When Does Metric Use Matter Less? How Firm and Managerial Characteristics Moderate the Relationship between Metric Use and Marketing Mix Performance

Ofer Mintz

Imran S. Currim

August 2014

Revised, November 2014 and February 2015

Forthcoming, European Journal of Marketing

Ofer Mintz (omintz@lsu.edu) is Assistant Professor of Marketing, E. J. Ourso College of Business, Louisiana State University, Baton Rouge, LA 70803. Imran S. Currim (iscurrim@uci.edu) is Chancellor's Professor, Professor of Marketing and Director of the Beall Center for Innovation and Entrepreneurship at the Paul Merage School of Business, University of California, Irvine, CA 92697. The authors thank Mike Hanssens (UCLA), Donna Hoffman (George Washington), and Ivan Jeliazkov, Robin Keller, and Connie Pechmann (all of UCI) for their support and feedback throughout the paper's development. This research was supported by the Dean's office of the Paul Merage School of Business.

When Does Metric Use Matter Less? How Firm and Managerial Characteristics Moderate the Relationship between Metric Use and Marketing Mix Performance

Abstract

- Purpose – In an effort towards building a contingent theory of drivers and consequences of managerial metric use in marketing mix decisions, this paper develops a conceptual framework to test whether the relationship between metric use and marketing mix performance is moderated by firm and managerial characteristics.
- Design/methodology/approach – Based on (i) reviews of the marketing, finance, management, and accounting literatures and homophily, firm resource based, and decision maker based theories, and (ii) 22 managerial interviews, a conceptual model is proposed. It is tested via generalized least squares - seemingly unrelated regression estimation of 1,287 managerial decisions.
- Findings – Results suggest the impact of metric use on marketing mix performance is lower in firms which are more market oriented, larger, and with worse recent business performance; and for marketing and higher level managers; while organizational involvement has a lesser nuanced effect.
- Research limitations/implications – While much is written on the importance of metric use to improve performance, this work is a first step towards understanding which settings are more difficult than others to accomplish this.
- Practical implications – Results allow identification of several conditional managerial strategies to improve marketing mix performance based on metric use.
- Originality/value – This paper contributes to the metric literature since prior research has (i) paid little attention to understanding the relationship between managerial metric use and performance of the marketing mix decision and (ii) not considered how the relationship is moderated by firm and managerial characteristics.

Keywords: Metrics; Managerial Decision-Making; Survey Methodology; Marketing Strategy

Introduction

The relationship between managerial metric use, i.e., the practice of employing metrics for marketing decisions, and the performance of marketing mix decisions is an increasingly important topic for practitioners and academicians (e.g., see MSI 1998-2014 Research Priorities; ISBM 2008-2012 B-To-B Marketing Trend Reports). While research has typically focused on the advantages of employing metrics, with the general consensus assuming that increasing metric use is beneficial to marketing performance (e.g., Ambler, 2003; Farris et al., 2010; Lehmann and Reibstein, 2006; O'Sullivan and Abela, 2007), there have been increasing calls for research to establish empirical links between metric use and marketing mix performance (Pauwels et al., 2009; Stewart, 2009).

Yet, despite the recent growing interest in the field of marketing metrics and performance measurement, the use of metric data in decision making and its performance implications at the marketing mix level has received only scant attention. Mintz and Currim (2013) empirically test the relationship between managerial metric use and marketing mix performance (in contrast to firm performance). However, no article to our knowledge considers (i) whether this relationship is moderated by firm and managerial characteristics, or (ii) whether the moderation effect depends on the types of metrics employed and the types of performance considered (Figure 1). These moderation effects, the central focus of this work, are fundamental building blocks for (a) developing a contingent theory of how managerial metric use affects marketing mix performance, i.e., the conditions in which metric use matters more or less to improve marketing mix performance, and (b) achieving managerial recommendations for how marketing mix performance can be improved through metric use in conditions under which metric use matters less to improve performance. In other words, studying the moderation effects allows individual

firms and managers to identify the settings in which metric use matters less to marketing mix performance, so they can design targeted metric compensation and training programs to increase metric use and improve performance in the settings identified.

The use of more information or being more comprehensive in decisions does not always ensure better performance (Homburg et al., 2012), i.e., despite enabling a more precise and detailed understanding of performance, employing a larger number of metrics can have a downside or less upside in certain conditions. For example, firms develop different business strategies, such as market orientation (Kohli and Jaworski 1990) and greater organizational involvement in decisions (Noble and Mokwa 1999), to advance homophily and similarity in managerial decision making styles across the organization in order to reduce uncertainty associated with outcomes (Finkelstein et al., 2009), which in turn can affect how metric use influences marketing mix performance. Firms also possess different resources based on their size and recent business performance (Kozlenkova et al., 2014; Wernerfelt, 1984), which can impact the allocation of resources needed to understand the efficacy of metrics for marketing decisions and affect how metric use influences marketing mix performance. And managers, because of their functional area and level in the organization, often experience accumulated learning and face information asymmetry in their choices; characteristics that affect decision making styles (Curren et al., 1992; Perkins and Rao, 1990) and hence may affect how metric use influences marketing mix performance. Thus, the possibility that metric use in certain firm and managerial settings will matter less for marketing mix performance is the main motivation of this study.

Based on a two-step process incorporating a multidisciplinary literature review and 22 managerial interviews, we propose that the firm's market orientation, organizational involvement in the decision, recent business performance, and size, and the manager's level in the

organization and functional area moderate the relationship (Figure 1) between metric use and marketing mix performance. Specifically, we consider such firm and managerial moderators of the relationship between five types of metric use (i.e., overall, marketing, financial, general, and specific to a marketing mix) and five types of marketing mix performance (i.e., overall, relative to stated objectives, compared to past, financial, and marketing). While our main focus is on the firm and managerial moderators of the relationship between metric use and marketing mix performance, we also account for the endogeneity of drivers of metric use in our conceptual model. This permits us to develop a contingent empirically tested theory of drivers and consequences of metric use. To test whether our firm and managerial variables moderate the relationship between metric use and marketing mix performance, and enable a substantive contribution over the current metric literature, we employ data from Mintz and Currim (2013) which comprises of 1,287 marketing mix decisions reported by 439 U.S. managers.

The main managerial contribution is the identification of several conditions, described in the results and discussion sections, under which metric use impacts marketing mix performance to lesser (greater) extents, enabling conditional and differential targeting of managerial incentives and training programs aimed at influencing metric use. For example, our results suggest that metric use in larger firms with stronger market orientations and worse recent business performance is associated with less improvement in marketing mix performance. And metric use by marketing and higher level managers involved in marketing-mix decisions is associated with less improvement in marketing mix performance. Consequently, this work suggests that to improve performance of marketing mix decisions, metric-based incentives and training programs should be targeted at such managers operating in these settings.

Conceptual Framework Development and Hypotheses

To develop our conceptual framework proposed in Figure 1, we employed a two-step process. First, we reviewed marketing, finance, strategy, accounting, and organizational behavior literatures, including the various theories from these literatures such as homophily in decision making, resource based view of the firm, and decision maker's based perspective, to develop a preliminary conceptual model with a particular focus on potential moderators of the relationship between metric use and marketing mix performance. This literature review across the different business disciplines indicated that (a) firm strategy, firm characteristics, and managerial characteristics would be particularly important moderators (e.g., Finkelstein et al., 2009; Perkins and Rao, 1990; Vorhies and Morgan, 2005); and (b) metric use is endogenously driven and thus needed to be controlled for in our empirical test (e.g., Mintz and Currim, 2013). Therefore, to build a comprehensive framework of the antecedents and consequences of marketing metric use (the end goal of our programmatic research), we decided to begin by controlling for the full set of drivers of metric use employed by Mintz and Currim (2013), i.e., firm strategy, market orientation, type of marketing mix decision, and managerial, firm, and environmental characteristics.

Second, we conducted 22 qualitative interviews with managers from a range of functional areas (i.e., marketing, finance, operations, etc.), levels (i.e., marketing managers, CMOs, CEOs, etc.), firms (i.e., large and small, innovators and laggards, B2B and B2C, etc.), and industries (i.e., concentrated and fragmented, growing and declining, hi-tech, manufacturing, and services, etc.).[1] The goals of these interviews were to understand (i) why managers used metrics for their marketing decisions; (ii) whether metric use was related to the performance of marketing mix decisions; and (iii) whether there were firm or managerial settings in which metric use had a

greater (or lesser) effect on marketing mix performance (i.e., whether there were moderators of the relationship described in (ii)). In addition, further objectives were to (iv) gain a managerial perspective for why these settings have a greater or lesser impact; and (v) refine our conceptual model (originally developed based on a multidisciplinary literature review).

There were two main results from the qualitative interviews. First, when asked about why metrics were viewed to be more or less important to determining the performance of a marketing mix decision (or iii above), managers responded with the firm and managerial based reasons included in Figure 1 as moderators of the relationship between metric use and performance. For example, one manager said his smaller firm size meant he "didn't always have the information needed to make quantitative decisions." Second, when asked about why managers used metrics for their marketing decisions (or i above), they responded with the firm, managerial and environmental reasons included in Figure 1 as controls of metric use. The results foremost (a) provided convergent validity for our conceptual model. Further, they (b) were helpful to build rationale for the hypothesized moderation effects of the six firm strategy, firm characteristics, and managerial characteristics variables, i.e., market orientation, organizational involvement, recent business performance, firm size, functional area, and level of manager in the organization, on the relationship between metric use and marketing mix performance. In other words, the theories from our multidisciplinary literature review such as homophily, resource based view of the firm, and decision maker based perspectives and the findings from the qualitative managerial interviews were employed jointly to (a) develop the conceptual model on moderators, (b) construct hypotheses on moderating effects, and (c) design our online questionnaire.

The two stages of conceptual framework development led us to focus on the improvements of subjective performance of the marketing mix decision, rather than objective

firm performance based measures as our primary dependent variable, because our intended unit of analysis is a manager making a marketing mix decision in a particular business unit of a firm. In contrast, firm performance (e.g., based on sales, stock market returns, or firm value from COMPUSTAT data) is based on the combined performance across multiple business units, several concurrent marketing mix decisions, and other contemporaneous non-marketing decisions (R&D, layoffs, etc.). Consequently, we focus our discussion on self-reported measurements of metric use and the resulting subjective performance of a marketing mix decision at the manager and business unit level employing multiple scale items proposed in previous studies (Jaworski and Kohli 1993; Moorman and Rust 1999; Verhoef and Leeflang 2009). Subjective judgments are not arbitrary; there is extensive precedence in the decision theory literature which relies on subjective self-report based judgments from managers to improve the quality of managerial decision making (Keeney and Raiffa, 1976; Clemen and Reilly, 2014; Edwards et al., 2007). Decision theorists have developed methods for eliciting such judgments, and such judgments are relied on because managers are professionals with several years of experience in making and assessing multiple decisions. Nonetheless, we discuss the potential limitations of subjective judgments in the discussion section. [2]

In addition, based on the conceptual framework development, when conducting hypothesis testing on whether the six firm and managerial variables moderate the relationship between metric use and overall performance, we consider (a) four types of metrics (classified by a 2 x 2 matrix) in addition to total metrics and (b) four marketing mix performance measures in addition to overall performance. We classify the metrics based on Mintz and Currim (2013) as being either (i) marketing or (ii) financial metrics, with marketing metrics defined as based on a customer or marketing mind set, and financial metrics defined as either monetary based, based

on financial ratios, or readily converted to monetary outcomes; and (iii) general or (iv) specific to a marketing mix metrics, with general metrics defined as metrics that apply to a variety of marketing mix decisions, and specific metrics defined as metrics largely suited to certain marketing mix decisions.[3] We classify marketing mix performance based on measures from Jaworski and Kohli (1993), Moorman and Rust (1999), and Verhoef and Leeflang (2009) as (i) performance relative to stated objectives, (ii) compared to past performance, (iii) financial performance, which is based on profitability, sales, and ROI, and (iv) marketing performance, which is based on customer satisfaction, loyalty, and market share. However, for ease of readability, we focus our hypotheses section solely on total metric use and overall performance.

Relationship between Metric Use and Marketing Performance

According to constructive choice theory, managers make decisions by trading-off accuracy and effort (Bettman et al., 1998). The more effort managers expend to consider additional metrics, the better the expected marketing performance since managers are employing additional statistics or decision aids to improve the accuracy and reduce the uncertainty inherent in their decisions. Although consideration of additional metrics may also lead to information overload problems, which in turn may result in worse marketing performance since managers may not assess the most meaningful metrics (Gigerenzer and Goldstein, 1996; Ittner and Larcker, 2003), employing more metrics in marketing mix decisions is generally expected to increase accountability (Verhoef and Leeflang, 2009), lead managers to justify their decisions based on risks and benefits (Farris et al., 2010), and indicate that managers are performing more comprehensive, higher quality decision analysis (Abramson et al., 2005) that should result in better performance (O'Sullivan et al., 2009). Hence, we expect:

H1. Increasing metric use in marketing mix decisions will be associated with improved marketing mix performance.

Moderation Effects on the Relationship between Metric Use and Marketing Mix Performance

Firm Strategy

Literature in organizational behavior and strategy theorizes that firm strategy results in homophily, i.e., managers across the firm employ similar decision making and evaluative processes to benchmark and monitor decisions, in order to reduce uncertainty associated with outcomes (Finkelstein et al., 2009). The resulting similarity in decision making explains the extent to which metric use reduces the uncertainty in marketing mix decisions and hence influences a manager's assessment of marketing mix performance. Firm strategy is defined and operationalized based on Mintz and Currim (2013), i.e., three variables each studied extensively in the marketing strategy literature: (i) market orientation (e.g., Kohli and Jaworski, 1990), (ii) strategic orientation (e.g., Olson et al., 2005), and (iii) organizational involvement in managerial decision making (e.g., Noble and Mokwa, 1999). Since strategic orientation was not expected to moderate the relationship between metric use and marketing performance based on our multidisciplinary literature review, qualitative interviews, and initial empirical analysis, the remaining two variables, market orientation and organizational involvement are employed as the hypothesized firm strategy variables. Market orientation describes the extent to which a firm's strategy is outward (i.e., customer) or inward (i.e., product) focused while organizational involvement describes the nature of managers' implementation of the strategy (i.e., collaborative or individualistic).

Market Orientation. Market oriented firms have a strong ideology (Kohli and Jaworski, 1990) that creates greater homophily in decision making and reduces the uncertainty managers

face when making marketing mix decisions (Fang et al., 2014; Morgan et al., 2005). If the firm does not have a strong market orientation ideology, performance of marketing mix decisions is expected to be more data- than ideologically-based to reduce the uncertainty associated with outcomes; whereas, if the firm does have a strong market orientation ideology, performance of the marketing mix decision is expected to be more ideologically- than data-based. For example, consider a firm with a strong market orientation or customer focus. Market orientation or customer focus is the fundamental strategy that structures manager decision making norms (Gounaris et al., 2010). By contrast, in firms with less market orientation or customer focus ideology, managers are expected to rely more on metrics to achieve better marketing mix performance, because in the absence of a strong ideology, data enables reduction of uncertainty in the marketing mix decision and assessment of performance through benchmarking and monitoring. Hence, we expect market orientation to have a negative moderating effect on the association between metric use and marketing mix performance.

