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# When does metric use matter less?

When does metric use matter less?

## How firm and managerial characteristics moderate the relationship between metric use and marketing mix performance

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### Abstract

**Purpose** – This paper aims to develop a conceptual framework, in an effort toward 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 reviews of the marketing, finance, management and accounting literatures, and homophily, firm resource- and decision-maker-based theories and 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 that 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 toward 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, as prior research has generally focused on the development of metrics or the linking of marketing efforts with performance metrics, but paid little attention to understanding the relationship between managerial metric use and performance of the marketing mix decision and has not considered how the relationship is moderated by firm and managerial characteristics.

**Keywords** Marketing, Marketing management, Marketing decision-making

**Paper type** Research paper



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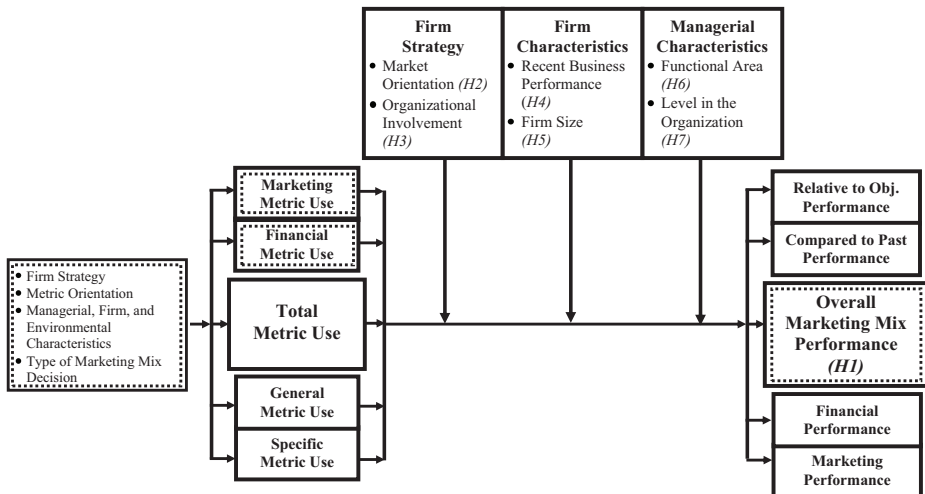
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**Introduction**

The relationship between managerial metric use, i.e. the practice of using metrics for marketing decisions, and the performance of marketing mix decisions is an increasingly important topic for practitioners and academicians (MSI, 1998 Research Priorities; ISBM, 2008 B-To-B Marketing Trend Reports). While research has typically focused on the advantages of using metrics, with the general consensus assuming that increasing metric use is beneficial to marketing performance (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 whether this relationship is moderated by firm and managerial characteristics or whether the moderation effect depends on the types of metrics used and the types of performance considered (Figure 1). These moderation effects, the central focus of this work, are fundamental building blocks for:

- 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.



**Figure 1.**  
Conceptual  
framework



- 
- 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.

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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, using 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 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, as well as 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 use data from Mintz and Currim (2013) which comprises 1,287 marketing mix decisions reported by 439 US 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 used 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-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:

- firm strategy, firm characteristics and managerial characteristics would be particularly important moderators ([Finkelstein \*et al.\*, 2009](#); [Perkins and Rao, 1990](#); [Vorhies and Morgan, 2005](#)); and
- metric use is endogenously driven and thus needed to be controlled for in our empirical test ([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 used by [Mintz and Currim \(2013\)](#), i.e. firm strategy, market orientation and type of marketing mix decision, as well as 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.)<sup>[1]</sup>. The goals of these interviews were to understand:

- Why managers used metrics for their marketing decisions.
- Whether metric use was related to the performance of marketing mix decisions.
- 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 the second point above).
- Gain a managerial perspective for why these settings have a greater or lesser impact.
- 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 the third point 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 the first point above), they responded with the firm, managerial and environmental reasons included in Figure 1 as controls of metric use. The results foremost provided convergent validity for our conceptual model. Further, they 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 used jointly to develop the conceptual model on moderators, construct hypotheses on moderating effects and 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 using 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:

- Four types of metrics (classified by a  $2 \times 2$  matrix) in addition to total metrics.
- Four marketing mix performance measures in addition to overall performance.



