes. ■

### Acknowledgements

The authors thank the Marketing Science Institute for support and funding for the study.

## Appendix 1. Measures

This section includes measures for constructs not included in Table 2. If not mentioned otherwise, a 5-point scale (where 1 = strongly disagree and 5 = strongly agree) is used for measurement.

### Business Process Performance

(7-point scale where 1 = worse, 4 = on par, and 7 = better)  
New Product Development (NPD) (adapted from Moorman and Rust 1999): Relative to your firm's (division's) stated objectives, how is your firm (division) performing on:

- Number of new products/services developed
- Number of new products/services that are "winners"
- Speed of new product/service development

**Customer Relationship Management (CRM)** (adapted from Moorman and Rust 1999): Relative to your firm's (division's) stated objectives, how is your firm (division) performing on:

- Customer satisfaction
- Customer retention

- Ability to charge price premium for products/services
- Increasing number of relationships with customers
- Image/reputation

**Supply Chain Management (SCM)** (new scale): Relative to your firm's (division's) stated objectives, how is your firm (division) performing on:

- Inventory cost
- Implementing just-in-time processes
- Smoothing demand volatility

### Financial Performance

(adapted from Moorman and Rust 1999)

(7-point scale where 1 = worse, 4 = on par, and 7 = better)  
Relative to your firm's (division's) stated objectives, how is your firm (division) performing on:

- Sales
- Profitability
- Market share
- Net operating margins
- Return on assets

### Comparative Advantage: Rarity and Translating

### Competency into Superior Value to Customers

(new scale)

Rarity: To what extent do you believe each competency or skill (that follows) is unique to your firm/ business unit when compared with your most relevant competitors? (4-point scale where 1 = not at all and 4 = very unique)

**Resource Translation:** To what extent has your firm or SBU been able to translate each competency or skill into offering products or services that provide superior value to customers?

(4-point scale where 1 = never, 2 = sometimes, 3 = often, 4 = always)

- Developing differentiated products
- Collaborative design: Designing products that are

- customer driven
- Market sensing
- Market responsiveness
  - Capacity to respond to market needs quickly
  - Capacity to respond to market needs effectively
- Focus on high-value customers
- Problem-solving orientation with customers
- Customer nurturing
- Sharing information with suppliers
- Leveraging supply partnerships

### R & D Intensity

What is your annual R&D expenditure as a percentage of sales?

(< 1%, 1-3%, 4-6%, 7-9%, 10-12%, 13-15%, >15%)

## Appendix 2. Measurement Validity

### Reliability Analysis

The scale reliability values (coefficient alpha) and item-to-total correlations are reported in Table 2. With one exception, reliability for all of the study constructs exceeds .7. The exception is the problem-solving orientation construct, which has an alpha value of .66. Low reliability typically introduces random noise in the results, making it difficult to detect significant effects. As such, while our results are not seriously compromised, they are likely conservative for the paths including this construct.

### Discriminant Validity

The next step was to explore the discriminant validity of the measures using exploratory factor analysis (EFA). In a confirmatory factor analysis (CFA), cross-loadings are constrained and one can argue that pockets of poor items are swamped by overall fit of the model and a large

number of good items. An EFA is less forgiving because it allows each item to cross-load and reveals the poor items (Ramaswami and Singh 2003). However, because of the larger number of estimates, an EFA requires a reasonable cases-to-items ratio (10:1). Given our *N* of 88, we factor-analyzed subsets of constructs for discriminant validity analysis, with each subset including constructs that pertained to each of the three business processes. For example, the NPD subset included a firm's ability to differentiate products and services, its collaboration with internal and external stakeholders, and market sensing. Table A1 presents the pattern matrix and factor correlations (values less than .30 are suppressed in the pattern matrix).

For reasonable discriminant and convergent validity, we would expect each item to have a significant and dominant loading on its hypothesized factor ( $> .30, p < .05$ ) and the spread between the dominant and cross-loading to be large and reasonable (e.g.,  $> .30$ ). Both these conditions are satisfied for all items but one. Overall, the items have a dominant loading on their hypothesized factor and cross-loadings, when present, are significantly smaller in magnitude. Although some may not consider this type of piece-meal analysis to be compelling, given the limits of the sample size and combined with the other evidence presented, we can conclude that the individual measures are not confounded.