H2. The impact of metric use on marketing mix performance will be lower for firms with stronger market orientation.

Organizational Involvement in the Marketing Mix Decision. The greater the involvement of managers across functions (marketing, finance, accounting, etc.) in the marketing mix decision, the greater the extent to which metric use is expected to improve marketing mix performance because greater metric use is expected to increase agreement among cross-functional members, reduce uncertainty, and increase decision quality and performance. Managers across different functions will vary on their primary goals, objectives, and metrics of interest (Merlo, 2011; Noble and Mokwa, 1999); consequently, greater metric use allows managers from different functional areas to “speak a common language” and have greater

homophily in decision making to reduce the uncertainty of whether they are making a quality marketing mix decision, in comparison to when managers from only one function are involved in the marketing mix decision and have less need for "speaking a common language" (Wind, 2008). Further, in order to build trust, commitment, and homophily (Palmatier et al., 2007) between organizational groups (finance, accounting, etc.) involved in the marketing mix decision, marketers will need to base their marketing mix performance assessments on metrics to a greater extent than if these different organizational groups were not involved in the marketing mix decision. Hence, we expect organizational involvement in the marketing mix decision to have a positive moderating effect on the association between metric use and marketing mix performance.

H3: The impact of metric use on marketing mix performance will be lower when there is less organizational involvement in marketing mix decisions.

Firm Characteristics

The resource based theory of the firm (Kozlenkova et al., 2014; Wernerfelt, 1984) proposes that a firm's characteristics and its history influence managerial decisions and firm performance. Hence, the resource based theory of the firm can help explain why differences in firm characteristics are likely to moderate the relationship between metric use and marketing mix performance. Two firm characteristics are considered: (a) recent business performance and (b) firm size.

Recent Business Performance. Business processes and recent performance are likely to determine the allocation and efficacy of resources (Lee and Grewal, 2004). For instance, when recent business performance falls below expected levels, marketing is more likely to lose valuable resource funding (Vorhies and Morgan, 2005) and the firm is more likely to undertake

riskier strategic investments involving greater uncertainty in an effort to produce greater rewards (Bromiley, 1991). Thus, when new risky strategic investments are employed, the measurements and information inherent in the current metrics employed by the firm for less risky investments in the marketing mix become less relevant. Consequently, current metrics employed as decision aids will have less influence on marketing mix performance. In contrast, when recent business performance meets expected levels, firms are more likely to continue with the marketing mix decisions that led to good business performance (Vorhies and Morgan, 2005) even though they may have little room for improvement and so may suffer decreasing returns to scale from the use of metrics. Consequently, managers can rely on current metrics as decision aids to achieve better marketing mix performance. Therefore, we expect recent business performance to have a positive moderation effect on the association between metric use and marketing mix performance.

H4: The impact of metric use on marketing mix performance will be lower for firms with worse recent business performance.

Firm Size. On the one hand, larger firms need more structured communication and may attain greater benefits from employing more metrics than their smaller counterparts (Jaworski, 1988). On the other hand, smaller firms operate in more uncertain environments because the performance of their marketing mix decisions is impacted to a greater extent by decisions of larger competitors (Blattberg et al., 1995). Consequently, there may be less persistence or more variation in their marketing mix decisions and more uncertainty in the performance of their marketing mix decisions, leading smaller firms to deploy proportionally more resources in order to enhance their decision making capabilities (Menon et al., 1999). In contrast, larger firms have less uncertainty than smaller firms in the performance of marketing mix decisions since they

possess more established brands with larger market shares that are less impacted by the efforts of smaller competitor firms. Thus, even though they may have a greater need for more structured communication and may possess greater resources to produce more metrics, we expect that there is a lower likelihood for managers to rely on metrics to assess marketing mix performance; consequently, a lower likelihood for managers to employ alternative or new metrics that could be valuable to marketing mix performance (Vorhies and Morgan, 2005). Hence, we expect firm size to have a negative moderating effect on the association between metric use and marketing mix performance.

H5: The impact of metric use on marketing mix performance will be lower in larger firms.

Managerial Characteristics

The decision maker based theory suggests that characteristics of managers influence a manager's resources and other drivers and assessment of decisions (Curren et al., 1992; Perkins and Rao, 1990), which are likely to moderate the relationship between metric use and marketing mix performance. Two managerial characteristics are considered: (a) functional area (marketing vs. non-marketing) and (b) level in the organization (VP and above vs. below VP).

Functional Area. Marketing managers are expected to have greater knowledge and experience with marketing mix decisions relative to non-marketing managers. They have made more marketing decisions in the past, resulting in accumulated experiences which may substitute for the need to employ metrics as decision aids (Abramson et al., 2005; Curren et al., 1992) to reduce decision-based outcome uncertainties (Perkins and Rao, 1990). In contrast, non-marketing managers have less knowledge and experience with marketing decisions, and need to employ metrics to reduce the uncertainty in marketing mix performance (Perkins and Rao, 1990). In addition, non-marketing managers have more difficulty than marketing managers in

understanding marketing's value (Day and Fahey, 1988; Rust et al., 2004). Thus, by employing metrics that provide market and financial-based benchmarks to assist evaluation of marketing activities, non-marketing managers will have more opportunities to monitor performance to help planned marketing mix activities produce desired results (Jaworski, 1988; O'Sullivan and Abela, 2007). Therefore, we expect that when non-marketing managers employ metrics in their marketing decisions, they will have better marketing mix performance outcomes than marketing managers. In other words, we expect a negative moderating effect on the association between metric use and marketing mix performance for marketing functional area managers.

H6: The impact of metric use on marketing mix performance will be lower for marketing managers.

Level in the Organization. Managers at lower levels in the organization (e.g., lower than VP), i.e., directors of marketing, and marketing and product managers, are more likely to be directly responsible for making marketing mix decisions than higher level managers (e.g., VP and above), i.e., CMOs, CFOs, and CEOs. As a result, there is information asymmetry between lower and higher level managers (Homburg et al., 2012), where lower level managers have a greater knowledge of which information or metrics are most valuable to be employed in a marketing mix decision (Eisenhardt, 1989; Stathakopoulos, 1998) and are more likely to employ such metrics to judge marketing mix performance. In contrast, higher-level managers, are more likely responsible for the entire marketing or firm spending effort rather than individual marketing mix decisions (Lehmann and Reibstein, 2006). However, when higher level managers are involved in individual marketing mix decisions, they will be less likely to employ metrics to judge the performance of individual marketing mix decisions (Gupta and Zeithaml, 2006; Menon et al., 1999). Thus, we expect that when lower-level managers employ metrics in their marketing

mix decisions, they will achieve greater perceived marketing mix performance than higher-level managers. In other words, we expect organizational level to have a negative moderating effect on the association between metric use and marketing mix performance.

H7: The impact of metric use on marketing mix performance will be lower for higher level managers in the organization.

Data

To test our hypotheses we analyze the data from Mintz and Currim (2013), which consists of 1,287 marketing decisions reported by 439 U.S. managers. The majority of the managers (84%) and decisions (81%) were from LinkedIn professional organizations, which posted announcements and promoted the survey on their webpages, with the remaining managers from MBA alumni of a U.S. west-coast university.

The online questionnaire consisted of two sections. First, managers indicated which of 12 general and 3 specific marketing metrics and 12 general and 3 specific financial metrics they used for each of 10 types of marketing-mix decisions they recently undertook. Next, managers assessed the performance of each marketing-mix decision based on 8 operational measures and indicated the level of organizational involvement for each decision. The metrics listed were based on Ambler (2003), Ambler et al. (2004), Barwise and Farley (2004), Du et al. (2007), Farris et al. (2010), Hoffman and Fodor (2010), Lehmann and Reibstein (2006), Pauwels et al. (2009), and Srinivasan et al. (2010) and the measures for marketing mix-performance were based on Jaworski and Kohli (1993), Moorman and Rust (1999), and Verhoef and Leeflang (2009). Second, managers answered questions on the remaining drivers and moderators of metric use and marketing mix performance. The measure(s) for (i) market orientation is based on Deshpande and Farley (1998), Jaworski and Kohli (1993), and Verhoef and Leeflang (2009); (ii)

organizational involvement is from Noble and Mokwa (1999); (iii) recent business performance is adapted from Jaworski and Kohli (1993); (iv) firm size is taken from Verhoef and Leeflang (2009); and (v) functional area and (vi) level in the organization are from Finkelstein et al. (2009).

Analyses of the data show no indication of multicollinearity and heteroscedasticity.[4] Exploratory factor analyses indicated that the factor loadings for constructs were all above .7, while coefficient alphas for all of the moderator variables are greater than .7. Common method bias is not detected based on the Lindell and Whitney (2001) test where we adjusted the correlation matrix by the lowest positive pairwise correlation value to create a partial-correlation adjusted matrix, and no resulting pairwise correlation lost significance. In addition, non-response bias is not found, based on the Armstrong and Overton (1977) test to compare early and late respondents scores on the included constructs.

The sample consists of good variation on metric use (mean = 6.8, s.d. = 4.6) and marketing mix performance (mean = 4.9, s.d. = 1.1). The sample also has good variation on the moderators; market orientation (mean = 5.0, s.d.= 1.1); organizational involvement in the marketing mix decision (mean = 3.8, s.d. = 1.7); recent business performance (mean = 5.3, s.d. = 1.3); company size (mean = 9,185 employees, median = 125 employees which indicates a good mix of large and small firms); functional area (54% marketing managers vs. 46% non-marketing); and managerial level in the organization (58% VP and above vs. 42% below VP).

Model

Following the extended conceptual framework (Figure 1) we specify a model comprised of two sub-models:

(1) the performance model, wherein performance is based on a main effect for metric use, main effects of the six firm and managerial moderators to control for each's direct impact on performance, and interaction effects of metric use with the six hypothesized firm and managerial moderators;

(2) the metric use model, which controls for the endogeneity of metric use by including main effects for the six categories of antecedent variables, including recent business performance, listed in Mintz and Currim (MC) (2013). We formulate the two sub-models as follows:

$$
\begin{aligned}
(1)\quad \mathrm{PERF} = \underbrace{\beta_0 + \beta_1\ \mathrm{METUSE}}_{\text{MC (2013)}} &+ \beta_2\ \mathrm{MKTOR} + \beta_3\ \mathrm{ORGINV} + \beta_4\ \mathrm{BUSPERF} + \beta_5\ \mathrm{SIZE} \\
&+ \beta_6\ \mathrm{MKT} + \beta_7\ \mathrm{MGRLVL} + \beta_8\ \mathrm{METUSE} * \mathrm{MKTOR} \\
&+ \beta_9\ \mathrm{METUSE} * \mathrm{ORGINV} + \beta_{10}\ \mathrm{METUSE} * \mathrm{BUSPERF} \\
&+ \beta_{11}\ \mathrm{METUSE} * \mathrm{SIZE} + \beta_{12}\ \mathrm{METUSE} * \mathrm{MKT} \\
&+ \underbrace{\beta_{13}\ \mathrm{METUSE} * \mathrm{MGRLVL}}_{\text{This paper}} + \varepsilon_{\mathrm{PERF}}
\end{aligned}
$$

where

$$
\begin{aligned}
(2)\quad \mathrm{METUSE} = \omega_0 &+ \sum_{p=1}^{5} \omega_p \mathrm{FS}_p + \sum_{d=1}^{2} \omega_{d+5} \mathrm{MO}_d + \sum_{g=1}^{4} \omega_{g+7} \mathrm{MC}_g + \sum_{q=1}^{6} \omega_{q+11} \mathrm{FC}_q \\
&+ \sum_{c=1}^{4} \omega_{c+17} \mathrm{EC}_c + \sum_{i=1}^{9} \omega_{i+21} \mathrm{MA}_i + \varepsilon_{\mathrm{METUSE}}
\end{aligned}
$$

The definitions for the variables in equation 1 are as follows: PERF is performance of the marketing mix decision, based on a firm's stated marketing, financial, and overall outcomes, relative to a firm's stated objectives and to similar prior decisions (Jaworski and Kohli, 1993; Moorman and Rust, 1999; Verhoef and Leeflang, 2009); METUSE is the number of metrics used in a marketing mix decision; i.e., the number of metrics a manager employed as a decision aid when making the marketing mix decision. MKTOR is based on the extent to which a firm measures, monitors, and communicates customer needs and experiences throughout the firm and whether the firm's strategy is based on this information (Deshpande and Farley, 1998; Jaworski and Kohli, 1993; Verhoef and Leeflang, 2009); ORGINV is the extent to which a firm's marketing-mix decision or action is based on involvement of a wide range of managers across

functions (Noble and Mokwa, 1999); BUSPERF is a business unit's overall performance last year, relative to its own expectations and its competitors' performance (Jaworski and Kohli, 1993); SIZE is the natural logarithm of the number of full-time employees in a firm (Verhoef and Leeflang, 2009); MKT is whether a manager works in the marketing department; and MGRLVL is whether a manager is VP-level or higher (e.g., SVP, C-level or Owner) (Finkelstein et al., 2009).

For equation 2, FS_p are five firm strategy variables (analyzers, low-cost defenders, and differentiated defenders each relative to prospectors which is the base level, market orientation, and organizational involvement), MO_d are two metric orientation measures (metric compensation and training), MC_g are four managerial characteristics (functional area, level in organization, managerial experience, and quantitative background), FC_q are six firm characteristics (company size, type of ownership, CMO presence, recent business performance, and B2C vs. B2B and services vs. goods orientation), EC_c are four environmental characteristics (product life cycle, industry concentration, market growth, and market turbulence), and MA_i are nine marketing activities (traditional and internet advertising, direct to consumer, social media, pricing, price promotions, new product development, sales force, and distribution) relative to PR/sponsorship which is the base level. For further details on the definitions, operational measures, and sources of all the variables in equations 1 and 2, we refer the reader to Online Appendix A. The list of metrics considered is provided in Online Appendix B.

In addition to the moderating variables proposed in equation 1, we explored all other firm, managerial, and environmental variables proposed by Mintz and Currim (2013). However, the other variables were not found to moderate the relationship between METUSE and PERF. We estimate the model employing generalized least squares (GLS) estimation to allow for

unequal variances of observations and seemingly unrelated regression (SUR) to jointly estimate the two equations because errors in equations 1 and 2 could be contemporaneously correlated. To allow comparisons of the size effects of the variables, we standardize the coefficients in equations 1 and 2. We account for potential dependence of a single manager making multiple marketing mix decisions by the inclusion of managerial characteristics.

We ask managers to report on metrics employed to make a marketing mix decision, i.e., before the marketing mix performance is observed; consequently, metric use is not modeled to depend on marketing mix performance, although metric use is allowed to depend on recent business performance, i.e., recent performance of the firm, recognizing that the recent performance of the firm, as hypothesized, may encourage or discourage managers to employ metrics to make and evaluate future marketing mix decisions. Over the course of our 22 interviews which helped develop the conceptual framework, managers indicated that their metric use was not driven by marketing mix performance or the outcome of their decisions, but rather it was the performance or the outcome of their decisions that was driven by metric use.

In addition, we consider whether the effects of the moderators depend on (i) the type of metrics employed; i.e., general and specific, in addition to marketing, financial, and total metrics; and (ii) the type of performance assessed; i.e., relative to the firm's stated objectives, compared to past, financial, and marketing, in addition to overall performance. Our main goal of decomposing types of metrics employed and types of performance assessed is to gain insights into whether the results of the moderators of the relationship between metric use and overall performance are uniform across all types of metrics and performance or whether the moderation effect is contingent on certain types of metrics and performance.