We classify the metrics based on [Mintz and Currim \(2013\)](#) as being either marketing or financial metrics, with marketing metrics defined as based on a customer or marketing mind set, and financial metrics defined as monetary based, based on financial ratios or readily converted to monetary outcomes; and being general or specific to the 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:

- performance relative to stated objectives;
- compared to past performance;
- financial performance, which is based on profitability, sales and ROI; and
- 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, as managers are using 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, as managers may not assess the most meaningful metrics ([Gigerenzer and Goldstein, 1996](#); [Ittner and Larcker, 2003](#)), using 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 use similar decision-making and evaluative processes to benchmark and monitor decisions 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 the study by [Mintz and Currim \(2013\)](#), i.e. three variables each studied extensively in the marketing strategy literature:



- 
- (1) market orientation (Kohli and Jaworski, 1990);
  - (2) strategic orientation (Olson *et al.*, 2005); and
  - (3) organizational involvement in managerial decision making (Noble and Mokwa, 1999).

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Because 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 used as the hypothesized firm strategy variables. Market orientation describes the extent to which a firm's strategy is outwardly (i.e. customer) or inwardly (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 based 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 based 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 enable 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, 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: recent business performance and 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 the 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 used, the measurements and information inherent in the current metrics used by the firm for less risky investments in the marketing mix become less relevant. Consequently, current metrics used 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 using 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 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, as 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 use 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:

- (1) functional area (marketing vs non-marketing); and
- (2) 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 the need to use 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 use 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 using 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 use 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 use 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 use 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 use 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 consist of 1,287 marketing decisions reported by 439 US managers. The majority of the managers (84 per cent) and decisions (81 per cent) were from LinkedIn professional organizations, which posted announcements and promoted the survey on their Web pages, with the remaining managers from MBA alumni of a US 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 eight operational measures and indicated the level of organizational involvement for each decision. The metrics listed were based on the studies by 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 the studies by 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:

- Market orientation is based on the studies by Deshpande and Farley (1998), Jaworski and Kohli (1993) and Verhoef and Leeflang (2009).
- Organizational involvement is based on the studies by Noble and Mokwa (1999).
- Recent business performance is adapted from the studies by Jaworski and Kohli (1993).
- Firm size is taken from Verhoef and Leeflang (2009).
- Functional area and level in the organization are from the studies by Finkelstein *et al.* (2009).

Analyses of the data show no indication of multicollinearity and heteroskedasticity[4]. Exploratory factor analyses indicated that the factor loadings for constructs were all above 0.7, while coefficient alphas for all of the moderator variables are greater than 0.7. 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, SD = 4.6) and marketing mix performance (mean = 4.9, SD = 1.1). The sample also has good variation on the moderators, market orientation (mean = 5.0, SD = 1.1), organizational involvement in the marketing mix decision (mean = 3.8, SD = 1.7), recent business performance (mean = 5.3, SD = 1.3), company size (mean = 9,185 employees, median = 125 employees which indicates a good mix of large and small firms), functional area (54 per cent marketing managers vs 46 per cent non-marketing) and managerial level in the organization (58 per cent VP and above vs 42 per cent below VP).

### Model

Following the extended conceptual framework ([Figure 1](#)), we specify a model comprising 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 by [Mintz and Currim \(2013\)](#). We formulate the two sub-models as follows:

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

This paper

Where:

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

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

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manager used 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 Table AI. The list of metrics considered is provided in Table AII.

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 using 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 used 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 use 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:

- the type of metrics used, i.e. general and specific, in addition to marketing, financial and total metrics; and
- 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.

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Our main goal of decomposing types of metrics used 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 use both separate and joint estimations similar to the aforementioned econometric model to test each type of metric and performance assessed. For type of metric used, for what we label as separate estimation, each type of metric used 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 [Appendix 3](#). 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 [Appendix 3](#)]. 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 [Appendix 3](#) 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 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 [Appendix 3](#)].