### Method of Analysis

Path analysis is used to estimate the hypothesized relationships. Jöreskog and Sörbom (1988) observed that when modeling relationships among a large number of latent variables, researchers may have difficulty in fitting their models even to predictions with strong theoretical support. Because the present study uses a large number of indicators (i.e., 48) and a small sample size of 88, a better approach is to reduce the size of the problem by computing a single summated score for each construct. This reduces the input matrix from a  $48 * 48$  to a  $15 * 15$  covariance matrix, which reduces estimation difficulties. There is precedence for this approach in marketing (see Babin and Boles 1998 for a recent example).

Table A1

## Examination of Discriminant Validity

### A. Exploratory Factor Analysis of NPD Performance Determinants

|   | Factor 1 | Factor 2 | Factor 3 |
|---|----------|----------|----------|
| <b>Market sensing (MS)</b>              |          |          |          |
| MS1                                     | .790     |          |          |
| MS2                                     | .789     |          |          |
| MS3                                     | .788     |          |          |
| MS4                                     | .766     |          |          |
| <b>Differentiated products (DP)</b>     |          |          |          |
| DP1                                     |          | .750     | .316     |
| DP2                                     |          | .843     |          |
| DP3                                     |          | .820     |          |
| <b>Collaboration with partners (CP)</b> |          |          |          |
| CP1                                     |          |          | .867     |
| CP2                                     |          |          | .866     |

## B. Exploratory Factor Analysis of CRM Performance Determinants

|  | Factor 1 | Factor 2 | Factor 3 | Factor 4 |
|--|----------|----------|----------|----------|
| <b>Focus on high-value customers (HVC)</b>       |          |          |          |          |
| HVC1   | .711     |          |          |          |
| HVC2   | .817     |          |          |          |
| HVC3   | .639     |          |          |          |
| HVC4   | .564     |          |          |          |
| HVC5   | .503     | .313     |          |          |
| <b>Market responsiveness: customers (CUSR)</b>   |          |          |          |          |
| CUSR1  |          | .696     |          |          |
| CUSR2  |          | .794     |          |          |
| CUSR3  |          | .862     |          |          |
| <b>Market responsiveness: competitors (CMPR)</b> |          |          |          |          |
| CMPR1  |          |          | .723     |          |
| CMPR2  |          |          | .687     |          |
| <b>Customer nurturing (CN)</b>                   |          |          |          |          |
| CN1  |          | .306     |          | .739     |
| CN2  |          |          |          | .667     |
| CN3  |          |          |          | .664     |
| CN4  |          |          |          | .729     |
| CN5  |          |          |          | .748     |

## C. Exploratory Factor Analysis of SCM Performance Determinants

|   | Factor 1 | Factor 2 | Factor 3 |
|---|----------|----------|----------|
| <b>Supply chain leverage (SCL)</b>      |          |          |          |
| SCL1                                    | .595     |          |          |
| SCL2                                    | .811     |          |          |
| SCL3                                    | .819     |          |          |
| SCL4                                    | .696     |          |          |
| <b>Sharing demand information (SHR)</b> |          |          |          |
| SHR 1                                   |          | .858     |          |
| SHR 2                                   |          | .825     |          |
| <b>Market sensing (MS)</b>              |          |          |          |
| MS1                                     | .353     |          | .677     |
| MS2                                     |          |          | .687     |
| MS3                                     |          |          | .864     |
| MS4                                     |          |          | .820     |

A unique feature of this path analytic approach is that it accounts for measurement error even while it decreases the number of indicators used. The measurement error is taken into account by setting the path from the latent variable to the scale score equal to the product of the square root of the scale reliability and its standard deviation and by setting the error variance equal to the product of the variance of the scale score and one minus the reliability (Williams and Hazer 1986). (When using a correlation instead of a covariance matrix, the path from the latent variable to the scale score is set equal to the square root of the scale reliability and the error variance is set equal to one minus the reliability.)