We employ both separate and joint estimations similar to the aforementioned econometric model to test each type of metric and performance assessed. For type of metric employed, for what we label as separate estimation, each type of metric employed is substituted in place of total metric use in equations 1 and 2; see equations 3 and 4 for marketing metrics and equations 5 and 6 for financial metrics in Online Appendix C. For what we label as joint estimation, both marketing *and* financial [general *and* specific] metric use are substituted in place of total metric use, resulting in one equation for equation 1 with marketing *and* financial [general *and* specific] metric use moderating effects, and two equations for equation 2 for drivers of marketing and financial [general and specific] metric use (equations 7, 8, and 9 in Online Appendix C). The system of three equations is then estimated jointly by SUR-GLS. For type of performance assessed, for separate estimation, each marketing mix performance measure is substituted in place of overall marketing mix performance in equation 1, while equation 2 remains the same as originally specified (equations 10 and 11 in Online Appendix C for one of four performance measures); and the estimation of the SUR-GLS system of the two equations is conducted one performance measure at a time. For joint estimation, equation 1 will now comprise of four equations, one for each marketing mix performance measure, and one equation 2, same as originally specified, and all five equations are estimated by SUR-GLS jointly (equations 12-16 in Online Appendix C).

Empirical Test

Results of Hypothesis Testing

Table 1 presents the results of our empirical analysis; it includes the results of the (i) main effects of metric use and the six firm and managerial characteristics on marketing mix performance, (ii) interaction effects of metric use and the six hypothesized interactions on marketing mix

performance, and (iii) controls for drivers of metric use. Note, negative (positive) interaction effects show that increasing metric use is associated with less (greater) improvement of marketing mix performance in that firm or managerial setting.

As hypothesized in H1, we find increasing metric use is associated with improved marketing mix performance. This finding mirrors Mintz and Currim (2013)'s results. For H2-H7, we find the impact of metric use on overall marketing mix performance is lower (equation 1 in Table 1) for (i) stronger market orientations ($p<.01$), (ii) larger firms ($p<.05$), (iii) marketing managers ($p<.05$), and (iv) higher level managers ($p<.01$). Consequently, H2, H5, H6, and H7 are supported. Organizational involvement in the marketing mix decision and recent business performance are not found to moderate the relationship between metric use and overall marketing mix performance; consequently, H3 and H4 are not supported.

The results support our theory that (a) for firms with strong market orientation ideology, performance of marketing mix decisions is more ideologically- than data-based, and hence metric use is less impactful relative to firms with weaker market orientations; (b) smaller firms benefit more than larger ones in terms of marketing mix performance from employing metrics; (c) marketing managers have greater experience with marketing decisions than non-marketing managers thus metric use is less helpful for their decisions; and (d) senior executives because of information asymmetries rely less on metrics to judge the performance of individual marketing mix decisions relative to lower level managers.

Analysis of Moderators on the Relationship between Types of Metrics Use and Types of Performance

Next, we investigate whether H3 and H4 are supported for certain types of metrics (marketing or financial, general or specific) and performance (relative to objectives, compared to past,

financial, or marketing). There were three interesting findings. First, when we consider types of metrics, i.e., marketing and financial metrics (Table 2), and general and specific metrics (Table 3), the analysis reveals a significant moderation effect of recent business performance on the relationship between financial and specific metric use and overall performance (both $p<.05$) that is directionally consistent with H4, which was insignificant with total metric use. Consequently, H4 is now supported for financial and specific metric use, indicating that the impact of financial and specific metric use on marketing mix performance is lower for firms with worse recent business performance.

Second, when we consider types of performance (Table 4), the moderating effect of organizational involvement (H3), which was insignificant with overall marketing mix performance, is now found to be significant for financial performance ($p<.05$); while, the moderation effect of recent business performance (H4), which was also insignificant with overall marketing mix performance, is found to be significant on compared to past performance ($p<.05$). Consequently, H3 is now supported for financial performance and H4 is now supported for compared to past performance.

Third, when we considered types of metrics and types of performance (see Online Appendix E), H3 is supported for (a) financial metric use and financial and marketing performance (both $p<.05$) and (b) general metric use and financial performance ($p<.05$). In addition, H4 is supported for (a) financial metric use and relative to stated objectives ($p<.05$), compared to past ($p<.01$), and marketing performance measures ($p<.05$), (b) general metrics and compared to past performance ($p<.05$), and (c) specific metric use and compared to past performance and marketing performance (both $p<.05$). Consequently, while H3 and H4 were not

supported for overall metric use and overall performance, we find support for H3 and H4 for certain types of metrics and performance measures.

The results reported in Tables 2-4 and summarized in Table 5 further strengthen the results of our original hypotheses that tested the moderators of total metric use and overall performance by finding that (a) when there is less organizational involvement in a marketing mix decision, managers do not need to employ as many metrics to help "speak a common language" to reduce uncertainty; and (b) with worse recent business performance, firms are less able to rely on current metrics as decision aids to judge new marketing mix decisions, hence those metrics are less impactful on marketing mix performance.

Analysis of Non-Linearity of Moderators on the Relationship between Metric Use and Performance

In addition, we also test whether there is non-linearity, i.e., increasing or decreasing returns of scale, in each moderator's relationship between metric use and performance by including additional quadratic terms in each of 5 additional models, 1 for each type of metric. We find H4**,** the relationship between increasing recent business and metric use, to have decreasing returns of scale for total, marketing, and general metrics, while all remaining squared terms for the 5 other moderators are insignificant. Therefore, we conclude non-linearity is not found in each moderator's relationship between metric use and performance other than the saturation point for the use additional total, marketing, and general metrics in marketing decisions for firms with better recent business performance just noted.

Discussion

Previous studies increasingly call for research establishing empirical links between metric use and performance (Pauwels et al. 2009; Stewart 2009). Yet, empirical research on the topic at the

marketing mix level has only received scant attention. Therefore, in this work we attempt to develop a contingent theory of consequences of metric use on marketing mix performance which has not been accomplished heretofore. We ask whether the effect of managerial metric use on the performance of marketing mix decisions is invariant across the settings in which metrics are employed or whether it is dependent on the setting, i.e., the characteristics of firms and managers employing the metrics. Constructive choice theory (Bettman et al., 1998) suggests that managers who expend more effort to employ additional metrics will improve their marketing mix decisions accuracy and performance. However, managers who employ additional metrics in their decisions may also overlook more valuable or overemphasize less relevant information, which could potentially generate negative information overload problems that lead to lower performing decisions. The implications of our conceptual model displayed in Figure 1 and findings summarized in Table 5 are that knowing when metric use will matter more or less to firm and management performance would be useful for managers and researchers.

In general, we find that increasing use of metrics is associated with improved marketing performance, but the magnitude of its effect is moderated by the firm's strategy, other firm characteristics, and the characteristics of the manager. Our theoretical contribution is that we develop a conceptual framework that considers firm and managerial moderators of the relationship between metric use and performance of marketing mix decisions. The empirical analysis supports our theoretical model and shows that (1) homophily theory (Finkelstein et al., 2009) helps us understand why the impact of metric use on performance is lower for firms with stronger market orientation and less organizational involvement in marketing mix decisions; (2) resource based theory of the firm (Kozlenkova et al., 2014; Wernerfelt, 1984) is valuable to explain why the impact of metric use on performance is lower for larger firms with worse

business performance; and (3) decision maker based theory (Curren et al., 1992; Perkins and Rao, 1990) provides a rationale to understand why the impact of metric use on performance is lower for marketing and higher level managers. This provides a substantive contribution to the metric literature since prior research has generally focused on the development of metrics (e.g., Farris et al., 2010) or the linking of marketing efforts with performance metrics (e.g., Srinivasan and Hanssens, 2009), however paid little attention to understanding the relationship between managerial metric use and performance of the marketing mix decision (in contrast to firm performance).

The empirical results support current academic and practitioner emphasis for managerial metric use in their marketing decisions and generate managerial implications for the best opportunities to improve metric use to increase performance of marketing mix decisions. For example, while much is written on the importance of metric use to improve performance (e.g., Farris et al., 2010; O'Sullivan et al., 2009), little is known about which settings are best to accomplish this. The analysis suggests that the best settings to increase total metric use to improve overall performance are marketing decisions involving non-marketing and lower-level managers operating in smaller and weaker market oriented firms. Managers can increase overall performance of marketing mix decisions involving such managers and firms by designing metric based training and compensation programs aimed at improving overall metric use. Much is also written on the importance of (1) marketing metrics (e.g., customer satisfaction) to improve financial performance and (2) financial metric use (e.g., ROI) to improve marketing performance. However, again, little is known about which settings are more suited to achieving this goal than others. The analysis suggests that the settings to best achieve (1) is in smaller firms, and non-marketing and lower-level managers, and for (2) is in firms with better recent

business performance and greater organizational involvement with non-marketing and lower-level managers.

The main limitation of this work is that the performance measures are based on subjective rather than objective evaluations. While using objective performance is typically preferred, the focus of our research was to try to link managerial metric use in a marketing mix decision with its subsequent performance; thus, subjective evaluations were required since objective performance data was unavailable for each managerial decision at the marketing mix level. However, the advantage of our multiple subjective measures for types of performance is that they offer more flexibility in testing the hypotheses, i.e., if certain hypotheses are not supported by certain measures (or certain types of performance), the hypotheses can be supported by other measures (or other types of performance) as we observe for H3 and H4. A second limitation is the hypothesis that a lower level manager is more likely to gain more from use of metrics (H7) applies to directors of marketing or marketing or product managers (lower level) relative to higher level (VP and above), and may not apply if the lower level person was lower than a director or manager, i.e., a marketing assistant or marketing communications assistant manager who do not have final decision making authority.

A further research topic that can build on our contingent framework of how metric use impacts marketing mix performance is to investigate the impact of employing individual rather than types of metric on marketing mix performance. In other words, another direction for future research is to determine what is the "right metric for the right setting," i.e., the right metric for the right decision, manager, firm, industry, etc. For example, some of the metrics we considered and listed may be more appealing than others, and if there is an association between metric appeal and any mediating variable, additional useful insights might be generated. While previous

research has demonstrated that there is no single preferred "silver metric" for firms (e.g., Ambler and Roberts, 2008), one can investigate whether certain bundles of metrics improve marketing mix performance. This idea can be extended to investigate whether the same bundles of metrics have the same impact on different marketing mix variables or different types of performance. Second, our work can be extended to investigate whether our results hold for managers operating in different countries. Third, the fact that metric use is less effective in more customer oriented organizations (H2) is intriguing. Metric use leads to better performance. Customer orientation leads to better performance. But customer orientation leads to a lower effectiveness of metric use. At a minimum this leads us to speculate why it is so. Is it due to a clash of cultures (more emphatic environments are less able to harness subjective data)? Is it due to customer oriented firms having less to learn and therefore facing a lower expected new present value of perfect information? Or is there another explanation? We hope such future research will build on our efforts.

References

Abramson, C., Currim, I.S. and Sarin, R. (2005), "An experimental investigation of the impact of information on competitive decision making", *Management Science*, Vol. 51 No. 2, pp. 195–207.

Ambler, T. (2003), *Marketing and the bottom line: The marketing metrics to pump up cash flow*, FT Prentice Hall, London, 2nded.

Ambler, T., Kokkinaki, F. and Puntoni, S. (2004), "Assessing marketing performance: Reasons for metrics selection", *Journal of Marketing Management*, Vol. 20 No. 3, pp. 475–498.

Ambler, T. and Roberts, J.H. (2008), "Assessing marketing performance: don't settle for a silver metric", *Journal of Marketing Management*, Vol. 24 No. 7-8, pp. 733–750.

Armstrong, J.S. and Overton, T.S. (1977), "Estimating nonresponse bias in mail surveys", *Journal of Marketing Research*, Vol. 14 No. 3, pp. 396–402.

Barwise, P. and Farley, J.U. (2004), "Marketing metrics: Status of six metrics in five countries", *European Management Journal*, Vol. 22 No. 3, pp. 257–262.

Bettman, J.R., Luce, M.F. and Payne, J.W. (1998), "Constructive consumer choice processes", *Journal of Consumer Research*, Vol. 25 No. 3, pp. 187–217.

Blattberg, R.C., Briesch, R. and Fox, E.J. (1995), "How promotions work", *Marketing Science*, Vol. 14 No. 3, Part 2 of 2: Special Issue on Empirical Generalizations in Marketing, pp. G122–G132.

Bromiley, P. (1991), "Testing a casual model of corporate risk taking and performance", *Academy of Management Journal*, Vol. 34 No. 1, pp. 37–59.

Clark, B.H. (1999), "Marketing performance measures: History and interrelationships", *Journal of Marketing Management*, Vol. 15 No. 8, pp. 711–732.

Clark, B.H., Abela, A.V. and Ambler, T. (2006), "BEHIND the wheel", *Marketing Management*, Vol. 15 No. 3, pp. 19–23.

Clemen, R.T. and Reilly, T. (2014), *Making hard decisions*, Cengage Learning, Boston, Massachusetts, 3rd ed.

Curren, M.T., Folkes, V.S. and Steckel, J.H. (1992), "Explanations for successful and unsuccessful marketing decisions: The decision maker's perspective", *Journal of Marketing*, Vol. 56 No. 2, pp. 18–31.

Day, G.S. and Fahey, L. (1988), "Valuing market strategies", *Journal of Marketing*, Vol. 52 No. 3, pp. 45–57.

Deshpande, R. and Farley, J.U. (1998), "Measuring market orientation: Generalization and synthesis", *Journal of Market-Focused Management*, Vol. 2 No. 3, pp. 213–232.

Du, R.Y., Kamakura, W.A. and Mela, C.F. (2007), "Size and share of customer wallet", *Journal of Marketing*, Vol. 71 No. 2, pp. 94–113.

Edwards, W., Miles Jr., R.F. and von Winterfeldt, D. (Eds.). (2007), *Advances in decision analysis: from foundations to applications*, Cambridge University Press, Cambridge, UK.

Eisenhardt, K. (1989), "Making fast strategic decisions in high-velocity environments", *Academy of Management Journal*, Vol. 32 No. 3, pp. 543–576.

Fang, S.-R., Chang, E., Ou, C.-C. and Chou, C.-H. (2014), "Internal market orientation, market capabilities and learning orientation", *European Journal of Marketing*, Vol. 48 No. 1/2, pp. 170–192.

Farris, P.W., Bendle, N.T., Pfeifer, P.E. and Reibstein, D.J. (2010), *Marketing metrics: The definitive guide to measuring marketing performance*, Wharton School Publishing, Upper Saddle River, New Jersey, 2nded.

Finkelstein, S., Hambrick, D.C. and Cannella, A.A. (2009), *Strategic leadership: Theory and research on executives, top management teams, and boards*, Oxford University Press, Oxford, UK.

Gigerenzer, G. and Goldstein, D.G. (1996), "Reasoning the fast and frugal way: Models of bounded rationality", *Psychological Review*, Vol. 103 No. 4, p. 650.

