

Marketing Performance Measurement Ability and Firm Performance Author(s): Don O'Sullivan and Andrew V. Abela Source: *Journal of Marketing*, Apr., 2007, Vol. 71, No. 2 (Apr., 2007), pp. 79–93 Published by: Sage Publications, Inc. on behalf of American Marketing Association Stable URL: https://www.jstor.org/stable/30162185

REFERENCES

Linked references are available on JSTOR for this article: https://www.jstor.org/stable/30162185?seq=1&cid=pdfreference#references_tab_contents You may need to log in to JSTOR to access the linked references.

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at https://about.jstor.org/terms



American Marketing Association and Sage Publications, Inc. are collaborating with JSTOR to digitize, preserve and extend access to Journal of Marketing

Marketing Performance Measurement Ability and Firm Performance

Marketing practitioners are under increasing pressure to demonstrate their contribution to firm performance. It has been widely argued that an inability to account for marketing's contribution has undermined its standing within the firm. To respond to this pressure, marketers are investing in the development of performance measurement abilities, but to date, there have been no empirical studies of whether the ability to measure marketing performance has any actual effect on either firm performance or marketing's stature. In this study of senior marketing managers in high-technology firms, the authors examine the effect of ability to measure marketing performance on firm performance, using both primary data collected from senior marketers and secondary data on firm profitability and stock returns. They also explore the effect of ability to measure marketing. The empirical results indicate that the ability to measure marketing performance, which is operationalized as chief executive officer satisfaction with marketing. The empirical results indicate that the ability to measure marketing's stature within the firm, which is marketing's stature within the firm.

he effective dissemination of new methods of assessing marketing productivity to the business community will be a major step toward raising marketing's vitality in the firm and, more important, toward raising the performance of the firm itself" (Rust et al. 2004, p. 76). In response to the pressure on marketers to demonstrate their value to the firm, there have been several highprofile calls for more research in the area of marketing performance measurement (MPM) and several conceptual and empirical research papers (e.g., Donthu, Hershberger, and Osomonbekov 2005; Lukas, Whitwell, and Doyle 2005; Rust et al. 2004). Furthermore, there have been regular calls for marketing practitioners to develop and enhance their ability to account for marketing's contribution to firm performance (Ambler 2003; Bolton 2004). An assumption underlying these related academic and practitioner concerns is that developing and applying MPM ability leads to both greater status for marketing at the board level (see, e.g., Webster, Malter, and Ganesan 2005) and improved firm performance (Morgan, Clark, and Gooner 2002). However, to date, the relationship between MPM ability and either

Don O'Sullivan is College Lecturer, Department of Management and Marketing, University College Cork, and Visiting Associate Professor of Marketing, Melbourne Business School, University of Melbourne (e-mail: d.osullivan@ucc.ie). Andrew V. Abela is Assistant Professor of Marketing, Catholic University of America (e-mail: abela@cua.edu). The authors gratefully acknowledge the three anonymous *JM* reviewers for their feedback and suggestions and Bruce Clark for his comments on previous versions of the article. The authors thank the CMO Council and, in particular, the council's Marketing Performance Measurement Steering Committee and Marketing Performance Measurement Task Force for their support in undertaking this study.

To read and contribute to reader and author dialogue on JM, visit http://www.marketingpower.com/jmblog.

firm performance or marketing's stature within the firm has not been demonstrated empirically.

The primary purpose of this article is to test whether MPM ability contributes to actual firm performance or to marketing's stature within the firm, which we operationalize as chief executive officer (CEO) satisfaction with marketing. A secondary purpose is to explore two potentially distinct aspects of MPM ability: the ability to measure performance across a range of marketing activities (e.g., advertising, trade promotion, direct mail) and the ability to assess marketing performance using a comprehensive set of metrics (e.g., financial, nonfinancial).

We focus on firms in the high-technology sector. We chose high-tech firms because of the recognition that within this sector, marketing has been under intense pressure to demonstrate its contribution to firm performance. There are two primary reasons for this pressure. First, high-tech companies tend to have more of an engineering orientation than a marketing orientation, and thus top management tends to be more skeptical about the value of marketing (Davies and Brush 1997). Second, during the period we studied (early 2000s), the sector experienced the collapse of the "technology boom," which led to sharply increased scrutiny of marketing activities (Mohr and Shooshtari 2003). We begin by reviewing the MPM literature and generating several testable hypotheses.

Measurement and Performance

A long-standing caricature of marketing practitioners is that they love to spend money and hate to assess the results of that spending (e.g., Adler 1967). Marketers' inability to account for the function's contribution to firm performance is recognized as a key factor that has led to marketing's loss of stature within organizations (Kumar 2004; Lehmann 2004; Webster, Malter, and Ganesan 2005). This is reflected

© 2007, American Marketing Association ISSN: 0022-2429 (print), 1547-7185 (electronic) Journal of Marketing Vol. 71 (April 2007), 79–93 in increased demand for greater accountability (Doyle 2000; Morgan, Clark, and Gooner 2002; Rust et al. 2004). In addition, there have been several high-profile calls for more research in the area of MPM. Most notably, MPM topics have been consistently listed among the Marketing Science Institute's (1998, 2000, 2002, 2004, 2006) top priorities.

Marketing performance measurement is the assessment of "the relationship between marketing activities and business performance" (Clark and Ambler 2001, p. 231). Because the problem in question is the inability to account for marketing activities, our specific interest is in marketing's *ability* to assess this relationship. Given that the goal of MPM research is to demonstrate the value of the marketing activities, in line with the work of Rust and colleagues (2004), our focus is on marketing not as the "underlying products, pricing, or customer relationships" (Rust et al. 2004, p. 76) but rather as the "marketing activities" themselves, which we define as marketing communication, promotion, and other activities that represent the bulk of the typical marketing budget.

Marketing performance measurement research can be divided into three research streams: measurement of marketing productivity (e.g., Morgan, Clark, and Gooner 2002; Rust, Lemon, and Zeithaml 2004), identification of metrics in use (e.g., Barwise and Farley 2003; Winer 2000), and measurement of brand equity (e.g., Aaker and Jacobson 2001; Ailawadi, Lehmann, and Neslin 2002). Rust and colleagues (2004) build on the work of Srivastava, Shervani, and Fahey (1998) to describe a "chain of marketing productivity" that extends from marketing activities to shareholder value. Marketing activities influence intermediate outcomes (customer thoughts, feelings, knowledge, and, ultimately, behavior), which in turn influence financial performance of the firm. The MPM research we cited examines how marketers can measure the relationships along the chain of marketing productivity; which metrics firms use or could use along this chain, particularly financial, nonfinancial, and market-based assets; and contextual factors, particularly the firm's market orientation (e.g., Clark and Ambler 2001).

Underlying all this work is the assumption that such measurement effort is beneficial to the firm and is not just a post hoc justification of marketers' efforts—that improvements in marketing's ability to account for its activities will actually raise the performance of the firm. In the face of senior management demands that marketers demonstrate their value, the desire for justification is understandable. However, overcoming the inability to account for the function's contribution to firm performance requires that resources and management attention be expended on measurement efforts (Bonoma and Clark 1988). Incurring such cost assumes that the firm will benefit, and testing this assumption is the primary purpose of this article.