### Notes

1. Note that capabilities are intangible assets of a firm (Hunt and Morgan 1995). Further, the manner in which capabilities are conceptualized in this study (to include uniqueness and translation into customer value) would make this concept closely conform to assets of a firm. Additionally, the terms “resources” and “capabilities” are

used synonymously from hereon.

2. From this point onwards, we will restrict our discussion to the ability component; however, based on the assumption of rarity and translatability, the hypotheses will be framed in terms of comparative advantage. This style of writing has been adopted in the manuscript to reduce repetitive reference to rarity and translatability of resources.

## References

- Achrol, Ravi S. (1991), "Evolution of the Marketing Organization: New Forms for Turbulent Environments." *Journal of Marketing* 55 (October), 77-93.
- Babin, Barry J., and James S. Boles (1998), "Employee Behavior in a Service Environment: A Model and Test of Potential Differences between Men and Women." *Journal of Marketing* 62 (April), 77-91.
- Barney, Jay (1991), "Firm Resources and Sustained Competitive Advantage." *Journal of Management* 17 (1), 99-120.
- Bharadwaj, Sundar G., Rajan P. Varadarajan, and John Fahy (1993), "Sustainable Competitive Advantage in Service Industries: A Conceptual Model and Research Propositions." *Journal of Marketing* 57 (October), 83-99
- Boulding, William, Eunkyoo Lee, and Richard Staelin (1994), "Mastering the Mix: Do Advertising, Promotions and Sales Force Activities Lead to Differentiation?" *Journal of Marketing Research* 31 (May), 159-72.
- Capron, Laurence, and John Hulland (1999), "Redeployment of Brands, Sales Forces, and General Marketing Management Expertise Following Horizontal Acquisitions: A Resource-Based View." *Journal of Marketing* 63 (April), 41-54.
- Cooper, Robert G. (1994), "New Products: The Factors That Drive Success." *International Marketing Review* 11 (1), 60-76.
- CRM Advisor (2000), "More Companies Must Invest in CRM." <http://crm-advisor.com/doc/06206> April 24, 2004.
- Day, George S. (1994), "The Capabilities of Market-Driven Organizations." *Journal of Marketing* 58 (October), 37-52.
- \_\_\_\_\_ (1997), "Aligning the Organization to the Market." In *Reflections on the Futures of Marketing*, eds. Donald R. Lehmann and Katherine E. Jocz, chapter 4. Cambridge, Mass.: Marketing Science Institute.
- \_\_\_\_\_ (1999), *The Market Driven Organization*. New York, N.Y.: The Free Press.
- \_\_\_\_\_ (2001), *Capabilities for Forging Customer Relationships*. Unpublished manuscript, The Wharton School, University of Pennsylvania.
- \_\_\_\_\_, and Robin Wensley (1988), "Assessing Advantage: A Framework for Diagnosing Competitive Superiority." *Journal of Marketing* 52 (April), 1-20.
- Dess, Gregory G., Abdul Rasheed, Kevin McLaughlin, and Richard L. Priem (1995), "The New Corporate Architecture." *The Academy of Management Executive* 9 (August), 7-21.
- Dess, Gregory G., and Richard B. Robinson (1984), "Measuring Organizational Performance in the Absence of Objective Measures: The Case of the Privately-Held Firm and Conglomerate Business Unit." *Strategic Management Journal* 5(3), 265-74.
- Dickson, Peter R., and James L. Ginter (1987), "Market Segmentation, Product Differentiation, and Marketing Strategy." *Journal of Marketing* 51 (April), 1-10.
- Fenwick, Nigel (2001), "CRM, CCA, and eRetail Business Objectives." Retrieved March 23, 2004, from <http://www.eretainews.com/Features/0011crm.htm>
- Francis, Philip H. (2000), *Product Creation: The Heart of the Enterprise from Engineering to E-Commerce*. New York, N.Y.: The Free Press.
- Gavirneni, Srinagesh, Roman Kapurscinski, and Sridhar Tayur (1999), "Value of Information of Capacitated Supply Chains." *Management Science* 45 (January), 16-24.
- Grant, Robert M. (1991), "The Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation." *California Management Review* 33 (Spring), 114-35.
- Greenyer, Andrew (2003), "Should All Your Customers Be Retained?" Direct (June 1). Retrieved March 23, 2004, from [http://www.directmag.com/ar/marketing\\_customers\\_retained/](http://www.directmag.com/ar/marketing_customers_retained/).
- Gulati, Ranjay, and Harbir Singh (1998), "The Architecture of Cooperation: Managing Coordination Costs and Appropriation Concerns in Strategic Alliances." *Administrative Science Quarterly* 43 (December), 781-815.
- Hagel, John III, and Marc Singer (1999), "Unbundling the Corporation." *Harvard Business Review* 77 (March-April), 133-41.
- Harmsen, Hanne, Klaus G. Grunert, and Karsten Bove (2000), "Company Competencies as Network: The Role of Product Development." *Journal of Product Innovation Management* 17 (May), 194-207.
- Hayes, Ian S. (2001), "Optimizing E-supply Chain: The Final Frontier." *Software Magazine*, June, [www.soft-waremag.com](http://www.soft-waremag.com), April 2004. [http://www.findarticles.com/cf\\_dls/m0SMG/3\\_21/76939577/p1/article.jhtml](http://www.findarticles.com/cf_dls/m0SMG/3_21/76939577/p1/article.jhtml).
- Hitt, Michael A., Robert E. Hoskisson, Richard A. Johnson, and Douglas D. Moesel (1996), "The Market for Corporate Control and Firm Innovation." *Academy of Management Journal* 39 (October), 1084-119.
- \_\_\_\_\_, \_\_\_\_\_, and Hicheon Kim (1997), "International Diversification: Effects on Innovation and Firm Performance in Product-Diversified Firms." *Academy of Management Journal* 40 (August), 767-98.
- \_\_\_\_\_, \_\_\_\_\_, R. Duane Ireland, and Jeffrey