Gounaris, S., Vassilikopoulou, A. and Chatzipanagiotou, K.C. (2010), "Internal-market orientation: a misconceived aspect of marketing theory", *European Journal of Marketing*, Vol. 44 No. 11/12, pp. 1667–1699.

Gupta, S. and Zeithaml, V. (2006), "Customer metrics and their impact on financial performance", *Marketing Science*, Vol. 25 No. 6, pp. 718–739.

Hoffman, D.L. and Fodor, M. (2010), "Can you measure the ROI of your social media marketing?", *MIT Sloan Management Review*, Vol. 52 No. 1, pp. 41–49.

Homburg, C., Artz, M. and Wieseke, J. (2012), "Marketing performance measurement systems: Does comprehensiveness really improve performance?", *Journal of Marketing*, Vol. 76 No. 3, pp. 56–77.

Ittner, C.D. and Larcker, D.F. (2003), "Coming up short on nonfinancial performance measurement", *Harvard Business Review*, Vol. 81 No. 11, pp. 88–95.

Jaworski, B.J. (1988), "Toward a theory of marketing control: Environmental context, control types, and consequences", *Journal of Marketing*, Vol. 52 No. 3, pp. 23–39.

Jaworski, B.J. and Kohli, A.K. (1993), "Market orientation: Antecedents and consequences", *Journal of Marketing*, Vol. 57 No. 3, pp. 53–70.

Keeney, R.L. and Raiffa, H. (1976), *Decision analysis with multiple conflicting objectives*, Wiley & Sons, New York.

Kohli, A.K. and Jaworski, B.J. (1990), "Market orientation: The construct, research propositions, and managerial implications", *Journal of Marketing*, Vol. 54 No. 2, pp. 1–18.

Kozlenkova, I.V., Samaha, S.A. and Palmatier, R.W. (2014), "Resource-based theory in marketing", *Journal of the Academy of Marketing Science*, Vol. 42 No. 1, pp. 1–21.

Kuester, S., Homburg, C. and Robertson, T.S. (1999), "Retaliatory behavior to new product entry", *Journal of Marketing*, Vol. 63 No. 4, pp. 90–106.

Lee, R.P. and Grewal, R. (2004), "Strategic responses to new technologies and their impact on firm performance", *Journal of Marketing*, Vol. 68 No. 4, pp. 157–171.

Leeflang, P.S.H., Wittink, D.R., Wedel, M. and Naert, P.A. (2000), *Building models for marketing decisions*, Kluwer Academic Publishers, Dordrecht.

Lehmann, D.R. and Reibstein, D.J. (2006), *Marketing metrics and financial performance*, Relevant Knowledge Series, Marketing Science Institute, Cambridge, Massachusetts.

Lindell, M.K. and Whitney, D.J. (2001), "Accounting for common method variance in cross-sectional research designs", *Journal of Applied Psychology*, Vol. 86 No. 1, pp. 114–121.

March, J.G. (1991), "Exploration and exploitation in organizational learning", *Organization Science*, Vol. 2 No. 1, pp. 71–87.

Marketing Science Institute (1998, 2000, 2002, 2004, 2006, 2008, 2012), *Research priorities: A guide to MSI research programs and procedures*, Marketing Science Institute, Cambridge, Massachusetts.

Menon, A., Bharadwaj, S.G., Adidam, P.T. and Edison, S.W. (1999), "Antecedents and consequences of marketing strategy making: A model and a test", *Journal of Marketing*, Vol. 63 No. 2, pp. 18–40.

Merlo, O. (2011), "The influence of marketing from a power perspective", *European Journal of Marketing*, Vol. 45 No. 7/8, pp. 1152–1171.

Miller, C.C., Burke, L.M. and Glick, W.H. (1998), "Cognitive diversity among upper-echelon executives: Implications for strategic decision processes", *Strategic Management Journal*, Vol. 19 No. 1, pp. 39–58.

Mintz, O. and Currim, I.S. (2013), "What drives managerial use of marketing and financial metrics and does metric use affect performance of marketing-mix activities?", *Journal of Marketing*, Vol. 77 No. 2, pp. 17–40.

Moorman, C. and Rust, R.T. (1999), "The role of marketing", *Journal of Marketing*, Vol. 63 No. 4, pp. 180–197.

Morgan, N.A., Anderson, E.W. and Mittal, V. (2005), "Understanding firms' customer satisfaction information usage", *Journal of Marketing*, Vol. 69 No. 3, pp. 131–151.

Noble, C.H. and Mokwa, M.P. (1999), "Implementing marketing strategies: developing and testing a managerial theory", *Journal of Marketing*, Vol. 63 No. 4, pp. 57–73.

Olson, E.M., Slater, S.F. and Hult, G.T.M. (2005), "The performance implications of fit among business strategy, marketing organization structure, and strategic behavior", *Journal of Marketing*, Vol. 69 No. 3, pp. 49–65.

O'Sullivan, D. and Abela, A.V. (2007), "Marketing performance measurement ability and firm performance", *Journal of Marketing*, Vol. 71 No. 2, pp. 79–93.

O'Sullivan, D., Abela, A.V. and Hutchinson, M. (2009), "Marketing performance measurement and firm performance: Evidence from the European high-technology sector", *European Journal of Marketing*, Vol. 43 No. 5/6, pp. 843–862.

Palmatier, R.W., Dant, R.P. and Grewal, D. (2007), "A comparative longitudinal analysis of theoretical perspectives of interorganizational relationship performance", *Journal of Marketing*, Vol. 71 No. 4, pp. 172–194.

Pauwels, K., Ambler, T., Clark, B.H., LaPointe, P., Reibstein, D.J., Skiera, B., Wierenga, B., et al. (2009), "Dashboards as a service: Why, what, how, and what research is needed?", *Journal of Service Research*, Vol. 12 No. 2, pp. 175–189.

Perkins, W.S. and Rao, R.C. (1990), "The role of experience in information use and decision making by marketing managers", *Journal of Marketing Research*, Vol. 27 No. 1, pp. 1–10.

Rust, R.T., Ambler, T., Carpenter, G.S., Kumar, V. and Srivastava, R.K. (2004), "Measuring marketing productivity: Current knowledge and future directions", *Journal of Marketing*, Vol. 68 No. 4, pp. 76–89.

Srinivasan, S. and Hanssens, D.M. (2009), "Marketing and firm value: Metrics, methods, findings, and future directions", *Journal of Marketing Research*, Vol. 46 No. 3, pp. 293–312.

Srinivasan, S., Vanhuele, M. and Pauwels, K. (2010), "Mind-set metrics in market response models: An integrative approach", *Journal of Marketing Research*, Vol. 47 No. 4, pp. 672–684.

Stathakopoulos, V. (1998), "Enhancing the performance of marketing managers: Aligning strategy, structure and evaluation systems", *European Journal of Marketing*, Vol. 32 No. 5/6, pp. 536–558.

Stewart, D.W. (2009), "Marketing accountability: Linking marketing actions to financial results", *Journal of Business Research*, Vol. 62 No. 6, pp. 636–643.

The Institute for the Study of Business Markets (2008, 2010, 2012), *B-to-B marketing trends,* The Institute for the Study of Business Markets, University Park, Pennsylvania.

Verhoef, P.C. and Leeflang, P.S.H. (2009), "Understanding the marketing department's influence within the firm", *Journal of Marketing*, Vol. 73 No. 2, pp. 14–37.

Vorhies, D.W. and Morgan, N.A. (2005), "Benchmarking marketing capabilities for sustainable competitive advantage", *Journal of Marketing*, Vol. 69 No. 1, pp. 80–94.

Wernerfelt, B. (1984), "A resource-based view of the firm", *Strategic Management Journal*, Vol. 5 No. 2, pp. 171–180.

Wind, Y. (2008), "A plan to invent the marketing we need today", *MIT Sloan Management Review*, Vol. 49 No. 4, pp. 21–28.

Footnotes

[1] The descriptive statistics for the 22 interviewed managers are the following. The average manager had been working 6.4 years with their current company and 3.7 years in their current position. 57% of the managers were top managers. Their firms ranged from 1 - 200,000 employees and $30,000 - $43,000,000,000 in sales. 62% of the companies were publicly listed, while 38% were privately held. 57% of the firms competed in turbulent markets, 62% in concentrated industries, and 34% in mature or declining industries.

[2] We thank a reviewer for suggesting this clarification.

[3] In other words, metrics are classified by a 2x2 matrix categorized by being marketing and financial metrics; and general and specific to a marketing mix metrics. Note the 2x2 classification of metrics allows overlap between (i) marketing and general and specific to a marketing mix metrics, (ii) financial and general and specific to a marketing mix metrics, (iii) general and marketing and financial metrics, and (iv) specific to a marketing mix and marketing and financial metrics.

[4] In Online Appendix D, we show that 27 of 28 pairwise correlations reported in equation 1 and 463 of 465 pairwise correlations reported in equation 2 are less than .40 (Leeflang et al., 2000). The null hypothesis that variance of the residuals is homogenous cannot be rejected in any of the two equations (both $p<.01$), indicating no heteroscedasticity in equations 1 or 2.

Figure 1: Conceptual Framework

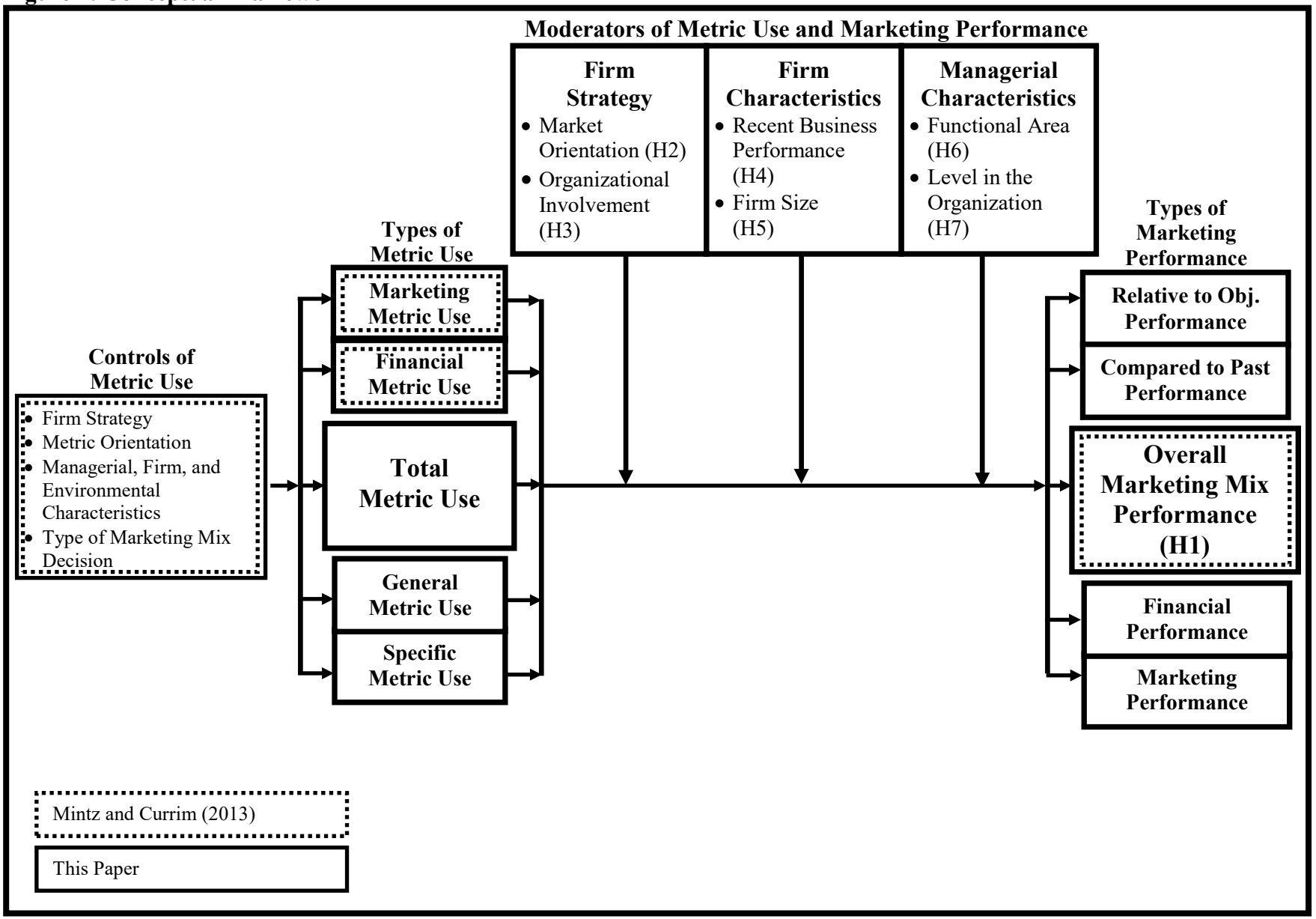

Table 1: Relationship between Metric Use and Marketing Mix Performance - SUR-GLS Estimation Results

Variable	Parameter Estimate
Metric Use to Performance (Equation 1)	
Intercept	.00***
Market Orientation	.15**
Organizational Involvement	.20***
Recent Business Performance	.17***
Company Size (Ln)	.16**
Marketing Functional Area	.06
Level in Organization	.09
Metric Use	.54**
Metric Use * Market Orientation	-.37**
Metric Use * Organizational Involvement	.09
Metric Use * Recent Business Performance	.22
Metric Use * Company Size (Ln)	-.16*
Metric Use * Marketing Functional Area	-.15*
Metric Use * Level in Organization	-.23***
Drivers of Metric Use (Equation 2)	
Intercept	.00**
Market Orientation	.10***
Analyzer[1]	.14***
Low-Cost Defender[1]	.18***
Differentiated Defender[1]	.06*
Organizational Involvement	.07**
Metric Compensation	.20***
Metric Training	.17***
Marketing Functional Area	.00
Level in Organization	.05
Work Experience	-.02
Quantitative Background	.00
Company Size (Ln)	-.12***
Type of Ownership (Public)	.12***
CMO Presence	.10***
Recent Business Performance	.08**
B2C (vs. B2B)	.11***
Services (vs. Goods)	-.15***
Maturity/Declining Product Life Cycle	-.01
Industry Concentration (Concentrated)	.11***
Market Growth	-.04
Market Turbulence (More)	-.01
Traditional Advertising[2]	.09**
Internet Advertising[2]	.15***
Direct to Consumer[2]	.13***
Social Media[2]	.03
Price Promotions[2]	.01
Pricing[2]	.11***
New Product Development[2]	.19***
Sales Force[2]	.08**
Distribution[2]	.04
Model Diagnostics for SUR System of Equations	
System Weighted MSE	1.00
Degrees of freedom	2529
System Weighted R- Square	.26

*p<.05; **p<.01; ***p<.001; [1] Analyzers, low-cost defenders, and differentiated defenders are compared to prospectors.
[2] All marketing mix activities are compared to PR/sponsorships decisions.