Hypotheses

We develop hypotheses based on a theoretical framework that links MPM ability to firm performance and CEO satisfaction with marketing. We begin by hypothesizing that MPM ability has an effect on actual firm performance. Sevin (1965) argues that the implementation of robust performance measures should result in greater marketing and firm performance. Several arguments that link MPM to improvements in marketing and firm performance have been advanced (see, e.g., Rust et al. 2004). First, anticipation of the scrutiny of marketing efforts will encourage greater attention to the activities that will be measured. The idea that "what gets measured gets done" is well founded in the management literature (see, e.g., Ouchi 1979) and is assumed within the MPM literature. Second, Webster, Malter, and Ganesan (2005) contend that marketing's contribution to the achievement of strategic goals is underrepresented in firms that do not measure marketing performance and that the performance of such firms may suffer as a result. Third, it has been argued that MPM should lead to learning, which should enable improved marketing decisions and, consequently, performance (Morgan, Clark, and Gooner 2002). Fourth, MPM offers performance feedback, and performance feedback has consistently been found to influence both managerial attitudes and behavior (Audia, Locke, and Smith 2000; Curren, Folkes, and Steckel 1992; Greve 1998; Miller 1994). Finally, feedback relative to goals has been demonstrated to produce strong effects (e.g., Locke and Latham 1990). Thus:

H₁: MPM ability positively influences firm performance.

It has long been recognized that the marketing function typically plays a limited role in the process of strategy formulation (Anderson 1982; Day 1992; Webster 1992). Srivastava, Shervani, and Fahey (1998) argue that an important reason for this is that marketers struggle to measure and communicate to top management the impact of marketing activities on firm performance. Lehmann (2004) and Webster, Malter, and Ganesan (2005) observe that marketing has the greatest influence and stature in firms in which there are clear measures of marketing's contribution. Accordingly,

H₂: MPM ability is positively associated with CEO satisfaction with marketing.

As we noted previously, although the primary purpose of this article is to test empirically whether MPM ability contributes to firm performance or to marketing's stature within the firm, a secondary purpose is to explore the ability to measure performance across a range of marketing activities and the ability to assess marketing performance using a comprehensive set of metrics. Although the two aspects are clearly related in that they both contribute to a firm's MPM ability, we hypothesize that they are distinct. For example, one firm may be able to measure the performance of its advertising or public relations (activities) only in terms of changes in awareness (nonfinancial metric), whereas another firm may be able to measure them in terms of revenue change (financial metric) and against specific goals and competitor performance (benchmark metric) (Ambler 2003).

The focus of the broader marketing accountability literature has been on the importance of the ability to measure disparate marketing activities (e.g., Rust, Lemon, and Zeithaml 2004; Webster, Malter, and Ganesan 2005). In addition, the discussion of MPM among practitioners has also tended to focus on the activities dimension (e.g., McMaster

2002). However, within the existing academic literature on MPM, the focus has tended to be on the metrics in use (e.g., Ambler, Kokkinaki, and Puntoni 2004; Barwise and Farley 2003, 2004; Lages, Lages, and Lages 2005; Lukas, Whitwell, and Doyle 2005).

We hypothesize that both the activities and the metrics aspects have separate but related effects on performance and CEO satisfaction. Because the activities aspect precedes the metrics aspect both theoretically and logically, we test the activities aspect first:

- H₃: The ability to measure performance across the range of marketing activities a firm employs positively influences firm performance.
- H_4 : The ability to measure performance across the range of marketing activities a firm employs is positively associated with CEO satisfaction with marketing.

As we noted previously, the identification of metrics in use is one of the main streams of MPM research (e.g., Ambler, Kokkinaki, and Puntoni 2004; Barwise and Farley 2003, 2004; Lages, Lages, and Lages 2005; Lukas, Whitwell, and Doyle 2005). An assumption underlying this research stream is that choice of metrics matters. Researchers in this area have concluded that in their choice of metrics, firms should employ both financial and nonfinancial metrics (Clark 1999; Rust et al. 2004) and that they should compare these against goals and competitors (Ambler 2003). Thus, we expect that firms that follow this guidance and are able to assess marketing performance using a broad set of metrics (financial and nonfinancial, in relation to goals, and in relation to competitors) should outperform those that lack this ability. It has previously been noted that the academic community's focus on metrics in use has had little impact on practicing marketers (Clark 1999). Reflecting this, we are interested in isolating the impact of metrics ability on performance and CEO satisfaction beyond that which is accounted for by activities ability. Thus:

- H_5 : The ability to provide a comprehensive set of metrics positively influences firm performance.
- H_6 : The ability to provide a comprehensive set of metrics is positively associated with CEO satisfaction with marketing.

Dashboards are a variation of a balanced scorecard (Kaplan and Norton 1992) and are used as a means to report key metrics to senior management from the array of information generated by corporate information systems (Paine 2004; Wind 2005). Ambler (2003) describes a dashboard as a refined set of marketing performance data, usually presented together, which communicate an overview of strategic performance. Two important elements of dashboards are that they provide automated or (close to) real-time reporting (Iyer, Lee, and Venkatraman 2006; Wind 2005) and that they enable users to "drill down" to program-level details (Miller and Cioffi 2004). It has been noted that dashboards, which are increasingly popular among marketing practitioners, have received only limited attention in marketing research (Rogers 2003). Recently, Srivastava and Reibstein (2005) have called for more research on the role of dashboards in managing marketing productivity.

Dashboards are viewed as a means by which information can be summarized and readily communicated to senior decision makers (Srivastava and Reibstein 2005). It is argued that this distilling of data increases the perceived value and managerial use of information (Peyrot et al. 2002), which in turn creates a closer link between marketing activities and firm goals (McGovern et al. 2004; Miller and Cioffi 2004). Therefore, the use of a marketing dashboard is hypothesized to act as a moderator in the relationships between ability to measure and performance and between ability to measure and CEO satisfaction.

H₇: The greater the use of a marketing dashboard, the more positively MPM will influence firm performance and CEO satisfaction.

The study controls for firm size and firm age because both variables have previously been shown to affect performance (e.g., Ahuja and Lampert 2001; Miles, Covin, and Heeley 2000). In controlling for firm age, the study follows previous research on high-tech firms (e.g., Hill and Naroff 1984). Firm age is accepted as influencing performance through the ability to learn in the customer relationship and on competitive advantage outcomes (Zahra, Ireland, and Hiltt 2000). We summarize the relationships outlined in this section in Figure 1.

Method

Sample and Procedure

A survey of senior marketers in high-tech firms about MPM ability, CEO satisfaction with marketing, and aspects of firm performance produced the primary data for our research. We used the membership list of the CMO Council as the sample frame for our study. The CMO Council is a U.S.-based, not-for-profit organization for senior marketers in high-tech firms. The council's membership is global, though at the time of study, it was heavily skewed toward North American firms. The membership list contains names and background information (title, firm, and contact details) for all members. We collected survey responses through an online, structured survey. We supplemented the primary data captured through the survey with secondary data on aspects of firm performance.

The study sought responses from key informants. Because the CMO Council's membership is limited to senior marketers, we included in the sample all members other than those who worked in marketing services providers, such as advertising agencies. We subsequently analyzed the responses to ensure that the respondents had senior marketing responsibilities (job title) before we included them in further analysis. The views of key informants are widely used within the marketing literature (see, e.g., Day and Nedungadi 1994; Moorman and Rust 1999; Narver and Slater 1990).