- S. Harrison (1991), "Effects of Acquisitions on R&D Inputs and Outputs." *Academy of Management Journal* 34 (September), 693–706.
- Hunt, Shelby D. (2000). *A General Theory of Competition*. Thousand Oaks, Calif.: Sage Publications.
- \_\_\_\_\_, and Robert M. Morgan (1995), "The Comparative Advantage Theory of Competition." *Journal of Marketing* 59 (April), 1–15.
- Jöreskog, Karl G., and Dag Sörbom (1988), LISREL VII: *A Guide to the Program and Applications*, 2nd ed. Chicago, Ill.: SPSS.
- Jose, Manuel L., Len M. Nichols, and Jerry L. Stevens (1986), "Contributions of Diversification, Promotion, and R&D to the Value of Multiproduct Firms: A Tobin's q Approach." *Financial Management* 15 (Winter), 33–42.
- Keller, Kevin Lane (1993), "Conceptualizing, Measuring and Managing Customer-Based Brand Equity." *Journal of Marketing* 57 (January), 1–22.
- Kohli, Ajay K., and Bernard J. Jaworski (1990), "Market Orientation: The Construct, Research Propositions and Managerial Implications." *Journal of Marketing* 54 (April), 1–18.
- Lehmann, Donald R. (1997), "Some Thoughts on the Futures of Marketing." In *Reflections on the Futures of Marketing*, eds. Donald R. Lehmann and Katherine E. Jocz, chapter 6. Cambridge, Mass.: Marketing Science Institute.
- Leifer, Richard, and Peter K. Mills (1996), "An Information Processing Approach for Deciding upon Control Strategies and Reducing Loss in Emerging Organizations." *Journal of Management* 22 (1), 113–38.
- Levitt, Theodore (1960), "Marketing Myopia." *Harvard Business Review* 38 (4), 45–56.
- Lusch, Robert F., and Michael G. Harvey (1994), "Opinion: The Case for an Off-Balance-Sheet Controller." *Sloan Management Review* 35 (Winter), 101–5.
- Moorman, Christine, and Roland T. Rust (1999), "The Role of Marketing." *Journal of Marketing* 63 (Special Issue), 180–97.
- Morgan, Jim (1998), "The Great Outsourcing Push." *Purchasing* 124 (4), 48–51.
- Narver, John C., and Stanley F. Slater (1990), "The Effect of a Market Orientation on Business Profitability." *Journal of Marketing* 54 (October), 20–35.
- Ottum, Brian D., and William L. Moore (1997), "The Role of Market Information in New Product Success/Failure." *The Journal of Product Innovation Management* 14 (July), 258–73.
- Purohit, Devavrat (1994), "What Should You Do When Your Competitors Send in the Clones?" *Marketing Science* 13 (Autumn), 392–411.
- Ramaswami, Sridhar N., and Jagdip Singh (2004), "Antecedents and Consequences of Merit Pay Fairness for Industrial Salespeople." *Journal of Marketing* 67 (October), 46–66.
- Russell, Gary J and A. Wagner Kamakura (1994), "Understanding Brand Competition Using Micro and Macro Scanner Data." *Journal of Marketing Research* 31(2), 289–303.
- Salz-Trautman, Peggy (2000), "Changing Face: Communication Industry Focuses on Customer Relations." *Communication Week International* (January 17).
- Schalet, Sarah D. (2001), "The Cost of Secrecy." *CIO Magazine* [electronic version] (July 15). Retrieved March 23, 2004, from <http://www.cio.com/archive/071501/guru.html>.
- Sengupta, Sanjit (1998), "Some Approaches to Complementary Product Strategy." *Journal of Product Innovation Management* 15 (July), 352–67.
- Sheth, Jagdish N., and Atul Parvatiyar (1995), "Relationship Marketing in Consumer Markets: Antecedents and Consequences." *Journal of the Academy of Marketing Sciences* 23 (Fall), 255–82.
- Sims, David (2000), "A New ROI for a New Economy CRM?" AND Just Why Doesn't High-Tech Get It." CRMguru.com, April 4
- Slater, Stanley F., and John C. Narver (1995), "Marketing Orientation and the Learning Organization." *Journal of Marketing* 59 (July), 63–74.
- Smith, Daniel C., and C. Whan Park (1992), "The Effects of Brand Extensions on Market Share and Advertising Efficiency." *Journal of Marketing Research* 29 (August), 296–313.
- Smith, Ellen Reid (2001), *E-Loyalty: How To Keep Customers Coming Back to Your Web Site*. New York, N.Y.: Harper Business/HarperCollins.
- Srivastava, Rajendra K., Tasadduq A. Shervani, and Liam Fahey (1998), "Market-Based Assets and Shareholder Value: A Framework for Analysis." *Journal of Marketing* 62 (January), 2–18.
- \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ (1999), "Marketing, Business Processes and Shareholder Value: An Organizationally Embedded View of Marketing Activities." *Journal of Marketing* 63 (Special Issue), 168–79.