Table 2: Relationship between Marketing and Financial Metric Use and Marketing Mix Performance - SUR-GLS Estimation Results

Metric Type	Marketing	Financial	Marketing	Financial
Separate or Joint Model Estimation	Separate	Separate	Joint	
Metric Use to Performance (Equation 1)				
Intercept	.00***	.00***	.00***	
Market Orientation	.11**	.14**	.16**	
Organizational Involvement	.25***	.19***	.20***	
Recent Business Performance	.22***	.16***	.16***	
Company Size (Ln)	.19***	.09*	.17**	
Marketing Functional Area	.03	.04	.06	
Level in Organization	.04	.07	.09	
Metric Use	.64***	.25	.60**	-.04
Metric Use * Market Orientation	-.32*	-.25	-.15	-.25
Metric Use * Organizational Involvement	.01	.12	-.06	.16
Metric Use * Recent Business Performance	.12	.30*	-.06	.36*
Metric Use * Company Size (Ln)	-.21**	-.07	-.22**	.05
Metric Use * Marketing Functional Area	-.12*	-.13*	-.09	-.06
Metric Use * Level in Organization	-.17**	-.22***	-.08	-.17*
Drivers of Metric Use (Equation 2)				
Intercept	.00	.00***	.00	.00***
Market Orientation	.15***	.02	.15***	.02
Analyzer[1]	.08*	.17***	.08*	.17***
Low-Cost Defender[1]	.12***	.20***	.12***	.20***
Differentiated Defender[1]	.02	.09**	.02	.09**
Organizational Involvement	.05	.08**	.05	.08**
Metric Compensation	.16***	.20***	.16***	.20***
Metric Training	.14***	.15***	.14***	.15***
Marketing Functional Area	.00	.01	-.01	.01
Level in Organization	.04	.06*	.04	.06*
Work Experience	.01	-.04	.01	-.04
Quantitative Background	-.04	.06*	-.04	.06*
Company Size (Ln)	-.08*	-.14***	-.08*	-.14***
Type of Ownership (Public)	.08*	.13***	.08*	.13***
CMO Presence	.05*	.12***	.05*	.12***
Recent Business Performance	.06	.08**	.06	.08**
B2C (vs. B2B)	.11***	.07**	.11***	.07**
Services (vs. Goods)	-.09***	-.18***	-.09**	-.18***
Maturity/Declining Product Life Cycle	-.04	.02	-.04	.02
Industry Concentration (Concentrated)	.10***	.08**	.10***	.08***
Market Growth	-.04	-.02	-.04	-.02
Market Turbulence (More)	-.01	-.01	-.01	-.01
Traditional Advertising[2]	.06	.09**	.06*	.09**
Internet Advertising[2]	.11**	.16***	.11**	.16***
Direct to Consumer[2]	.05	.19***	.05	.19***
Social Media[2]	.06	-.01	.06	-.01
Price Promotions[2]	-.04	.07**	-.04	.07**
Pricing[2]	.05	.16***	.05	.16***
New Product Development[2]	.14***	.19***	.14***	.19***
Sales Force[2]	-.02	.17***	-.02	.17***
Distribution[2]	.00	.08**	.00	.08**
Model Diagnostics for SUR System of Equations				
System Weighted MSE	1.00	1.00	1.00	
Degrees of freedom	2529	2529	3778	
System Weighted R- Square	.20	.28	.24	

*p<.05; **p<.01; ***p<.001;

[1] Analyzers, low-cost defenders, and differentiated defenders are compared to prospectors.

[2] All marketing mix activities are compared to PR/sponsorships decisions.

Table 3: Relationship between General and Specific Metric Use and Marketing Mix Performance - SUR-GLS Estimation Results

Metric Type	General	Specific	General	Specific
Separate or Joint Model Estimation	Separate	Separate	Joint	
Metric Use to Performance (Equation 1)				
Intercept	.00***	.00***	.00***	
Market Orientation	.12**	.15**	.17***	
Organizational Involvement	.20***	.24***	.21***	
Recent Business Performance	.21***	.15**	.15**	
Company Size (Ln)	.16**	.09*	.15**	
Marketing Functional Area	.01	.09	.11	
Level in Organization	.05	.09	.12*	
Metric Use	.50**	.36*	.42*	.25
Metric Use * Market Orientation	-.31*	-.29*	-.21	-.25
Metric Use * Organizational Involvement	.10	.06	.08	.01
Metric Use * Recent Business Performance	.16	.29*	.04	.25
Metric Use * Company Size (Ln)	-.18*	-.05	-.18*	.02
Metric Use * Marketing Functional Area	-.08	-.22***	-.02	-.20**
Metric Use * Level in Organization	-.20**	-.22***	-.12	-.15*
Drivers of Metric Use (Equation 2)				
Intercept	.00***	.00	.00***	.00
Market Orientation	.13***	.01	.13***	.01
Analyzer[1]	.12***	.12***	.12***	.12***
Low-Cost Defender[1]	.18***	.10**	.18***	.10**
Differentiated Defender[1]	.05	.06	.05	.06
Organizational Involvement	.07*	.04	.07*	.05
Metric Compensation	.18***	.15***	.18***	.15***
Metric Training	.14***	.16***	.14***	.16***
Marketing Functional Area	-.04	.08*	-.04	.08*
Level in Organization	.03	.07*	.03	.07*
Work Experience	.02	-.08**	.02	-.08**
Quantitative Background	.00	.02	.00	.02
Company Size (Ln)	-.11**	-.10**	-.11**	-.10**
Type of Ownership (Public)	.10**	.09**	.10**	.09**
CMO Presence	.08**	.08**	.08**	.08**
Recent Business Performance	.05	.10***	.05	.10***
B2C (vs. B2B)	.09***	.10***	.09***	.10***
Services (vs. Goods)	-.12***	-.15***	-.12***	-.15***
Maturity/Declining Product Life Cycle	-.02	.01	-.02	.01
Industry Concentration (Concentrated)	.08**	.11***	.08**	.11***
Market Growth	-.03	-.03	-.03	-.03
Market Turbulence (More)	.00	-.03	.00	-.03
Traditional Advertising[2]	.12***	-.02	.12***	-.02
Internet Advertising[2]	.06*	.27***	.06	.27***
Direct to Consumer[2]	.09**	.16***	.09**	.16***
Social Media[2]	.00	.08*	.00	.08*
Price Promotions[2]	.06*	-.08**	.06*	-.08**
Pricing[2]	.14***	.01	.14***	.01
New Product Development[2]	.22***	.02	.22***	.02
Sales Force[2]	.06*	.08*	.06*	.08*
Distribution[2]	.06*	.00	.06*	-.01
Model Diagnostics for SUR System of Equations				
System Weighted MSE	1.00	1.00	1.00	
Degrees of freedom	2529	2529	3778	
System Weighted R- Square	.20	.28	.24	

*p<.05; **p<.01; ***p<.001;

[1] Analyzers, low-cost defenders, and differentiated defenders are compared to prospectors.

[2] All marketing mix activities are compared to PR/sponsorships decisions.

Table 4: Relationship between Metric Use and Different Measures of Marketing Mix Performance - SUR-GLS Estimation Results

Performance Type	Relative to Objectives	Compared to Past	Financial	Marketing	Relative to Objectives	Compared to Past	Financial	Marketing
Separate or Joint Model Estimation	Separate	Separate	Separate	Separate	Joint			
Metric Use to Performance (Equation 1)								
Intercept	.00***	.00***	.00***	.00***	.00***	.00**	.00***	.00***
Market Orientation	.15**	.16**	.07	.22***	.16**	.22***	.09	.22***
Organizational Involvement	.24***	.27***	.14**	.18***	.28***	.27***	.19***	.16**
Recent Business Performance	.11*	.06	.26***	.16**	.19***	.11*	.28***	.18***
Company Size (Ln)	.19***	.15**	.15**	.13*	.15*	.17**	.12	.13*
Marketing Functional Area	.03	.11	.14*	.09	.07	.16*	.13*	.10
Level in Organization	.06	.12*	.16**	.12*	.06	.13*	.14*	.14*
Metric Use	.39*	.41*	.61***	.58**	.51**	.65***	.73***	.59**
Metric Use * Market Orientation	-.24	-.35*	-.24	-.45**	-.23	-.50**	-.31*	-.42**
Metric Use * Organizational Involvement	-.01	-.01	.18*	.10	-.03	.01	.12	.15
Metric Use * Recent Business Performance	.23	.35*	.04	.19	.07	.29*	.01	.13
Metric Use * Company Size (Ln)	-.21**	-.19*	-.14	-.13	-.17*	-.21*	-.10	-.12
Metric Use * Marketing Functional Area	-.06	-.14*	-.24***	-.16*	-.10	-.20**	-.25***	-.18**
Metric Use * Level in Organization	-.16*	-.21**	-.31***	-.23**	-.16*	-.23**	-.31***	-.25***
Drivers of Metric Use (Equation 2)								
Intercept	.00**	.00**	.00**	.00**	.00**			
Market Orientation	.10***	.11***	.11***	.11***	.12***			
Analyzer[1]	.14***	.13***	.12***	.12***	.11***			
Low-Cost Defender[1]	.18***	.17***	.16***	.16***	.14***			
Differentiated Defender[1]	.06*	.06*	.05	.05	.05			
Organizational Involvement	.07**	.07**	.07*	.06*	.07*			
Metric Compensation	.20***	.20***	.21***	.21***	.21***			
Metric Training	.17***	.16***	.17***	.17***	.17***			
Marketing Functional Area	.00	-.01	-.01	.00	-.01			
Level in Organization	.05	.04	.03	.04	.03			
Work Experience	-.02	-.04	-.03	-.04	-.04			
Quantitative Background	.00	.02	.00	.00	.01			
Company Size (Ln)	-.13***	-.15***	-.14***	-.14***	-.15***			
Type of Ownership (Public)	.12***	.13***	.12**	.12**	.12**			
CMO Presence	.10***	.10***	.12***	.12***	.11***			
Recent Business Performance	.08**	.08**	.08**	.07*	.06*			
B2C (vs. B2B)	.11***	.11***	.12***	.12***	.12***			

Services (vs. Goods)	-.15***	-.14***	-.14***	-.14***	-.13***
Maturity/Declining Product Life Cycle	-.01	-.01	.01	.01	.01
Industry Concentration (Concentrated)	.11***	.12***	.13***	.13***	.15***
Market Growth	-.04	-.04	-.03	-.04	-.03
Market Turbulence (More)	-.01	.00	-.01	-.01	.00
Traditional Advertising[2]	.09**	.10**	.09**	.09**	.09**
Internet Advertising[2]	.15***	.15***	.15***	.14***	.14***
Direct to Consumer[2]	.13***	.13***	.14***	.13***	.14***
Social Media[2]	.03	.03	.06	.05	.05
Price Promotions[2]	.01	.02	.02	.01	.01
Pricing[2]	.11***	.11***	.12***	.12***	.12***
New Product Development[2]	.19***	.19***	.19***	.19***	.18***
Sales Force[2]	.08**	.08*	.09*	.09**	.08*
Distribution[2]	.04	.06*	.06*	.06*	.06*
Model Diagnostics for SUR System of Equations					
System Weighted MSE	1.00	1.00	1.00	1.00	1.00
Degrees of freedom	2529	2357	2309	2239	5308
System Weighted R- Square	.23	.23	.25	.23	.14

*p<.05; **p<.01; ***p<.005; [1] Analyzers, low-cost defenders, and differentiated defenders are compared to prospectors.
[2] All marketing mix activities are compared to PR/sponsorships decisions.

Table 5. Overview of Findings on Relationships between Different Types of Metric Use and Different Performance Measures

Variable	Hypo-thesis	Total Metric Use	Marketing Metric Use	Financial Metric Use	General Metric Use	Specific Metric Use
Overall Performance						
H1: Metric Use	+	Supported	Supported	---	Supported	Supported
H2: Market Orientation	-	Supported	Supported	---	Supported	Supported
H3: Organizational Involvement	+	---	---	---	---	---
H4: Recent Business Performance	+	---	---	Supported	---	Supported
H5: Company Size	-	Supported	Supported	---	Supported	---
H6: Marketing Functional Area	-	Supported	Supported	Supported	---	Supported
H7: Level in Organization	-	Supported	Supported	Supported	Supported	Supported
Performance Relative to Objectives						
H1: Metric Use	+	Supported	Supported	---	Supported	---
H2: Market Orientation	-	---	---	---	---	---
H3: Organizational Involvement	+	---	---	---	---	---
H4: Recent Business Performance	+	---	---	Supported	---	---
H5: Company Size	-	Supported	Supported	---	Supported	---
H6: Marketing Functional Area	-	---	---	---	---	---
H7: Level in Organization	-	Supported	---	Supported	Supported	Supported
Compared to Past Performance						
H1: Metric Use	+	Supported	Supported	---	---	Supported
H2: Market Orientation	-	Supported	---	---	---	Supported
H3: Organizational Involvement	+	---	---	---	---	---
H4: Recent Business Performance	+	Supported	---	Supported	Supported	Supported
H5: Company Size	-	Supported	Supported	---	Supported	Supported
H6: Marketing Functional Area	-	Supported	Supported	---	---	Supported
H7: Level in Organization	-	Supported	Supported	Supported	Supported	Supported
Financial Performance						
H1: Metric Use	+	Supported	Supported	Supported	Supported	Supported
H2: Market Orientation	-	---	---	---	---	---
H3: Organizational Involvement	+	Supported	---	Supported	Supported	---
H4: Recent Business Performance	+	---	---	---	---	---
H5: Company Size	-	---	Supported	---	Supported	---
H6: Marketing Functional Area	-	Supported	Supported	Supported	Supported	Supported
H7: Level in Organization	-	Supported	Supported	Supported	Supported	Supported
Marketing Performance						
H1: Metric Use	+	Supported	Supported	---	Supported	---
H2: Market Orientation	-	Supported	Supported	---	Supported	---
H3: Organizational Involvement	+	---	---	Supported	---	---
H4: Recent Business Performance	+	---	---	Supported	---	Supported
H5: Company Size	-	---	Supported	---	---	---
H6: Marketing Functional Area	-	Supported	---	Supported	---	Supported
H7: Level in Organization	-	Supported	---	Supported	Supported	Supported

Supported = $p<.05$; --- = insignificant; Only separate estimation results are displayed for ease of readability; for joint estimation results, please contact the authors directly.