Before constructing the questionnaire, we conducted preliminary in-depth interviews with 17 chief marketing officers (CMOs). These discussions focused on the interviewees' understanding of and motivations for measuring marketing performance. A strong functional orientation was apparent; interviewees were most interested in measuring

FIGURE 1 Conceptual Model



the performance of the marketing function as opposed to the broader marketing performance of the firm. In addition, respondents were interested in assessing performance impact at the firm level. In short, MPM was viewed as an assessment of the marketing function's contribution to firm performance. The interviews provided a basis for the development of our survey questionnaire.

The questionnaire was divided into three sections that contained questions related to MPM ability, firm performance, and respondent profile. The questionnaire included a 15-item scale to quantify the ability to measure performance across a range of marketing activities and a 4-item scale to measure the ability to assess performance using a comprehensive set of metrics. These scales reflected the views captured from our interviews with CMOs and a review of the literature. To test for comprehension, relevance, and completeness, we pilot-tested the questionnaire with ten senior marketers from the CMO Council. Participants in the pilot phase were asked to identify any problems they encountered with the e-mail invitation, the content of the questionnaire, or the process of completing it online. Participants were also asked to evaluate the clarity of the questions and the response formats. No major difficulties were identified, though we clarified some of the response options and revised the questionnaire accordingly.

The survey was administered online between February and March 2004. A total of 810 marketers received e-mail notification of the survey. This was followed 14 days later by a reminder e-mail to nonrespondents. Each e-mail contained an embedded link to the survey. We received 214 usable response, for a response rate of 26.4%. This response rate was highly satisfactory given that rates ranging from 12% to 20% are considered acceptable for cross-sectional samples (Churchill 1991). We tested for nonresponse bias using time-trend analysis (Armstrong and Overton 1977). We selected two subsamples from early and late respondents. Because these did not differ in terms of respondent profile or the variables of interest, we concluded that nonresponse bias was not a significant concern.

We collected survey responses over a four-week period. After that time, we made the survey available through several additional channels, most notably a *BusinessWeek* research panel. This produced an additional 98 qualified respondents, for a total of 312 responses. Subsequent analysis of these additional 98 respondents indicated that they were not materially different from the first 214 respondents in terms of job title and sector. Furthermore, their responses to the key issues under consideration in the study were similar to those of the original 214 respondents. Consequently, we included them for further analysis. In total, we included 312 responses in subsequent analysis.

The job titles of respondents represented the range of possible senior marketer titles: 17% were CMOs, 40% were vice presidents of marketing, and 15% were marketing directors. Of the 27% who answered "other," most were senior managers with titles such as president or vice president of sales and marketing. Respondent firms were drawn from a cross-section of information technology–related sectors: 36% were software providers, 35% provided Internet-related services, 3% provided components, 3% provided computer systems, and 3% provided networking products and services. Peripherals and integration accounted for 2% and 1%, respectively. Of the 17% that responded "other," most were application services, or telecommunications-related products and services. Firm age varied greatly among

respondents, and most (>90%) were headquartered in North America.

Measurement¹

We calculated MPM ability as the simple average of a firm's scores on the activities and metrics scales. We assessed MPM ability using a 15-item scale based on our in-depth exploratory interviews with CMOs. We recorded responses on a seven-point scale anchored by "poor" and "excellent." These activities included above- and below-theline promotional activities as well as marketing planning and customer relationship management. As we noted previously, because the issue being addressed is marketers' inability to account for marketing activities, our specific interest here is in marketing's ability to assess this relationship. Having an ability does not necessarily mean using it, but given the demands being placed on marketers in hightech firms at the time of this study to account for their contribution more effectively, it seems highly unlikely that any MPM ability would have remained latent. Therefore, we assume that any firm in our sample that had an MPM ability was indeed using it. Discussions with the CMO Council's Steering Committee and interviews with 17 CMOs during the exploratory phase of our research indicated that this assumption was reasonable.

In our study, metrics is a construct that consists of the summed responses to four questions. Again, we captured responses on a seven-point scale anchored by "poor" and "excellent." Over the past 40 years, ranges of metrics have been proposed for MPM (for a review, see Clark 2001). These include both financial and nonfinancial measures. The inclusion of nonfinancial measures is considered an important progression because it helps provide a more complete description of marketing's contribution. Financial and nonfinancial measurement are two of the four aspects of metrics ability we considered. The other two aspects of metrics we assessed are related to benchmarking. Bonoma (1989) was one of the first researchers to argue for greater benchmarking of marketing performance. More recently, Vorhies and Morgan (2005) have demonstrated the impact of the benchmarking of marketing capabilities on firm performance. Consequently, we included the ability to benchmark against plan and against competitors in our understanding of metrics. The resultant scale was reliable (α = .83).

Dependent measures. Our dependent measures were firm performance and CEO satisfaction with marketing. We assessed firm performance using both primary and secondary data. Primary data were provided through our survey of senior marketers. In the past, the most common measures of output in firm-level marketing performance studies have been profit, sales, market share, and cash flow (Bonoma and Clark 1988). Financial measures, such as sales and profit, continue to be the most important MPMs (Clark 2000; Kokkinaki and Ambler 1999). Several studies have suggested that managers balance profitability and sales growth (McKee, Varadarajan, and Pride 1989; Slater and Narver 1996), and others have considered market share a measure of firm performance (Jaworski and Kohli 1993). Accordingly, and in line with previous studies, we measured performance as the mean of a respondent's rating for his or her firm's sales growth, market share, and profitability performance relative to all other competitors. We captured responses on a five-point scale anchored by "very poor" and "outstanding." We measured CEO satisfaction with marketing as the response to a single question. We captured responses on a five-point scale anchored by "excellent" and "poor."

Following the work of Rust, Moorman, and Dickson (2002), we captured secondary data on firm performance through two measures: return on assets (ROA) and stock returns. We calculated ROA as the firms' overall ROA for the 12 months subsequent to our original study, as reported in COMPUSTAT. This time lag enabled us to determine the direction of causality between MPM and firm performance.

Using data provided by the University of Chicago's Center for Research in Security Prices (CRSP), we measured stock returns as the firms' size-adjusted stock returns for the 12 months subsequent to the original study. The CRSP provides data on stocks traded on each of the major U.S. stock exchanges: NYSE, AMEX, and NASDAQ. We calculated returns as the difference between an individual firm's stock returns and the value-weighted average return for all firms in the same size decile of the sample firm in CRSP's size decile portfolio for each month. Return data were adjusted for both stock dividends and splits for each firm by CRSP (Rust, Lemon, and Zeithaml 2004). We calculated each firm's return for the period, referred to as the holding period return, as follows:

$$R_i = [(P_1 - P_0) + (D_1)/P_0)],$$

where R_i is the return on stock i, P_1 is share price in month 1, P_0 is share price in the previous month, and D_1 is the dividend associated with Month 1.

We determined the value-weighted portfolio return for each month from the CRSP portfolio assignment number. We calculated returns by compounding both the return for the firm and the value-weighted returns for the portfolio for the 12 months. This enabled us to determine the return as the difference between the compounded return for the firm and the compounded portfolio return.

The cumulative size-adjusted excess return then becomes the return on the stock less the return on the relevant CRSP market capitalization decile portfolio:

$$CAR_{i} = [\Sigma(R_{it} - R_{sizet})],$$

where R_{it} is the cumulative return on stock i over the 12 months and R_{sizet} is the matching return on the appropriate CRSP market capitalization decile portfolio.

Potential moderator. Responding to recent calls for a consideration of the role and impact of marketing dashboards, we included dashboards as a potential moderator. We assessed the use of a marketing dashboard as the mean of responses to three questions related to the existence of a dashboard and its functionality, which, as we noted previ-

¹Scale items for each of the MPM measures appear in the Appendix.

ously, include automated updating and program-level drilldown capability ($\alpha = .88$).