Storey, Chris, and Christopher J. Easingwood (1998), "The Augmented Service Offering: A Conceptualization and Study of Its Impact on New Service Success." *Journal of Product Innovation and Management* 15 (July), 335–51.

Thomas, Jim (1999), "Hard Sell." *Logistics Management* (February 1). Retrieved March 23, 2004, from <http://www.manufacturing.net/lm/article/CA123256>.

Wernerfelt, Birger (1984), "A Resource-based View of the Firm." *Strategic Management Journal* 5 (April-June), 171–80.

Williams, Larry J., and John T. Hazer (1986), "Antecedents and Consequences of Satisfaction and Commitment in Trust Models: A Reanalysis Using Latent Variable Structural Equation Models." *Journal of Applied Psychology* 71 (May), 219–23.

Young, Ian (1998), "Sabco Sharpens Its Market Focus." *Chemical Week* 160 (3), 50-1.

Zandan, Peter (1992), *Brand Equity in Technology Product-Markets*. [Presentation Slides] Austin, Tex.: Intelliquest.

---

**Report No. 04-102**

"Market-based Assets and Capabilities, Business Processes, and Financial Performance" © 2004 Sridhar N. Ramaswami, Mukesh Bhargava, and Rajendra Srivastava; Report Summary © 2004 Marketing Science Institute