Online Appendix A: Variables, Definitions, Operational Measures and their Sources

Variable	Definition and Operational Measures	Source(s)	α
Marketing Mix Performance	**Definition:** *The performance of a marketing-mix activity is defined based on a firm's stated marketing, financial, and overall outcomes, relative to a firm's stated objectives and to similar prior decisions.* **Measures: Performance Relative to Objectives:** Relative to your firm's stated objectives, how is the last major marketing activity undertaken performing overall? (1=much worse, 7=much better) **Compared to Past Performance:** Relative to similar prior marketing activities you've undertaken, how is the last major marketing activity undertaken performing? (1=much worse, 7=much better; N/A if unsure or never undertook activity) **Financial Performance:** Relative to your firm's stated objectives, how is the last major marketing activity undertaken performing on: (1=much worse, 7=much better; N/A if unsure) • Profitability, Sales, ROI **Marketing Performance:** Relative to your firm's stated objectives, how is the last major marketing activity undertaken performing on: (1=much worse, 7=much better; N/A if unsure) • Customer satisfaction, Customer loyalty, Market share	Jaworski & Kohli 1993; Moorman & Rust 1999; Verhoef & Leeflang 2009	.94
Metric Use	**Definition:** *A metric is defined to be used in a marketing mix decision if a manager employed the metric as a decision aid when making the marketing mix decision.* **Marketing Metric Definition:** Marketing metrics are based on a customer or marketing mind set. A metric is defined to be used in a marketing-mix decision if a manager employed the metric as a decision aid when making the marketing-mix decision. **Financial Metric Definition:** Financial metrics are either monetary based, based on financial ratios, or readily converted to monetary outcomes. **General Metric Definition:** General metrics are defined as metrics suited to many marketing-mix decisions. **Specific Metric Definition:** Specific metrics are defined as metrics largely suited to each of 10 marketing-mix decisions considered. **Measure:** Please indicate if you used any of the following MARKETING or FINANCIAL metrics when making your marketing-mix decision: See Online Appendix B for 12 general marketing and 12 general financial metrics which were listed for each of 10 marketing-mix decisions. In addition, 3 specific marketing metrics and 3 specific financial metrics were listed for each of 10 specific marketing-mix decisions.	(Ambler, 2003; Ambler et al., 2004; Barwise and Farley, 2004; Du et al., 2007; Farris et al., 2010; Hoffman and Fodor, 2010; Lehmann and Reibstein, 2006; Pauwels et al., 2009; Srinivasan et al., 2010)	---
Market Orientation	**Definition***: The extent to which a firm measures, monitors, and communicates customer needs and experiences throughout the firm and whether the firm's strategy is based on this information.* **Measures**: How strongly do you agree or disagree with each of the following statements: (1 = strongly disagree, 7 = strongly agree) • Our business objectives are driven primarily by customer satisfaction • We constantly monitor our level of commitment and orientation to serving customer needs • We freely communicate information about our successful and unsuccessful customer experiences throughout all business functions • Our strategy for competitive advantage is based on our understanding of customer needs • We measure customer satisfaction systematically and frequently • We have routine or regular measures for customer service • We are more customer focused than our competitors • I believe this business exists primarily to serve customers	Deshpande & Farley 1998; Jaworski & Kohli 1993; Verhoef & Leeflang 2009	.86
Organization Involvement	**Definition**: *The extent to which a firm's marketing-mix decision or action is based on involvement of a wide range of managers across functions.* **Measures**: How strongly do you agree or disagree with each of the following statements: (1 = strongly disagree, 7 = strongly agree)	Noble & Mokwa 1999	.94

	• This marketing action was a real company-wide effort • People from all over the organization were involved in this marketing action • A wide range of departments or functions in the company got involved in this marketing action		
Recent Business Performance	**Definition:** *A business unit's overall performance last year, relative to its own expectations and its competitors' performance.* **Measures:** To what extent did the overall performance of the business unit meet expectations last year: (1= poor, 7=excellent) To what extent did the overall performance of your business unit relative to your major competitors meet expectations last year: (1= poor, 7=excellent)	Jaworski & Kohli 1993	.84
Firm Size	**Definition:** *The number of full-time employees in a firm.* **Measure:** Approximately how many full-time employees does your firm have?	Verhoef & Leeflang 2009	---
Functional Area and Level in the Organization	**Definition:** *(Functional Area) Whether a manager works in the marketing department;* *(Managerial Level) Whether a manager is VP-level or higher (e.g., SVP, C-level or Owner) or lower than VP-level (e.g., Director, Manager).* **Measure:** Please indicate your job title: CEO/Owner, CMO, C-Level (Other than Marketing), SVP/VP of Marketing, SVP/VP Sales, SVP/VP (Other than Marketing and Sales), Director of Marketing, Director of Sales, Brand Manager, Marketing Manager, Product Manager, Sales Manager, Other (Please list)	Finkelstein et al. 2009	---
Strategic Orientation	**Definition**: *The strategy which a firm employs to compete in an industry or market, categorized based on two dominant frameworks of strategic orientation, the Miles and Snow (1978) typology which focuses on the firm's intended rate of product-market change, and the Porter (1980) typology, which focuses on the firm's differentiation or cost advantage.* **Measures**: Please select one of the following descriptions that best characterizes your organization: ☐ *Prospectors:* These firms are frequently the first-to-market with new product or service concepts. They do not hesitate to enter new market segments in which there appears to be an opportunity. These firms concentrate on offering products that push performance boundaries. Their proposition is an offer of the most innovative product, whether it is based on substantial performance improvement or cost reduction. ☐ *Analyzers:* These firms are seldom first-in with new products or services or first to enter emerging market segments. However, by monitoring market activity, they can be early followers with a better targeting strategy, increased customer benefits, or lower costs. ☐ *Low-Cost Defenders:* These firms attempt to maintain a relatively stable domain by aggressively protecting their product market position. They rarely are at the forefront of product of service development; instead, they focus on producing goods or services as efficiently as possible. In general, these firms focus on increasing share in existing markets by providing products at the best prices. ☐ *Differentiated Defenders:* These firms attempt to maintain a relatively stable domain by aggressively protecting their product market position. They rarely are at the forefront of product or service development; instead, they focus on providing superior service and/or product quality. Their prices are typically higher than the industry average.	Olson et al. (2005); Slater & Olson (2000)	---
Metric-based Compensation	**Definition**: *The importance of metrics in a manager's compensation package.* **Measures**: Please indicate how important each metric type is related to your compensation package: (1= not at all important, 7 = extremely important) • Overall Metrics, Marketing Metrics, Financial Metrics	Mintz & Currim (2013)	.82
Metric Training Level	**Definition**: *A manager's level of training on the use of metrics.* **Measures**: Please indicate your level of training with metrics (can be through work or educational experiences): (1= much less than average amount of training, 7 = much more than average amount of training*)* • Overall Metrics, Marketing Metrics, Financial Metrics	Mintz & Currim (2013)	.94

Managerial Experience	**Definition**: *A manager's experience in number of years as a manager, at the firm, and in the current position.* **Measures**: How many years of managerial experience do you have? How many years have you been working for this company? How many years have you been working at your current position?	Mintz & Currim (2013)	.68
Quantitative Background	**Definition:** *A manager's qualitative/quantitative orientation based on education and work experience.* **Measures:** Please rate your qualitative/quantitative background: (1 = entirely qualitative, 7 = entirely quantitative) • Overall orientation • Educational Background • Work Experience Background	Mintz & Currim (2013)	.85
Ownership	**Definition**: *Whether a firm is publicly traded or privately held.* **Measure**: Is your firm publicly traded?	Verhoef & Leeflang 2009	---
CMO Presence	**Definition:** *Whether a firm employs a Chief Marketing Officer (CMO).* **Measure:** Does your firm employ a Chief Marketing Officer (CMO)?		---
B2C vs. B2B	**Definition**: *The extent to which a manager's sales come from B2B or B2C markets.* **Measure**: Please indicate the extent to which your sales come from B2B or B2C markets: (1 = mostly B2B, 7 = mostly B2C)	Verhoef & Leeflang 2009	---
Services vs. Goods	**Definition**: *The extent to which a manager's sales come from goods or services markets.* **Measure**: Please indicate the extent to which your sales come from goods or services markets: (1 = mostly goods, 7 = mostly services)	Verhoef & Leeflang 2009	---
Product Life Cycle	**Definition:** *The stage of the product life cycle.* **Measure:** At which one of the following stages would you place your product? (shown in a product life cycle diagram, introductory, growth, maturity, decline)	Deshpande & Zaltman (1982)	---
Industry Concentration	**Definition:** *The percentage of sales the four largest businesses competing in a market control.* **Measure:** Approximately what percentage of sales does the largest 4 competing businesses in your market control? 0-50%, 51-100%	Kuester et al. 1999	---
Market Growth	**Definition:** *The average annual growth or decline of the company and the industry over the last three years.* **Measures:** Over the last three years, what was the average annual market growth or decline for your company? Over the last three years, what was the average annual market growth or decline for your industry?	Homburg et al. (1999)	.66
Market Turbulence	**Definition:** *The rate at which products or services become obsolete, the ease of forecasting consumer preferences, and how often a firm needs to change its marketing and production/service technology to keep up with competitors and/or consumer preferences.* **Measures:** How strongly do you agree or disagree with each of the following statements (1 = strongly disagree, 7 = strongly agree): ® = reverse scored • Products/services become obsolete very slowly in your firm's principal industry ® • Your firm seldom needs to change its marketing practices to keep up with competitors ® • Consumer demand and preferences are very easy to forecast in your firm's principal industry ® • Your firm must frequently change its production/service technology to keep up with competitors and/or consumer preferences	Miller et al. 1998	.63

Note: Online Appendix A is taken from Mintz and Currim (2013)

Online Appendix B: Marketing, Financial, General, and Specific to a Marketing Mix Metrics

Marketing Mix Activity	Marketing Metrics	Financial Metrics
General Metrics	• Market Share (Units or Dollars) • Awareness (Product or Brand) • Satisfaction (Product or Brand) • Likeability (Product or Brand) • Preference (Product or Brand) • Willingness to Recommend (Product or Brand) • Loyalty (Product or Brand) • Perceived Product Quality • Consideration Set • Total Customers • Share of Customer Wallet • Share of Voice	• Net Profit • Return on Investment (ROI) • Return on Sales (ROS) • Return on Marketing Investment (ROMI) • Net Present Value (NPV) • Economic Value Added (EVA) • Marketing Expenditures (% specifically on Brand Building Activities) • Stock Prices / Stock Returns • Tobin's *q* • Target Volume (Units or Sales) • Customer Segment Profitability • Customer Lifetime Value (CLV)
Traditional Advertising	• Impressions • Reach • Recall	• Cost per Customer Acquired / Cost per Thousand Impressions (CPM) • Lead Generation • Internal Rate of Return (IRR)
Internet Advertising	• Impressions • Hits/Visits/Page Views • Click-through Rate	• Cost per Click • Conversion Rate • Internal Rate of Return (IRR)
Direct to Consumer	• Reach • Number of Responses by Campaign • New Customer Retention Rate	• Cost per Customer Acquired • Conversion Rate • Lead Generation
Social Media	• Hits/Visits/Page Views • Number of Followers / Tags • Volume of Coverage by Media	• Lead Generation • Cost per Exposure • Total Costs
Price Promotions	• Impressions • Reach • Trial / Repeat Volume (or Ratio)	• Promotional Sales / Incremental Lift • Redemption Rates (coupons, etc.) • Internal Rate of Return (IRR)
Pricing	• Price Premium • Reservation Price • Relative Price	• Unit Margin / Margin % • Price Elasticity • Optimal Price
New Product Development	• Belief in New Product Concept • Attitude toward Product / Brand • Expected Annual Growth Rate	• Expected Margin % • Level of Cannibalization / Cannibalization Rate • Internal Rate of Return (IRR)
Sales Force	• Reach • Number of Responses by Campaign • New Customer Retention Rate	• Sales Potential Forecast • Sales Force Productivity • Sales Funnel / Sales Pipeline
Distribution	• Out of Stock % / Availability • Strength of Channel Relationships • Product Category Volume (PCV)	• Total Inventory / Total Distributors • Channel Margins • Sales per Store / Stock-keeping units (SKUS)
PR / Sponsorship	• Volume of Coverage by Media • Reach • Recall	• Lead Generation • Cost per Exposure • Total Costs

Note: Online Appendix B is taken from Mintz and Currim (2013)

Online Appendix C. Estimation Equations

Marketing Metric Use Separate Estimation Equations

$$\begin{aligned}(3)\quad \text{PERF} = {} & \beta_0 + \beta_1\ \text{MKTMET} + \beta_2\ \text{MKTOR} + \beta_3\ \text{ORGINV} + \beta_4\ \text{BUSPERF} + \beta_5\ \text{SIZE} \\ & + \beta_6\ \text{MKT} + \beta_7\ \text{MGRLVL} + \beta_8\ \text{MKTMET} * \text{MKTOR} + \beta_9\ \text{MKTMET} * \text{ORGINV} \\ & + \beta_{10}\ \text{MKTMET} * \text{BUSPERF} + \beta_{11}\ \text{MKTMET} * \text{SIZE} + \beta_{12}\ \text{MKTMET} * \text{MKT} \\ & + \beta_{13}\ \text{MKTMET} * \text{MGRLVL} + \varepsilon_{\text{PERF}}\end{aligned}$$

where

$$\begin{aligned}(4)\quad \text{MKTMET} = {} & \delta_0 + \sum_{p=1}^{5}\delta_p \text{FS}_p + \sum_{d=1}^{2}\delta_{d+5}\text{MO}_d + \sum_{g=1}^{4}\delta_{g+7}\text{MC}_g + \sum_{q=1}^{6}\delta_{q+11}\text{FC}_q \\ & + \sum_{c=1}^{4}\delta_{c+17}\text{EC}_c + \sum_{i=1}^{9}\delta_{i+21}\text{MA}_i + \varepsilon_{\text{MKTMET}}\end{aligned}$$

Financial Metric Use Separate Estimation Equations

$$\begin{aligned}(5)\quad \text{PERF} = {} & \beta_0 + \beta_1\ \text{FINMET} + \beta_2\ \text{MKTOR} + \beta_3\ \text{ORGINV} + \beta_4\ \text{BUSPERF} + \beta_5\ \text{SIZE} \\ & + \beta_6\ \text{MKT} + \beta_7\ \text{MGRLVL} + \beta_8\ \text{FINMET} * \text{MKTOR} + \beta_9\ \text{FINMET} * \text{ORGINV} \\ & + \beta_{10}\ \text{FINMET} * \text{BUSPERF} + \beta_{11}\ \text{FINMET} * \text{SIZE} + \beta_{12}\ \text{FINMET} * \text{MKT} \\ & + \beta_{13}\ \text{FINMET} * \text{MGRLVL} + \varepsilon_{\text{PERF}}\end{aligned}$$

where

$$\begin{aligned}(6)\quad \text{FINMET} = {} & \alpha_0 + \sum_{p=1}^{5}\alpha_p \text{FS}_p + \sum_{d=1}^{2}\alpha_{d+5}\text{MO}_d + \sum_{g=1}^{4}\alpha_{g+7}\text{MC}_g + \sum_{q=1}^{6}\alpha_{q+11}\text{FC}_q \\ & + \sum_{c=1}^{4}\alpha_{c+17}\text{EC}_c + \sum_{i=1}^{9}\alpha_{i+21}\text{MA}_i + \varepsilon_{\text{FINMET}}\end{aligned}$$