Control variables. We included two control variables that are commonly recognized in the marketing and strategy literature as influencing firm performance: firm size and firm age. We operationalized firm size as the firm's annual revenue. Previous research has suggested that number of employees, sales, and assets are all equally appropriate indicators of a firm's size (e.g., Harrison and Torres 1988). We measured firm age as the number of years the firm has been in business.²

Measurement properties. After data collection and before testing our hypotheses, we conducted several procedures to examine the psychometric properties of and to purify our measures. We judged the 15-item activities scale to have face validity because it reflects the primary activities of the marketing function as commonly outlined in the literature. To ensure content validity, senior marketers on the CMO Council's MPM Steering Committee provided expert screening of scale items (Churchill 1979; Malhotra 1996). Exploratory factor analysis indicated that the scale comprised four factors. The first factor accounted for 36% of the total variation in the scale, the second factor accounted for 11% of the variation, and the third and fourth factors each accounted for 7% of the variation. Thus, the third and fourth factors explained little more than any one of the individual items. To isolate key factors further, we subjected the data to Varimax rotation. We set a factor loading of .4 as the cutoff to establish themes and labels for the factors. This is consistent with previous studies (e.g., Mitchell and Walsh 2004; Washburn and Plank 2002). In deciding which items to use to compute a "factor score," we also applied Bedford's criterion of a primary loading being at least .2 greater than any cross-loading in addition to the

²When analyzing the impact of MPM on the ROA and stock returns of public companies, we extracted size from COMPU-STAT and age from company reports.

.4 criterion. The latter criteria resulted in the loss of three items. Consistent with Gerbing and Anderson's (1988) recommendations, we used confirmatory factor analysis to evaluate and refine the resultant scales further. We conducted the factor analysis using the 12 items remaining at the end of the exploratory factor analysis. As part of this analysis, it was specified that four factors should be extracted rather than allowing for an unforced selection of factors. The resultant four factors explained 65% of the total variance. Varimax rotation identified the same factor structure (see Table 1) as that which we determined on the basis of the exploratory analysis.

The four factors are labeled as follows:

•Direct: the ability to measure below-the-line and online marketing activities (three items).

•MGT: the ability to measure performance of management and analysis activities (four items).

•PR: the ability to measure public relations, analyst, and other stakeholder relations activities (three items).

•Brand: the ability to measure performance of branding and advertising activities (two items).

Our next step was to examine the discriminant validity of our measures. Table 2, Panel A, presents the descriptive statistics and correlation matrix for the variable set. Alpha coefficients for all measures were greater than .7, indicating that reliability is acceptable (Nunnally and Bernstein 1994). As we expected, activities and metrics, the two aspects of MPM in our conceptual model, were highly correlated, as were the dashboard and metrics measures. Notably, CEO satisfaction with marketing was minimally correlated with overall firm performance, with a correlation coefficient of .13.

The results of the tests for discriminant validity appear in Table 2, Panel B. For each construct, average variance extracted (AVE) exceeds the .5 level that Hair and colleagues (1998) recommend. In addition, the AVE for each construct is higher than the squared correlation between that construct and any other construct, indicating that discriminant validity is not a problem (Fornell and Larcker 1981).

Facto	or Matrix of MPM	Activities		
	Factor 1 (Direct)	Factor 2 (MGT)	Factor 3 (PR)	Factor 4 (Brand)
Branding Advertising Direct mail/e-mail campaigns Telemarketing and contact management Web site and Internet presence Trade shows and events	.810 .804 .621		.641	.79 .805
Public relations and internal communications Analyst and stakeholder relations Channel marketing Customer relationship management systems Market research Budgeting		.693 .729 .690 .595	.797 .670	

	TA	B	_E 1	
Factor	Matrix	of	MPM	Activities

Notes: All but the highest loadings are suppressed.

Analysis and Results

Firm Performance: Primary Data

In H_1 and H_2 , we predicted that there would be a positive relationship between MPM ability and both firm performance and CEO satisfaction with marketing. We tested these hypotheses using hierarchical moderated regression models (Schoonhoven 1981). Reflecting our conceptual model and to test H_7 , we considered marketing dashboards a potential moderator of the relationship between MPM and each of the dependent variables. We specified two equations, one for each dependent variable. We entered data into the equations in two steps. The first step contained the main effects associated with MPM and the potential moderator. In addition, in testing the relationship to firm performance, we entered the two control variables at this time. The second step contained the interactions defined by mean centering the main effects and creating products of dashboard and MPM. Mean centering enabled us to control for the effect of multicoliniarity, as Aiken and West (1993) and Cohen and colleagues (2002) recommend. The introduction of the interaction term failed to produce a significant effect on either firm performance or CEO satisfaction with marketing. For performance, change in F(1, 283) = 1.206, p =.273. For CEO satisfaction with marketing, change in F(2, 290) = .558, p = .298. Given these results, we reestimated the model including MPM and, in the case of firm performance, the two control variables. The results appear in Table 3.

		A:	Summa	ry Statis	stics and	Correlati	on Matrix	ĸ				
	М	SD	Items	1	2	3	4	5	6	7	8	9
1. Activities	4.1	.97	4	.72								
2. Metrics	3.64	1.44	4	.71	.83							
3. Dashboard	3.17	1.74	3	.56	.68	.88						
4. Firm size	32.06	71.12	1	01	03	.05						
5. Firm age	23.58	23.79	1	.09	.12	010	.39					
6. CEO satisfaction	3.48	.93	1	.53	.44	.35	.06	04				
7. Performance	5.02	1.32	3	.27	.23	.27	05	.0	.34	.84		
8. ROA	5.79	12.67	1	.31	.24	.18	.06	.07	.23	.44		
9. Stock returns	1	.25	1	.17	.2	.0	02	.05	.1	.09	.12	
		<u> </u>		B: Disc	riminant	Validity						
		Sq	uared C	orrelati	ons							
	AVE	1	2	3	4							
1. Activities	.56							 -				
2. Metrics	.67	.50										
3. Dashboard	.80	.31	.46									
4. Performance	80	07	05	07								

 TABLE 2

 Summary Statistics, Correlation Matrix, and Discriminant Validity

Notes: Alphas for multi-item measures are in italics on the diagonal in the correlation matrix.

TABLE 3

The Impact of MPM on Firm Performance and CEO Satisfaction: Primary Data

	Firm Per	formance	CEO Sa	tisfaction
Model Statistics				
Adjusted R ²		.148		.220
F statistic	16	.566	84	.219
d.f.	3.	285	1.	294
<i>p</i> value	<	.001	<	.001
Final Predictors	ba	tb	ba	t b
MPM	.253	4.608*	.472	9.177*
Firm size ^c	.320	4.722*		•••••
Firm age ^c	136	-2.015		

*p < .001.

^aStandardized coefficients.

bt refers to the t-statistic for the estimated coefficients.

^cWe do not include firm size and firm age as control variables when considering the impact of MPM ability on CEO satisfaction with marketing, because there is no basis in theory that would lead us to expect that these two variables affect the dependent variable.

The regression coefficients indicate that as we hypothesized, MPM ability is significantly associated with both firm performance and CEO satisfaction with marketing. These are the two hypothesized outcomes of MPM, and therefore the primary data support H_1 and H_2 .

Next, we tested H_3-H_6 , which predict that the two aspects of MPM, activities and metrics, each affect firm performance and CEO satisfaction with marketing. Again, we examined the interaction effects of activities with dashboard and of metrics with dashboard to determine whether either explained a significant level of variance when included in the linear regression model. Table 4, Panel A, provides the results of this analysis. Because entry of the interaction effects did not explain a significant level of variance (for firm performance, change in F(2, 281) = .629, p =.534; for CEO satisfaction with marketing, change in F(2, 290) = .558, p = .573), we report a model that contains the predictor variables only.

Again, we used hierarchical regression to test the relationship between the predictor variables and the dependent variables. Because our aim was to isolate the impact of metrics beyond the impact of activities, we entered the data in three steps. First, we entered the control variables. Second, we entered activities and considered the extent to which this explained a significant amount of variance. Third, we entered metrics to examine the degree to which it explained variance beyond that accounted for by activities.

Activities have a positive impact on firm performance and CEO satisfaction with marketing, and therefore H₃ and H₄ are supported in our analysis of the primary data. However, because the entry of metrics into the equation has a significant impact on CEO satisfaction with marketing but not on performance, the primary data reject H₅ but support H₆.

In our previous analysis of measurement properties, we explored the multidimensional nature of activities. To

TABLE 4
The Impact of Activities and Metrics on Firm Performance and CEO Satisfaction

	A: Activit	ties and Metrics		
	Firm Per	formance	CEO S	atisfaction
Model Statistics Adjusted R ² F statistic d.f. <i>p</i> value	15 3, <	134 846 285 001	2	.235 16.331 2, 293 <.001
Final Predictors Activities Metrics Firm size ^c Firm age ^c	bª .243 .315 −.135	t ^b 4.389*** 4.630*** –2.003*	b ^a .380 .142	t ^b 5.296*** 1.977*
	B: Acti	vities Factors		
	Firm Per	formance	CEO S	atisfaction
Model Statistics R ² F statistic d.f. <i>p</i> value	13 4, <	.145 .150 283 .001	2	.219 28.56 3, 291 <.001
Final Predictors Direct MGT	b ^a	t ^b	b ^a .235	t ^b 3.568***
PR Brand Metrics Firm size Firm age	.147 .167 .320 –.123	2.389* 2.672 4.720*** –1.820	.164 .178	2.679** 2.516*

*p < .05.

^{**}p < .01. ***p < .001.

^aStandardized coefficients.

bt refers to the t-statistic for the estimated coefficients.

«We do not include firm size and firm age as control variables when considering the impact of MPM ability on CEO satisfaction with marketing, because there is no firm basis in theory that would lead us to expect that these two variables affect the dependent variable.

examine the impact of the activities factors further, we calculated the regression coefficients for each factor on each dependent variable. The results of this analysis appear in Table 4, Panel B. Because interaction effects were not significant, the table reports the main effects of the four activities factors, metrics, and the control variables. Again, we conducted a three-step hierarchical regression. For firm performance, the entry of the PR factor into the model with firm size and firm age explained a significant level of additional variance in firm performance (change in F(1, 284) = 15.832, p < .001). The subsequent entry of metrics into this model in the third step also explained a significant level of additional variance in firm performance (change in F(1, 283) = 7.139, p = .008).

For CEO satisfaction, the entry of the MGT and Brand factors into the model with firm size and firm age explained significant levels of additional variance (with MGT: change in F(1, 293) = 59.783, p < .001; with Brand: change in F(1, 292) = 15.233, p < .001). The subsequent entry of metrics into this model in the third step again explained a significant level of additional variance (change in F(1, 291) = 6.329, p = .012). The limited impact of individual factors suggests that a focus on individual dimensions is unwarranted and that a consideration of the full spectrum of activities provides a greater impact. The emergence of metrics as a significant predicator may be explained by the reduction of the explanatory power of the activities variable through disaggregation into its four factors.

Firm Performance: Secondary Data

In addition to collecting subjective measures of firm performance from key informants, we also collected objective performance data. We collected data on firm profitability and stock returns for the 12 months subsequent to the original study. This enabled us to counterbalance the problems that arise in interpreting causality solely on the basis of evidence from cross-sectional correlational studies. Our objective measures were ROA and size-adjusted stock returns. We collected these from the COMPUSTAT and CRSP databases, respectively. Because both databases are confined to publicly quoted firms, our sample size was necessarily reduced for this phase of the analysis (94 for ROA and 82 for stock returns compared with 312 for the primary analysis).

This phase of the analysis followed the same process as that for the primary data. First, we considered the potential moderating impact of dashboards on the relationship between MPM ability and performance through a two-step hierarchical moderated regression model. For both measures of performance, the entry of the interaction effects failed to generate a significant level of variance. For ROA, change in F(1, 80) = .068, p = .794. For stock returns, change in F(1, 74) = .292, p = .591. Reflecting this, the results in Table 5 present a model that contains MPM ability and the control variables. Because MPM ability has a significant impact on both ROA and stock returns, H_1 is supported. This is consistent with findings from our analysis of the primary data.

Second, we examined the relationship between both ROA and stock returns and the two components of MPM ability: activities and metrics. We followed the same procedure as that in the examination of primary performance data. We considered the interaction effects of activities with dashboard and of metrics with dashboard. The entry of the interaction effects did not explain a significant level of additional variance for either ROA (change in F(2, 80) = .031, p = .969) or stock returns (change in F(2, 71) = .377, p = .688). Because neither interaction effect explained significant additional variance, we report only the main effects in Table 6, Panel A.

As we discussed previously, activities and metrics are conceptually related, and to reflect this, we carried out a three-step hierarchical regression analysis. We entered firm size and firm age into the model in the first step. In the second step, we entered activities. Finally, in the third step, we entered metrics to examine whether further variance was explained. Activities have a positive impact on ROA, but the results are not significant for stock returns. This finding provides partial support for H_3 . Consistent with our analysis

	R	OA	Stock	Returns
Model Statistics Adjusted R ² F statistic d.f. <i>p</i> value	3 3	.70 .119 , 82 .030	1. 3.	.024 .651 , 76 .185
Final Predictors MPM Firm size Firm age	b ^a .289 .073 .084	t ^b 2.704** .692 .788	b ^a .187 –.019 .134	t ^b 1.658* –.171 1.189

	TAI	BLE 5		
The Impact of MPM on	Firm	Performance:	Secondary	Data

**p < .01.

aStandardized coefficients.

bt refers to the t-statistic for the estimated coefficients.

^{*}*p* < .05.

TABLE 6	
The Impact of Activities and Metrics on Firm Performance: Secondary	Data

	A: Activ	ties and Metrics		
	F	AOA	Stock	Returns
Model Statistics				
Adjusted R ²		.173		004
F statistic	7	.078	1.	117
d.f.	3	, 84	3,	75
<i>p</i> value	<	.001		348
Final Predictors	ba	ťb	ba	ťÞ
Activities	.230	2.264*	.115	.959
Metrics				
Firm size	.409	3.241**	.023	.162
Firm age	167	-1.347	.132	.940

	B: A	ctivities Factors		
		ROA	Stoc	k Returns
Model Statistics				
R ²		.184		.047
F statistic		7.528		2.295
d.f.		3, 84		3, 75
<i>p</i> value		<.001		.085
Final Predictors	ba	ťb	b ^a	ťb
Direct				
MGT	.243	2.504*		
PR				
Brand				
Metrics			.236	2.084*
Firm size	.459	3.734***	.003	.019
Firm age	–.151	-1.233	.141	1.027

*p < .05. **p < .01.