Marketing and Financial Metric Use Joint Estimation Equations

$$\begin{aligned}(7)\quad \text{PERF} = {} & \beta_0 + \beta_1\ \text{MKTMET} + \beta_2\ \text{FINMET} + \beta_3\ \text{MKTOR} + \beta_4\ \text{ORGINV} + \beta_5\ \text{BUSPERF} \\ & + \beta_6\ \text{SIZE} + \beta_7\ \text{MKT} + \beta_8\ \text{MGRLVL} + \beta_9\ \text{MKTMET} * \text{MKTOR} \\ & + \beta_{10}\ \text{MKTMET} * \text{ORGINV} + \beta_{11}\ \text{MKTMET} * \text{BUSPERF} + \beta_{12}\ \text{MKTMET} * \text{SIZE} \\ & + \beta_{13}\ \text{MKTMET} * \text{MKT} + \beta_{14}\ \text{MKTMET} * \text{MGRLVL} + \beta_{15}\ \text{FINMET} * \text{MKTOR} \\ & + \beta_{16}\ \text{FINMET} * \text{ORGINV} + \beta_{17}\ \text{FINMET} * \text{BUSPERF} + \beta_{18}\ \text{FINMET} * \text{SIZE} \\ & + \beta_{19}\ \text{FINMET} * \text{MKT} + \beta_{20}\ \text{FINMET} * \text{MGRLVL} + \varepsilon_{\text{PERF}}\end{aligned}$$

where

$$\begin{aligned}(8)\quad \text{MKTMET} = {} & \delta_0 + \sum_{p=1}^{5}\delta_p \text{FS}_p + \sum_{d=1}^{2}\delta_{d+5}\text{MO}_d + \sum_{g=1}^{4}\delta_{g+7}\text{MC}_g + \sum_{q=1}^{6}\delta_{q+11}\text{FC}_q \\ & + \sum_{c=1}^{4}\delta_{c+17}\text{EC}_c + \sum_{i=1}^{9}\delta_{i+21}\text{MA}_i + \varepsilon_{\text{MKTMET}}\end{aligned}$$

$$\begin{aligned}(9)\quad \text{FINMET} = {} & \alpha_0 + \sum_{p=1}^{5}\alpha_p \text{FS}_p + \sum_{d=1}^{2}\alpha_{d+5}\text{MO}_d + \sum_{g=1}^{4}\alpha_{g+7}\text{MC}_g + \sum_{q=1}^{6}\alpha_{q+11}\text{FC}_q \\ & + \sum_{c=1}^{4}\alpha_{c+17}\text{EC}_c + \sum_{i=1}^{9}\alpha_{i+21}\text{MA}_i + \varepsilon_{\text{FINMET}}\end{aligned}$$

Total Metric Use to Different Performances Separate Estimation Equations

$$\begin{aligned}(10)\quad \text{PERFOBJ} = {} & \beta_0 + \beta_1\ \text{METUSE} + \beta_2\ \text{MKTOR} + \beta_3\ \text{ORGINV} + \beta_4\ \text{BUSPERF} + \beta_5\ \text{SIZE} \\ & + \beta_6\ \text{MKT} + \beta_7\ \text{MGRLVL} + \beta_8\ \text{METUSE} * \text{MKTOR} + \beta_9\ \text{METUSE} * \text{ORGINV} \\ & + \beta_{10}\ \text{METUSE} * \text{BUSPERF} + \beta_{11}\ \text{METUSE} * \text{SIZE} + \beta_{12}\ \text{METUSE} * \text{MKT} \\ & + \beta_{13}\ \text{METUSE} * \text{MGRLVL} + \varepsilon_{\text{PERFOBJ}}\end{aligned}$$

where

$$\begin{aligned}(11)\quad \text{METUSE} = {} & \omega_0 + \sum_{p=1}^{5} \omega_p \text{FS}_p + \sum_{d=1}^{2} \omega_{d+5} \text{MO}_d + \sum_{g=1}^{4} \omega_{g+7} \text{MC}_g + \sum_{q=1}^{6} \omega_{q+11} \text{FC}_q \\ & + \sum_{c=1}^{4} \omega_{c+17} \text{EC}_c + \sum_{i=1}^{9} \omega_{i+21} \text{MA}_i + \varepsilon_{\text{METUSE}}\end{aligned}$$

Total Metric Use to Different Performances Joint Estimation Equations

$$\begin{aligned}(12)\quad \text{PERFOBJ} = {} & \beta_0 + \beta_1\ \text{METUSE} + \beta_2\ \text{MKTOR} + \beta_3\ \text{ORGINV} + \beta_4\ \text{BUSPERF} + \beta_5\ \text{SIZE} \\ & + \beta_6\ \text{MKT} + \beta_7\ \text{MGRLVL} + \beta_8\ \text{METUSE} * \text{MKTOR} + \beta_9\ \text{METUSE} * \text{ORGINV} \\ & + \beta_{10}\ \text{METUSE} * \text{BUSPERF} + \beta_{11}\ \text{METUSE} * \text{SIZE} + \beta_{12}\ \text{METUSE} * \text{MKT} \\ & + \beta_{13}\ \text{METUSE} * \text{MGRLVL} + \varepsilon_{\text{PERFOBJ}}\end{aligned}$$

$$\begin{aligned}(13)\quad \text{PERFPAST} = {} & \beta_0 + \beta_1\ \text{METUSE} + \beta_2\ \text{MKTOR} + \beta_3\ \text{ORGINV} + \beta_4\ \text{BUSPERF} + \beta_5\ \text{SIZE} \\ & + \beta_6\ \text{MKT} + \beta_7\ \text{MGRLVL} + \beta_8\ \text{METUSE} * \text{MKTOR} + \beta_9\ \text{METUSE} * \text{ORGINV} \\ & + \beta_{10}\ \text{METUSE} * \text{BUSPERF} + \beta_{11}\ \text{METUSE} * \text{SIZE} + \beta_{12}\ \text{METUSE} * \text{MKT} \\ & + \beta_{13}\ \text{METUSE} * \text{MGRLVL} + \varepsilon_{\text{PERFPAST}}\end{aligned}$$

$$\begin{aligned}(14)\quad \text{PERFFIN} = {} & \beta_0 + \beta_1\ \text{METUSE} + \beta_2\ \text{MKTOR} + \beta_3\ \text{ORGINV} + \beta_4\ \text{BUSPERF} + \beta_5\ \text{SIZE} \\ & + \beta_6\ \text{MKT} + \beta_7\ \text{MGRLVL} + \beta_8\ \text{METUSE} * \text{MKTOR} + \beta_9\ \text{METUSE} * \text{ORGINV} \\ & + \beta_{10}\ \text{METUSE} * \text{BUSPERF} + \beta_{11}\ \text{METUSE} * \text{SIZE} + \beta_{12}\ \text{METUSE} * \text{MKT} \\ & + \beta_{13}\ \text{METUSE} * \text{MGRLVL} + \varepsilon_{\text{PERFFIN}}\end{aligned}$$

$$\begin{aligned}(15)\quad \text{PERFMKT} = {} & \beta_0 + \beta_1\ \text{METUSE} + \beta_2\ \text{MKTOR} + \beta_3\ \text{ORGINV} + \beta_4\ \text{BUSPERF} + \beta_5\ \text{SIZE} \\ & + \beta_6\ \text{MKT} + \beta_7\ \text{MGRLVL} + \beta_8\ \text{METUSE} * \text{MKTOR} + \beta_9\ \text{METUSE} * \text{ORGINV} \\ & + \beta_{10}\ \text{METUSE} * \text{BUSPERF} + \beta_{11}\ \text{METUSE} * \text{SIZE} + \beta_{12}\ \text{METUSE} * \text{MKT} \\ & + \beta_{13}\ \text{METUSE} * \text{MGRLVL} + \varepsilon_{\text{PERFMKT}}\end{aligned}$$

where

$$\begin{aligned}(16)\quad \text{METUSE} = {} & \omega_0 + \sum_{p=1}^{5} \omega_p \text{FS}_p + \sum_{d=1}^{2} \omega_{d+5} \text{MO}_d + \sum_{g=1}^{4} \omega_{g+7} \text{MC}_g + \sum_{q=1}^{6} \omega_{q+11} \text{FC}_q \\ & + \sum_{c=1}^{4} \omega_{c+17} \text{EC}_c + \sum_{i=1}^{9} \omega_{i+21} \text{MA}_i + \varepsilon_{\text{METUSE}}\end{aligned}$$

Marketing and Financial Metric Use to Different Performances Joint Estimation Equations

$$\begin{aligned}(17)\quad \text{PERFOBJ} = {} & \beta_0 + \beta_1\ \text{MKTMET} + \beta_2\ \text{FINMET} + \beta_3\ \text{MKTOR} + \beta_4\ \text{ORGINV} + \beta_5\ \text{BUSPERF} \\ & + \beta_6\ \text{SIZE} + \beta_7\ \text{MKT} + \beta_8\ \text{MGRLVL} + \beta_9\ \text{MKTMET} * \text{MKTOR} \\ & + \beta_{10}\ \text{MKTMET} * \text{ORGINV} + \beta_{11}\ \text{MKTMET} * \text{BUSPERF} + \beta_{12}\ \text{MKTMET} * \text{SIZE} \\ & + \beta_{13}\ \text{MKTMET} * \text{MKT} + \beta_{14}\ \text{MKTMET} * \text{MGRLVL} + \beta_{15}\ \text{FINMET} * \text{MKTOR} \\ & + \beta_{16}\ \text{FINMET} * \text{ORGINV} + \beta_{17}\ \text{FINMET} * \text{BUSPERF} + \beta_{18}\ \text{FINMET} * \text{SIZE} \\ & + \beta_{19}\ \text{FINMET} * \text{MKT} + \beta_{20}\ \text{FINMET} * \text{MGRLVL} + \varepsilon_{\text{PERFOBJ}}\end{aligned}$$

$$\begin{aligned}(18)\quad \text{PERFPAST} = {} & \beta_0 + \beta_1\ \text{MKTMET} + \beta_2\ \text{FINMET} + \beta_3\ \text{MKTOR} + \beta_4\ \text{ORGINV} + \beta_5\ \text{BUSPERF} \\ & + \beta_6\ \text{SIZE} + \beta_7\ \text{MKT} + \beta_8\ \text{MGRLVL} + \beta_9\ \text{MKTMET} * \text{MKTOR} \\ & + \beta_{10}\ \text{MKTMET} * \text{ORGINV} + \beta_{11}\ \text{MKTMET} * \text{BUSPERF} + \beta_{12}\ \text{MKTMET} * \text{SIZE} \\ & + \beta_{13}\ \text{MKTMET} * \text{MKT} + \beta_{14}\ \text{MKTMET} * \text{MGRLVL} + \beta_{15}\ \text{FINMET} * \text{MKTOR} \\ & + \beta_{16}\ \text{FINMET} * \text{ORGINV} + \beta_{17}\ \text{FINMET} * \text{BUSPERF} + \beta_{18}\ \text{FINMET} * \text{SIZE} \\ & + \beta_{19}\ \text{FINMET} * \text{MKT} + \beta_{20}\ \text{FINMET} * \text{MGRLVL} + \varepsilon_{\text{PERFPAST}}\end{aligned}$$

$$\begin{aligned}(19)\quad \text{PERFFIN} = {} & \beta_0 + \beta_1\ \text{MKTMET} + \beta_2\ \text{FINMET} + \beta_3\ \text{MKTOR} + \beta_4\ \text{ORGINV} + \beta_5\ \text{BUSPERF} \\ & + \beta_6\ \text{SIZE} + \beta_7\ \text{MKT} + \beta_8\ \text{MGRLVL} + \beta_9\ \text{MKTMET} * \text{MKTOR} \\ & + \beta_{10}\ \text{MKTMET} * \text{ORGINV} + \beta_{11}\ \text{MKTMET} * \text{BUSPERF} + \beta_{12}\ \text{MKTMET} * \text{SIZE} \\ & + \beta_{13}\ \text{MKTMET} * \text{MKT} + \beta_{14}\ \text{MKTMET} * \text{MGRLVL} + \beta_{15}\ \text{FINMET} * \text{MKTOR} \\ & + \beta_{16}\ \text{FINMET} * \text{ORGINV} + \beta_{17}\ \text{FINMET} * \text{BUSPERF} + \beta_{18}\ \text{FINMET} * \text{SIZE} \\ & + \beta_{19}\ \text{FINMET} * \text{MKT} + \beta_{20}\ \text{FINMET} * \text{MGRLVL} + \varepsilon_{\text{PERFFIN}}\end{aligned}$$

$$\begin{aligned}(20)\quad \text{PERFMKT} = {} & \beta_0 + \beta_1\ \text{MKTMET} + \beta_2\ \text{FINMET} + \beta_3\ \text{MKTOR} + \beta_4\ \text{ORGINV} + \beta_5\ \text{BUSPERF} \\ & + \beta_6\ \text{SIZE} + \beta_7\ \text{MKT} + \beta_8\ \text{MGRLVL} + \beta_9\ \text{MKTMET} * \text{MKTOR} \\ & + \beta_{10}\ \text{MKTMET} * \text{ORGINV} + \beta_{11}\ \text{MKTMET} * \text{BUSPERF} + \beta_{12}\ \text{MKTMET} * \text{SIZE} \\ & + \beta_{13}\ \text{MKTMET} * \text{MKT} + \beta_{14}\ \text{MKTMET} * \text{MGRLVL} + \beta_{15}\ \text{FINMET} * \text{MKTOR} \\ & + \beta_{16}\ \text{FINMET} * \text{ORGINV} + \beta_{17}\ \text{FINMET} * \text{BUSPERF} + \beta_{18}\ \text{FINMET} * \text{SIZE} \\ & + \beta_{19}\ \text{FINMET} * \text{MKT} + \beta_{20}\ \text{FINMET} * \text{MGRLVL} + \varepsilon_{\text{PERFMKT}}\end{aligned}$$

where

$$\begin{aligned}(21)\quad \mathbf{MKTMET} = {} & \delta_0 + \sum_{p=1}^{5} \delta_p \mathbf{FS}_p + \sum_{d=1}^{2} \delta_{d+5} \mathbf{MO}_d + \sum_{g=1}^{4} \delta_{g+7} \mathbf{MC}_g + \sum_{q=1}^{6} \delta_{q+11} \mathbf{FC}_q \\ & + \sum_{c=1}^{4} \delta_{c+17} \mathbf{EC}_c + \sum_{i=1}^{9} \delta_{i+21} \mathbf{MA}_i + \varepsilon_{\text{MKTMET}}\end{aligned}$$

$$\begin{aligned}(22)\quad \mathbf{FINMET} = {} & \alpha_0 + \sum_{p=1}^{5} \alpha_p \mathbf{FS}_p + \sum_{d=1}^{2} \alpha_{d+5} \mathbf{MO}_d + \sum_{g=1}^{4} \alpha_{g+7} \mathbf{MC}_g + \sum_{q=1}^{6} \alpha_{q+11} \mathbf{FC}_q \\ & + \sum_{c=1}^{4} \alpha_{c+17} \mathbf{EC}_c + \sum_{i=1}^{9} \alpha_{i+21} \mathbf{MA}_i + \varepsilon_{\text{FINMET}}\end{aligned}$$

Online Appendix D.