***[~]p < .001. ^aStandardized coefficients.

bt refers to the t-statistic for the estimated coefficients.

of the primary data, dashboards do not have a significant moderating effect. Consequently, we find no support for H_7 .

In analyzing the impact of the activities factors, we began by considering the potential moderating influence of dashboards. Because the interaction effect was not significant, we did not include it in further analysis. Table 6, Panel B, summarizes the main effects of activities. The entry of MGT into the model with firm size and firm age explained a significant level of additional variance in ROA (change in F(1, 84) = 6.268, p = .014). None of the four factors or metrics had a significant impact on stock returns, but the entry of metrics into the model with firm size and firm age explained a significant level of additional variance (change in F(1, 75) = 4.344, p = .041). Again, the limited impact of individual factors indicates that consideration of the full set of activities may offer the greatest benefit as a driver of firm performance.

Discussion

Summary of Findings

Taken together, our analysis of the primary and secondary data indicates that MPM ability has a positive impact on firm performance in the high-tech sector. We found that firms with a strong MPM ability tend to outperform their competitors, as reported by senior marketers. In addition, the results suggest that MPM ability has a positive influence on ROA and on stock returns. These findings are important given the centrality of performance outcomes to current academic and managerial interest in the MPM. We summarize the findings in Table 7.

In addition, we found that MPM ability has a significant, positive impact on CEO satisfaction with marketing. Because increasing marketing's stature at the board level is

			T Summary of H	ABLE 7 lypothesized Re	sults			
	Perfor	mance	CEO Sati	isfaction	0 ^R	A	Stock R	eturns
MPM Activities	Hypothesis	Supported	Hypothesis	Supported	Hypothesis	Supported	Hypothesis	Supported
MPM	+	Yes	+	Yes	+	Yes	+	Yes
Activities	+	Yes	+	Yes	+	Yes	+	No
Metrics	+	No	+	Yes	+	No	+	No
$MPM \times dashboard$	+	No	+	No	+	No	+	No
Activities × dashboard	+	No	+	No	+	No	+	No
Metrics $ imes$ dashboard	+	No	+	No	+	No	+	No No
Notae: 4 - a monitive humothesis	ad relationshin Ves - t	the hundthesis was sure	rated No = the hundrho	acie wee not cumorted				

was supported. No = the hypothesis was not supported. the hypothesis ш res relationsnip. Notes: + = a positive hypothesized

a focus of attention for both academic and practitioner communities, this is an important finding. Although the argument linking marketing accountability and marketing's influence is regularly posited, this is the first study to demonstrate this relationship successfully. Our demonstration of the link between MPM ability and CEO satisfaction with marketing lends support to researchers, such as Webster, Malter, and Ganesan (2005), who have called for greater accountability in marketing. Our findings also support the Marketing Science Institute's (2004) ongoing prioritization of performance measurement as a means of raising the profile of the discipline.

Marketing performance dashboards have captured the attention of practitioners and, more recently, marketing academics. However, we did not find that the existence of dashboards influenced the key relationships under consideration in our study.

We find that activities ability has four dimensions related to direct marketing, management, public relations, and brand. The impact of these factors varies across the dependent variables we considered. Notably, the ability to measure brand and management activities influences CEO satisfaction with marketing.

After we account for activities, the second component of MPM ability, metrics, does not have a significant additional impact on firm performance. However, it significantly affects CEO satisfaction with marketing.

Implications for Managers

The results of this study have several important managerial implications. Development of MPM ability requires that marketers divert part of their budget and attention away from actual marketing programs and toward measurement efforts; this would be counterproductive if it did not improve performance. Our study provides support for just such a diversion of resources, indicating that it can positively affect both firm performance and marketing's stature within the organization, at least for firms that operate in the high-tech sector.

Given that MPM ability offers demonstrable benefits, the question arises as to what should be measured and how. Although this study clearly identifies four factors that make up the activities aspect of performance measurement ability (direct marketing, public relations, brand, and management), it is noteworthy that each factor alone has relatively weak relationships to firm performance and CEO satisfaction with marketing. This implies that efforts to drive improvement in ability to measure a single marketing activity, no matter how important the activity is to the firm, are less valuable than a comprehensive effort to develop the ability to measure performance across the entire range of marketing activities employed.

In addition, our findings suggest that the ability to use a comprehensive set of metrics is associated with higher CEO satisfaction with marketing. In this respect, developing the ability to measure performance with a combination of financial and nonfinancial indicators that allow for a comparison of performance against plans and against competitors would seem to be beneficial for marketers. However, although a large part of the MPM literature has focused on which metrics are being or should be used, this study finds no separate impact on firm performance attributable to the ability to use a range of metrics.

Finally, our study questions the merit of the current high level of practitioner enthusiasm for marketing performance dashboards. Such dashboards have been presented as a means to present and communicate performance data more effectively. However, we do not observe any moderating effect of dashboards on the relationship between MPM and firm performance or CEO satisfaction with marketing. Because this is one of the first studies to explore the impact of performance dashboards in marketing and given that their adoption and functionality continue to evolve, our findings are not definitive; researchers and managers alike need to continue to explore this emerging area.

Limitations and Further Research

The membership list of the CMO Council, which we used as the sample frame for our study, is not a complete list of senior marketers in high-tech firms globally or even in North America, and therefore the results of this study cannot be generalized to the whole population of senior technology marketers. However, although we recognize the sample frame as being incomplete, we deemed access to the membership of the organization and the expected response rate to be sufficient to justify its use. It would be useful to replicate the research using a more complete sample frame. Furthermore, it would be useful to extend the research to other sectors because though pressure to demonstrate marketing's contribution is strongly evident in high-tech firms, this pressure is also evident in many other industries. Given the global nature of MPM research (e.g., Barwise and Farley 2004), it would also be useful to replicate this study with samples from outside the United States.

The research relies on the views of a single key informant (the senior marketer) in each firm. Although the key informant approach is common, the use of multiple informants from a single firm may allow for a more rounded perspective. In addition, as we noted previously, the absence of any evidence of the effect of dashboards might be due to the way we conceptualized them in this study; therefore, alternative conceptualizations are worth exploring. Similarly, although we found strong evidence of the impact of MPM ability on CEO satisfaction with marketing, we assessed the latter through a single-item measure. Future studies could pursue a more comprehensive consideration of marketing's stature within the firm.

An assumption underpinning this research is that firms with the ability to measure performance do so. We have already outlined the rationale for this assumption. However, notwithstanding the intense pressure on marketers to account for the performance impact of their activities, it is possible that a nontrivial portion of this ability remains latent in some firms. Accordingly, assessing actual MPM in future research would be useful.

Finally, although the focus of this study was on the relationship between MPM ability and firm performance and CEO satisfaction with marketing, it is possible that there are important mediating variables that could also be considered.

As we noted previously, it has been posited that improved learning may be a route through which MPM ability is positively related to improved performance, and as such, further research that incorporates this potentially mediating variable would be worthwhile. In addition, although we expect that measurement ability leads to improved marketing, we do not control for actual marketing performance in this study.

Appendix Measures

MPM Ability

MPM ability. For each of the following marketing activities, please rate your company's ability to measure performance (1 = "poor," and 7 = "excellent").

•Marketing planning

•Branding

•Advertising

•Direct mail/e-mail campaigns

•Telemarketing and contact management

•Web site and Internet presence

•Tradeshows and events

•Promotions

•Sales and marketing collateral

•Public relations and internal communications

•Analyst and stakeholder relationships

•Channel marketing

•Customer relationship management systems

Market research

•Budgeting

Ability to generate a comprehensive set of marketing metrics. Please rate your company's current ability to provide the following MPM information (1 = "poor," and 7 = "excellent").

•Financial indicators of marketing performance •Nonfinancial indicators of marketing performance •Benchmark indicators of marketing performance against plans

•Benchmark indicators of marketing performance against competitors

Outcomes

Primary firm performance outcomes. Please indicate your firm's performance over the last year relative to all other competitors in the primary market that you serve (1 = "very poor," and 7 = "outstanding").

•Sales growth •Market share •Profitability

Secondary firm performance outcomes.

•ROA (COMPUSTAT) •Size-adjusted stock returns (CRSP)

CEO satisfaction with marketing. In your opinion, what is your CEO's evaluation of your company's current marketing performance?

•Excellent •Above average •Average •Below average •Poor

Potential Moderator

Use of a marketing dashboard. Please rate your company's current ability to provide the following MPM information (1 = "poor," and 7 = "excellent").

•High-level "dashboard" of key marketing performance indicators

•Automated reporting of performance from the full range of marketing activities

•Automated "drill-down" information for detailed analysis of individual marketing programs

REFERENCES

- Aaker, David A. and Robert Jacobson (2001), "The Value Relevance of Brand Attitude in High-Technology Markets," *Journal* of Marketing Research, 38 (November), 485–93.
- Adler, Lee (1967), "Systems Approach to Marketing," Harvard Business Review, 45 (May–June), 105–118.
- Ahuja, Gautam and Curba M. Lampert (2001), "Entrepreneurship in the Large Corporation: A Longitudinal Study of How Established Firms Create Breakthrough Inventions," *Strategic Management Journal*, 22 (June), 521–44.
- Aiken, Leona S. and Stephen G. West (1993), *Multiple Regression: Testing and Interpreting Interactions*. Newbury Park, CA: Sage Publications.
- Ailawadi, Kusum L., Donald R. Lehmann, and Scott A. Neslin (2002), "A Product-Market-Based Measure of Brand Equity," Working Paper No. 02-102, Marketing Science Institute.
- Ambler, Tim (2003), *Marketing and the Bottom Line*. London: FT Prentice Hall.

- ——, Flora Kokkinaki, and Stefano Puntoni (2004), "Assessing Marketing Performance: Reasons for Metrics Selection," *Journal of Marketing Management*, 20 (3–4), 475–99.
- Anderson, Paul F. (1982), "Marketing, Strategic Planning, and the Theory of the Firm," *Journal of Marketing*, 46 (Spring), 15–26.
- Armstrong, J. Scott and Terry S. Overton (1977), "Estimating Nonresponse Bias in Mail Surveys," *Journal of Marketing Research*, 14 (August), 396–402.
- Audia, Pino G., Edwin A. Locke, and Ken G. Smith (2000), "The Paradox of Success: An Archival and a Laboratory Study of Strategic Persistence Following Radical Environmental Change," Academy of Management Journal, 43 (October), 837–53.
- Barwise, Patrick and John U. Farley (2003), "Which Marketing Metrics Are Used and Where?" Working Paper No. 03-111, Marketing Science Institute.

—— and —— (2004), "Marketing Metrics: Status of Six Metrics in Five Countries," *European Management Journal*, 22 (June), 257–62.

- Bolton, Ruth N. (2004), "Linking Marketing to Financial Performance and Firm Value," *Journal of Marketing*, 68 (October), 73–75.
- Bonoma, Thomas V. (1989), "Marketing Performance: What Do You Expect?" *Harvard Business Review*, 67 (September), 44-48.
- and Bruce H. Clark (1988), *Marketing Performance Assessment*. Boston: Harvard Business School Press.
- Churchill, Gilbert A. (1979), "A Paradigm for Developing Better Measures of Marketing Constructs," *Journal of Marketing Research*, 16 (February), 64-73.
- (1991), Marketing Research: Methodological Foundations. London: Dryden Press.
- Clark, Bruce H. (1999), "Marketing Performance Measures: History and Interrelationships," Journal of Marketing Management, 15 (November), 711–33.
 - (2000), "Managerial Perceptions of Marketing Performance: Efficiency, Adaptability, Effectiveness and Satisfaction," *Journal of Strategic Marketing*, 8 (March), 3–24.
 - (2001), "A Summary of Thinking on Measuring the Value of Marketing," *Journal of Targeting, Measurement and Analysis for Marketing*, 9 (June), 357–70.
- Cohen, Jacob, Patricia Cohen, Stephen West, and Leona Aiken (2002), Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Curren, Mary T., Valerie S. Folkes, and Joel H. Steckel (1992), "Explanations for Successful and Unsuccessful Marketing Decisions: The Decision Maker's Perspective," *Journal of Marketing*, 56 (April), 18–31.
- Davies, Warnock and Kathleen E. Brush (1997), "High-Tech Industry Marketing: The Elements of a Sophisticated Global Strategy," *Industrial Marketing Management*, 26 (January), 1-84.
- Day, George S. (1992), "Marketing's Contribution to the Strategy Dialogue," Journal of the Academy of Marketing Science, 20 (May), 323–30.
- Donthu, Naveen, Edmund Hershberger, and Talai Osomonbekov (2005), "Benchmarking Marketing Productivity Using Data Envelopment Analysis," *Journal of Business Research*, 58 (November), 1474–82.
- Doyle, Peter (2000), Value-Based Marketing. New York: John Wiley & Sons.
- Fornell, Claes and David F. Larcker (1981), "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error," *Journal of Marketing Research*, 18 (February), 39–50.
- Gerbing, David W. and James C. Anderson (1988), "An Updated Paradigm for Scale Development Incorporating Unidimensionality and Its Assessment," *Journal of Marketing Research*, 25 (May), 187–92.
- Greve, Henrich R. (1998), "Performance, Aspirations and Risky Organizational Change," Administrative Science Quarterly, 43 (March), 58-86.
- Hair, Joseph F., Rolph E. Anderson, Ronald L. Tatham, and William C. Black (1998), *Multivariate Data Analysis*. Upper Saddle River, NJ: Prentice Hall.