Correlation Matrix for Equation 1: Metric Use to Performance

	METUSE	MKTOR	ORGINV	BUSPERF	SIZE	MKT	MGRLVL	PERF
METUSE	1.00							
MKTOR	.14	1.00						
ORGINV	.21	.16	1.00					
BUSPERF	.09	.30	.02	1.00				
SIZE	.04	-.14	-.02	.17	1.00			
MKT	-.08	-.09	-.04	.11	.27	1.00		
MGRLVL	.09	.03	.08	-.08	-.23	-.53	1.00	
PERF	.23	.17	.28	.28	.10	-.01	-.04	1.00

Correlation Matrix for Equation 2: Drivers of Metric Use

	MKTOR	ANALYZER	LOWCOST	DIFFDEF	ORGINV	METCOMP	METTRAIN	MKT	MGRLVL	WORKEXP	QUANT	SIZE	OWN	CMO	BUSPERF	B2C	SERV	LIFECYCLE	INDCONC	MKTGRW	MKTTURB	TRAD	INTAD	D2C	SM	PP	PRI	NPD	SF	DIST	METUSE
MKTOR	1.00																														
ANALYZER	.03	1.00																													
LOWCOST	-.21	-.20	1.00																												
DIFFDEF	-.04	-.41	-.27	1.00																											
ORGINV	.16	.01	-.07	-.09	1.00																										
METCOMP	.19	.08	-.09	-.13	.26	1.00																									
METTRAIN	.17	-.01	-.06	-.12	.23	.33	1.00																								
MKT	-.09	-.09	-.01	.03	-.04	-.09	-.03	1.00																							
MGRLVL	.03	.07	-.14	-.02	.08	.13	.08	-.53	1.00																						
WORKEXP	-.03	.13	-.03	-.13	.08	.16	.31	-.12	.16	1.00																					
QUANT	.13	.09	-.04	.01	.11	.11	.03	-.29	.39	.09	1.00																				
SIZE	-.14	.04	-.06	.07	-.02	.03	.10	.27	-.23	.12	-.12	1.00																			
OWN	-.15	.08	.00	-.03	.06	.05	.15	.14	-.11	.14	-.03	.66	1.00																		
CMO	-.06	.09	-.02	-.06	.04	.07	.04	.06	.04	.05	.13	.21	.14	1.00																	
BUSPERF	.30	.05	-.11	.00	.02	.03	.07	.11	-.08	-.01	-.05	.17	.02	-.02	1.00																
B2C	.06	.07	.10	-.10	.09	.03	.05	.05	-.01	.08	.00	.10	-.03	.07	.03	1.00															
SERV	.11	.01	.09	.07	-.04	-.17	-.09	.04	.00	-.14	.03	-.17	-.19	.02	-.06	.04	1.00														
LIFECYCLE	-.16	.10	.00	.19	-.09	-.07	-.02	-.03	.01	.07	.17	.21	.15	.02	-.12	.06	.06	1.00													
INDCONC	-.09	-.06	-.04	-.01	-.03	.03	.07	.02	-.05	.03	.01	.12	.12	.03	.04	-.17	-.23	-.04	1.00												
MKTGRW	.06	-.04	-.04	-.13	.08	.12	.06	.00	-.01	.01	-.14	.01	.04	.04	.37	-.03	-.21	-.34	.17	1.00											
MKTTURB	-.03	-.07	.00	.07	.01	-.05	-.01	.03	-.02	-.06	-.05	-.03	.00	.01	.03	.01	.03	.01	-.01	.03	1.00										
TRAD	.00	.02	.03	.00	-.05	-.02	.00	.06	-.05	-.01	.01	.02	-.05	-.02	.00	.11	.02	.03	-.02	-.07	.00	1.00									
INTAD	-.01	.01	.00	-.01	-.13	-.03	-.02	.02	.00	.00	-.03	-.03	-.04	-.01	.03	.02	.01	-.02	-.04	.02	.03	-.12	1.00								
D2C	.04	-.02	.01	.02	-.01	-.01	-.03	.04	-.06	-.04	-.04	-.01	-.02	-.03	-.03	.05	.10	.00	-.06	-.06	.03	-.15	-.16	1.00							
SM	.05	.01	.00	-.01	-.05	-.02	-.02	.00	.00	-.02	-.02	-.12	-.12	-.02	-.01	-.02	.07	-.04	-.04	-.04	.00	-.12	-.13	-.16	1.00						
PP	-.01	-.01	-.02	-.02	.05	.05	.02	-.09	.05	.03	.05	.02	.04	.04	-.01	-.06	-.01	-.03	.02	.06	-.03	-.11	-.12	-.15	-.12	1.00					
PRI	-.05	-.01	-.01	.02	.04	.02	.01	-.03	.02	.04	-.02	.05	.04	.04	.00	.01	-.12	.03	.04	.04	-.02	-.08	-.09	-.11	-.08	-.08	1.00				
NPD	-.01	.01	-.02	-.01	.03	.03	.04	-.02	.05	.03	.01	.03	.07	.00	-.01	-.01	-.08	.06	.05	.01	-.03	-.10	-.11	-.13	-.10	-.10	-.07	1.00			
SF	-.04	.00	.02	-.05	.20	.04	.07	-.04	.05	.06	.05	.04	.11	.00	-.03	-.04	-.10	-.01	.08	.06	.01	-.12	-.13	-.16	-.12	-.12	-.09	-.11	1.00		
DIST	-.01	.04	.01	-.02	.00	.05	.06	-.03	-.01	.05	.03	.02	.08	.01	.04	-.03	-.11	.00	.05	.06	-.02	-.07	-.07	-.09	-.07	-.06	-.05	-.06	-.07	1.00	
METUSE	.14	.12	.07	-.15	.21	.34	.31	-.08	.09	.15	.08	.04	.13	.11	.09	.13	-.20	-.04	.12	.08	-.02	-.01	.04	.00	-.09	.00	-.03	.07	.16	.04	1.00

Online Appendix E. Relationships between Different Types of Metric Use and Different Measures of Marketing Mix Performance - Separate SUR-GLS Estimation Results

Relationship between Marketing and Financial Metric Use and Different Measures of Marketing Mix Performance

Metric Type	Marketing	Financial	Marketing	Financial	Marketing	Financial	Marketing	Financial
Performance Type	Relative to Objectives		Compared to Past		Financial		Marketing	
Metric Use to Performance (Equation 1)								
Intercept	.00***	.00***	.00***	.00***	.00***	.00***	.00***	.00***
Market Orientation	.13**	.13**	.12*	.14**	.02	.08	.18***	.18***
Organizational Involvement	.27***	.22***	.29***	.26***	.19***	.14**	.23***	.16***
Recent Business Performance	.20***	.12*	.16**	.09	.16**	.11*	.16**	.07
Company Size (Ln)	.15***	.11*	.12**	.06	.32***	.21***	.21***	.14**
Marketing Functional Area	-.01	.03	.09	.06	.07	.11*	.01	.09
Level in Organization	.02	.06	.09	.08	.08	.13*	.03	.14*
Metric Use	.49**	.15	.49**	.19	.64***	.35*	.72***	.19
Metric Use * Market Orientation	-.24	-.13	-.28	-.26	-.15	-.20	-.44**	-.26
Metric Use * Organizational Involvement	-.07	.04	-.03	.01	.10	.18*	.00	.18*
Metric Use * Recent Business Performance	.15	.27*	.22	.39**	-.12	.24	.05	.31*
Metric Use * Company Size (Ln)	-.24***	-.10	-.21**	-.10	-.15*	-.09	-.18*	-.04
Metric Use * Marketing Functional Area	-.02	-.08	-.13*	-.09	-.18**	-.21***	-.09	-.18**
Metric Use * Level in Organization	-.11	-.18**	-.17**	-.17**	-.21**	-.31***	-.11	-.27***
Drivers of Metric Use (Equation 2)								
Intercept	.00	.00***	.00*	.00**	.00*	.00***	.00	.00***
Market Orientation	.15***	.02	.16***	.02	.16***	.02	.15***	.03
Analyzer[1]	.08*	.17***	.07*	.17***	.06	.16***	.07*	.16***
Low-Cost Defender[1]	.12***	.20***	.12***	.18***	.10**	.18***	.10**	.19***
Differentiated Defender[1]	.02	.09**	.03	.08**	.01	.08*	.01	.09**
Organizational Involvement	.05	.08**	.05	.08**	.05	.07**	.04	.07**
Metric Compensation	.16***	.20***	.15***	.20***	.16***	.21***	.15***	.22***
Metric Training	.14***	.15***	.13***	.16***	.14***	.16***	.14***	.16***
Marketing Functional Area	-.01	.01	-.01	.00	-.02	.01	-.02	.01
Level in Organization	.04	.06*	.02	.05	.01	.04	.02	.05
Work Experience	.01	-.04	-.01	-.06*	.00	-.06*	-.01	-.05
Quantitative Background	-.04	.06*	-.02	.07*	-.05	.06*	-.05	.05
Company Size (Ln)	-.08*	-.14***	-.10*	-.16***	-.09*	-.16***	-.10*	-.15***
Type of Ownership (Public)	.08*	.13***	.09*	.14***	.08*	.13***	.08*	.13***
CMO Presence	.05*	.12***	.06*	.12***	.06*	.14***	.06*	.14***
Recent Business Performance	.06	.08**	.06	.09**	.05	.09**	.05	.08**
B2C (vs. B2B)	.11***	.07**	.12***	.08**	.13***	.08**	.13***	.09***

Services (vs. Goods)	-.09**	-.18***	-.09**	-.17***	-.08**	-.17***	-.08**	-.17***
Maturity/Declining Product Life Cycle	-.04	.02	-.04	.02	-.01	.03	-.02	.03
Industry Concentration (Concentrated)	.10***	.08***	.11***	.09***	.12***	.10***	.12***	.10***
Market Growth	-.04	-.02	-.04	-.04	-.03	-.03	-.03	-.03
Market Turbulence (More)	-.01	-.01	.00	.00	-.01	-.01	.00	-.01
Traditional Advertising[2]	.06*	.09**	.07*	.09**	.07*	.09**	.06	.09**
Internet Advertising[2]	.11***	.16***	.11**	.16***	.11**	.17***	.11**	.15***
Direct to Consumer[2]	.05	.19***	.04	.20***	.04	.20***	.04	.19***
Social Media[2]	.06	-.01	.06	.00	.09*	.01	.08*	.00
Price Promotions[2]	-.04	.07**	-.05	.08**	-.05	.08**	-.04	.08*
Pricing[2]	.05	.16***	.05	.16***	.04	.17***	.05	.17***
New Product Development[2]	.14***	.19***	.14***	.19***	.14***	.20***	.14***	.20***
Sales Force[2]	-.02	.17***	-.02	.17***	-.02	.18***	-.02	.19***
Distribution[2]	.00	.08**	.02	.10***	.01	.10***	.01	.10***
Model Diagnostics for SUR System of Equations								
System Weighted MSE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Degrees of freedom	2529	2529	2357	2357	2309	2309	2239	2239
System Weighted R- Square	.18	.25	.18	.25	.20	.27	.18	.26

*p<.05; **p<.01; ***p<.001; [1] Analyzers, low-cost defenders, and differentiated defenders are compared to prospectors.
[2] All marketing mix activities are compared to PR/sponsorships decisions.

Relationship between General and Specific Metric Use and Different Measures of Marketing Mix Performance

Metric Type	General	Specific	General	Specific	General	Specific	General	Specific
Performance Type	Relative to Objectives		Compared to Past		Financial		Marketing	
Metric Use to Performance (Equation 1)								
Intercept	.00***	.00***	.00***	.00***	.00***	.00***	.00***	.00***
Market Orientation	.12**	.16***	.11*	.16***	.05	.06	.21***	.14**
Organizational Involvement	.24***	.22***	.27***	.28***	.14***	.19***	.18***	.23***
Recent Business Performance	.18***	.11*	.13*	.12*	.17**	.06	.13*	.08
Company Size (Ln)	.14***	.10*	.10*	.08	.28***	.23***	.20***	.14**
Marketing Functional Area	.00	.05	.06	.09	.07	.11	.01	.14*
Level in Organization	.03	.07	.08	.08	.12*	.08	.09	.10
Metric Use	.35*	.25	.26	.46**	.60**	.35*	.69***	.19
Metric Use * Market Orientation	-.18	-.23	-.23	-.33*	-.22	-.20	-.52***	-.16
Metric Use * Organizational Involvement	-.01	.06	.02	-.01	.19*	.09	.11	.05
Metric Use * Recent Business Performance	.18	.25	.31*	.27*	.02	.14	.12	.29*
Metric Use * Company Size (Ln)	-.21**	-.08	-.15*	-.15*	-.18*	.02	-.15	-.04
Metric Use * Marketing Functional Area	-.03	-.10	-.10	-.15*	-.17**	-.24***	-.07	-.27***
Metric Use * Level in Organization	-.14*	-.16*	-.20**	-.14*	-.30***	-.20**	-.21**	-.19**
Drivers of Metric Use (Equation 2)								
Intercept	.00***	.00	.00***	.00	.00***	.00	.00**	.00
Market Orientation	.13***	.01	.13***	.00	.13***	.01	.13***	.02
Analyzer[1]	.12***	.12***	.11***	.12***	.11***	.10**	.11**	.10**
Low-Cost Defender[1]	.18***	.09**	.17***	.08**	.16***	.07*	.17***	.08*
Differentiated Defender[1]	.05	.06	.05	.06	.04	.05	.04	.06
Organizational Involvement	.07*	.05	.07*	.04	.06*	.05	.06*	.04
Metric Compensation	.18***	.15***	.18***	.15***	.18***	.16***	.18***	.16***
Metric Training	.13***	.16***	.13***	.16***	.14***	.15***	.14***	.16***
Marketing Functional Area	-.04	.08*	-.04	.07*	-.04	.08*	-.04	.08*
Level in Organization	.03	.07*	.02	.05	.01	.05	.02	.05
Work Experience	.02	-.08**	.00	-.10***	.01	-.09**	.00	-.09**
Quantitative Background	.00	.02	.02	.03	.00	.01	.00	.01
Company Size (Ln)	-.11**	-.10**	-.13***	-.12**	-.13**	-.11**	-.13**	-.10*
Type of Ownership (Public)	.10**	.09**	.11**	.10**	.10**	.08*	.11**	.08*
CMO Presence	.08**	.08**	.09**	.09**	.10***	.09***	.10***	.10***
Recent Business Performance	.05	.10***	.05	.11***	.05	.11***	.04	.09**
B2C (vs. B2B)	.09***	.10***	.09***	.10***	.09***	.12***	.09**	.14***
Services (vs. Goods)	-.12***	-.15***	-.11***	-.14***	-.11***	-.14***	-.11***	-.15***
Maturity/Declining Product Life Cycle	-.02	.01	-.02	.01	.00	.03	-.01	.03
Industry Concentration (Concentrated)	.08**	.11***	.09***	.12***	.10***	.12***	.10***	.14***

Market Growth	-.03	-.03	-.03	-.05	-.02	-.03	-.03	-.03
Market Turbulence (More)	.00	-.03	.01	-.02	.00	-.03	.01	-.03
Traditional Advertising[2]	.12***	-.02	.13***	-.02	.12***	-.02	.12***	-.03
Internet Advertising[2]	.06*	.27***	.06	.27***	.06	.28***	.07*	.24***
Direct to Consumer[2]	.09**	.16***	.09**	.16***	.09*	.17***	.09*	.15***
Social Media[2]	.00	.08*	.01	.08*	.03	.10**	.01	.10**
Price Promotions[2]	.06*	-.08**	.06*	-.09**	.06	-.08**	.06	-.09**
Pricing[2]	.14***	.01	.14***	.01	.14***	.02	.14***	.01
New Product Development[2]	.22***	.02	.22***	.03	.22***	.03	.23***	.03
Sales Force[2]	.06*	.08*	.06	.09*	.06	.10**	.07*	.09**
Distribution[2]	.06*	.00	.07*	.01	.07*	.01	.07*	.01
Model Diagnostics for SUR System of Equations								
System Weighted MSE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Degrees of freedom	2529	2529	2357	2357	2309	2309	2239	2239
System Weighted R- Square	.22	.20	.21	.21	.23	.22	.21	.21

*p<.05; **p<.01; ***p<.001; [1] Analyzers, low-cost defenders, and differentiated defenders are compared to prospectors.
[2] All marketing mix activities are compared to PR/sponsorships decisions.