- Harrison, Richard J. and David L. Torres (1988), "The Changing of the Guard: Turnover and Structural Change in the Top-Management Positions," Administrative Science Quarterly, 33 (June), 211–33.
- Hill, Joanne and Joel L. Naroff (1984), "The Effect of Location on the Performance of High Technology Firms," *Financial Management*, 13 (January), 27–37.
- Iyer, Bala, Chi-Hyon Lee, and N. Venkatraman (2006), "Managing in a Small World Ecosystem: Lessons from the Software Sector," *California Management Review*, 48 (Spring), 27–47.
- Jaworski, Bernard J. and Ajay K. Kohli (1993), "Market Orientation: Antecedents and Consequences," *Journal of Marketing*, 57 (July), 53–70.
- Kaplan, Robert S. and David P. Norton (1992), "The Balanced Scorecard: Measures That Drive Performance," *Harvard Busi*ness Review, 70 (January–February), 71–80.
- Kokkinaki, Flora and Tim Ambler (1999), "Marketing Performance Assessment: An Exploratory Investigation into Current Practice and the Role of Firm Orientation," Working Paper No. 99-114, Marketing Science Institute.
- Kumar, Nirmayla (2004), Marketing as Strategy: Understanding the CEO's Agenda for Driving Growth and Innovation. Boston: Harvard Business School Press.
- Lages, Luis F., Carmen Lages, and Cristiana R. Lages (2005), "Bringing Export Performance Metrics into Annual Reports: The APEV Scale and the PERFEX Scorecard," *Journal of International Marketing*, 13 (3), 79–104.
- Lehmann, Donald (2004), "Metrics for Making Marketing Matter," Journal of Marketing, 68 (October), 73–75.
- Locke, Edwin and Garry P. Latham (1990), A Theory of Goal Setting and Performance. Englewood Cliffs, NJ: Prentice Hall.
- Lukas, Bryan A., Gregory J. Whitwell, and Peter Doyle (2005), "How Can a Shareholder Value Approach Improve Marketing's Strategic Influence?" *Journal Business Research*, 58 (April), 414–22.
- Malhotra, Naresh K. (1996), Marketing Research: An Applied Orientation. London: Prentice Hall.
- Marketing Science Institute (1998), 1998-2000 Research Priorities: A Guide to MSI Research Programs and Procedures. Cambridge, MA: Marketing Science Institute.
- ——— (2000), 2000-2002 Research Priorities: A Guide to MSI Research Programs and Procedures. Cambridge, MA: Marketing Science Institute.
- —— (2002), 2002-2004 Research Priorities: A Guide to MSI Research Programs and Procedures. Cambridge, MA: Marketing Science Institute.
- (2004), 2004-2006 Research Priorities: A Guide to MSI Research Programs and Procedures. Cambridge, MA: Marketing Science Institute.
- (2006), 2006-2008 Research Priorities: A Guide to MSI Research Programs and Procedures. Cambridge, MA: Marketing Science Institute.
- McGovern, Gail J., David Court, John A. Quelch, and Blair Crawford (2004), "Bringing Customers into the Boardroom," *Harvard Business Review*, 82 (November), 70–80.
- McKee, Daryl O., Rajan P. Varadarajan, and William M. Pride (1989), "Strategic Adaptability and Firm Performance: A Market-Contingent Perspective," *Journal of Marketing*, 53 (July), 21–35.
- McMaster, Mark (2002), "ROI: More Vital Than Ever," Sales & Marketing Management, 154 (1), 51-52.
- Miles, Morgan P., Jeffery G. Covin, and Michael B. Heeley (2000), "The Relationship Between Environmental Dynamism and Small Firm Structure, Strategy, and Performance," *Journal of Marketing Theory and Practice*, 8 (Spring), 63–75.
- Miller, Amy and Jennifer Cioffi (2004), "Measuring Marketing Effectiveness and Value: The Unisys Marketing Dashboard,"

Journal of Advertising Research, 44 (September–October), 237–243.

- Miller, Danny (1994), "What Happens After Success: The Perils of Excellence," *Journal of Management Studies*, 31 (May), 318–35.
- Mitchell, Vincent-Wayne and Gianfranco Walsh (2004), "Gender Differences in German Consumer Decision-Making Styles," *Journal of Consumer Behavior*, 3 (June), 331–46.
- Mohr, Jakki J. and Nader H. Shooshtari (2003), "Introduction to the Special Issue: Marketing of High-Technology Products and Innovations," *Journal of Marketing Theory and Practice*, 11 (Summer), 1–12.

Moorman, Christine and Ronald T. Rust (1999), "The Role of Marketing," Journal of Marketing, 63 (Special Issue), 180–97.

- Morgan, Neil A., Bruce H. Clark, and Rich Gooner (2002), "Marketing Productivity, Marketing Audits, and Systems for Marketing Performance Assessment: Integrating Multiple Perspectives," *Journal of Business Research*, 55 (May), 363–75.
- Narver, John C. and Stanley F. Slater (1990), "The Effect of a Market Orientation on Business Profitability," *Journal of Marketing*, 54 (October), 20–35.
- Nunnally, Jum C. and Ira Bernstein (1994), *Psychometric Theory*. New York: McGraw-Hill.
- Ouchi, William G. (1979), "A Conceptual Framework for the Design of Organizational Control," *Management Science*, 25 (September), 833–48.
- Paine, Katie D. (2004), "Using Dashboard Metrics to Track Communication," *Strategic Communication Management*, 8 (August-September), 30-34.
- Peyrot, Mark, Nancy Childs, Doris Van Doren, and Kathleen Allen (2002), "An Empirically Based Model of Competitor Intelligence Use," *Journal of Business Research*, 55 (September), 747–58.
- Rogers, Beth (2003), "What Gets Measured Gets Better," Journal of Targeting, Measurement and Analysis for Marketing, 12 (January), 20–26.
- Rust, Ronald T., Tim Ambler, Gregory S. Carpenter, V. Kumar, and Rajendra K. Srivastava (2004), "Measuring Marketing Productivity: Current Knowledge and Future Directions," *Journal* of Marketing, 68 (October), 76–90.

—, Katherine N. Lemon, and Valarie A. Zeithaml (2004), "Return on Marketing: Using Customer Equity to Focus Marketing Strategy," *Journal of Marketing*, 68 (January), 109–127.

- , Christine Moorman, and Peter R. Dickson (2002), "Getting Return on Quality: Revenue Expansion, Cost Reduction, or Both?" *Journal of Marketing*, 66 (October), 7–24.
- Schoonhoven, Claudia B. (1981), "Problems with Contingency Theory: Testing Assumptions Hidden Within the Language of Contingency 'Theory," Administrative Science Quarterly, 26 (September), 349–77.
- Sevin, Charles H. (1965), *Marketing Productivity Analysis*. New York: McGraw-Hill.
- Slater, Stanley F. and John C. Narver (1996), "Competitive Strategy in the Market-Focused Business," Journal of Market-Focused Management, 1 (Spring), 159–74.
- Srivastava, Rajendra K. and David J. Reibstein (2005), "Metrics for Linking Marketing to Financial Performance," Report No. 05–200, Marketing Science Institute.
- ——, Tasaduq A. Shervani, and Liam Fahey (1998), "Market-Based Assets and Shareholder Value: A Framework for Analysis," *Journal of Marketing*, 62 (January), 2–18.
- Vorhies, Douglas W. and Neil A. Morgan (2005), "Benchmarking Marketing Capabilities for Sustainable Competitive Advantage," *Journal of Marketing*, 69 (January), 80–94.
- Washburn, Judith H. and Richard E. Plank (2002), "Measuring Brand Equity: An Evaluation of a Consumer-Based Brand Equity Scale," *Journal of Marketing Theory and Practice*, 10 (Winter), 46–62.
- Webster, Frederick E. (1992), "The Changing Role of Marketing in the Corporation," *Journal of Marketing*, 56 (October), 1–17.
 ——, Alan J. Malter, and Shankar Ganesan (2005), "The
- Decline and Dispersion of Marketing Competence," *MIT Sloan Management Review*, 46 (Summer), 35–43.
- Wind, Yoram (2005), "Marketing as an Engine of Business Growth: A Cross-Functional Perspective," Journal of Business Research, 58 (July), 863–73.
- Winer, Russell S. (2000), "What Marketing Metrics Are Used by MSI Members?" Report No. 00-119, Marketing Science Institute.
- Zahra, Shaker A., Duane R. Ireland, and Michael A. Hiltt (2000), "International Expansion by New Venture Firms: International Diversity, Mode of Market Entry, Technological Learning, and Performance," Academy of Management Journal, 43 (October), 925–50.