## Empirical test

### *Results of hypothesis testing*

[Table I](#) presents the results of our empirical analysis; it includes the results of the:

- Main effects of metric use and the six firm and managerial characteristics on marketing mix performance.
- Interaction effects of metric use and the six hypothesized interactions on marketing mix performance.
- 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



Variable	Parameter estimate
<i>Metric use to performance (Equation 1)</i>	
Intercept	0.00***
Market orientation	0.15**
Organizational involvement	0.20***
Recent business performance	0.17***
Company size (Ln)	0.16**
Marketing functional area	0.06
Level in organization	0.09
Metric use	0.54**
Metric use × market orientation	-0.37**
Metric use × organizational involvement	0.09
Metric use × recent business performance	0.22
Metric use × company size (Ln)	-0.16*
Metric use × marketing functional area	-0.15*
Metric use × level in organization	-0.23***
<i>Drivers of metric use (Equation 2)</i>	
Intercept	0.00**
Market orientation	0.10***
Analyzer <sup>a</sup>	0.14***
Low-cost defender <sup>a</sup>	0.18***
Differentiated defender <sup>a</sup>	0.06*
Organizational involvement	0.07**
Metric compensation	0.20***
Metric training	0.17***
Marketing functional area	0.00
Level in organization	0.05
Work experience	-0.02
Quantitative background	0.00
Company size (Ln)	-0.12***
Type of ownership (Public)	0.12***
CMO presence	0.10***
Recent business performance	0.08**
B2C (vs B2B)	0.11***
Services (vs Goods)	-0.15***
Maturity/declining product life cycle	-0.01
Industry concentration (concentrated)	0.11***
Market growth	-0.04
Market turbulence (more)	-0.01
Traditional advertising <sup>b</sup>	0.09**
Internet advertising <sup>b</sup>	0.15***
Direct to consumer <sup>b</sup>	0.13***
Social media <sup>b</sup>	0.03
Price promotions <sup>b</sup>	0.01
Pricing <sup>b</sup>	0.11***
New product development <sup>b</sup>	0.19***
Sales force <sup>b</sup>	0.08**
Distribution <sup>b</sup>	0.04

**Table I.**  
Relationship between  
metric use and  
marketing mix  
performance-SUR-  
GLS estimation  
results

(continued)

Variable	Parameter estimate
<i>Model diagnostics for SUR system of equations</i>	
System-weighted MSE	1.00
Degrees of freedom	2,529
System-weighted $R^2$	0.26

**Notes:** \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ ; <sup>a</sup>analyzers, low-cost defenders and differentiated defenders are compared to prospectors; <sup>b</sup>all marketing mix activities are compared to PR/sponsorships decisions

*H2-H7*, we find that the impact of metric use on overall marketing mix performance is lower [Equation (1) in Table I] for:

- Stronger market orientations ( $p < 0.01$ );
- Larger firms ( $p < 0.05$ );
- Marketing managers ( $p < 0.05$ ); and
- Higher-level managers ( $p < 0.01$ ).

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:

- For firms with strong market orientation ideology, performance of marketing mix decisions is more ideologically based than data based; hence, metric use is less impactful relative to firms with weaker market orientations.
- Smaller firms benefit more than larger ones in terms of marketing mix performance from employing metrics.
- Marketing managers have greater experience with marketing decisions than non-marketing managers thus metric use is less helpful for their decisions.
- 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 II), and general and specific metrics (Table III), the analysis reveals a significant moderation effect of recent business performance on the relationship between financial and specific metric use and overall performance (both  $p < 0.05$ ) that is directionally consistent with *H4*, which was insignificant with total metric use. Consequently, *H4* is now supported

Metric type	Marketing	Financial	Marketing	Financial
Separate or joint model estimation	Separate	Separate	Joint	Joint
<i>Metric use to performance (Equation 1)</i>				
Intercept	0.00***	0.00***		0.00***
Market orientation	0.11**	0.14**		0.16**
Organizational involvement	0.25***	0.19***		0.20***
Recent business performance	0.22***	0.16***		0.16***
Company size (Ln)	0.19***	0.09*		0.17**
Marketing functional area	0.03	0.04		0.06
Level in organization	0.04	0.07		0.09
Metric use	0.64***	0.25	0.60***	-0.04
Metric use × market orientation	-0.32*	-0.25	-0.15	-0.25
Metric use × organizational involvement	0.01	0.12	-0.06	0.16
Metric use × recent business performance	0.12	0.30*	-0.06	0.36*
Metric use × company size (Ln)	-0.21**	-0.07	-0.22**	0.05
Metric use × marketing functional area	-0.12*	-0.13*	-0.09	-0.06
Metric use × level in organization	-0.17**	-0.22***	-0.08	-0.17*
<i>Drivers of metric use (Equation 2)</i>				
Intercept	0.00	0.00***	0.00	0.00***
Market orientation	0.15***	0.02	0.15***	0.02
Analyzer <sup>a</sup>	0.08*	0.17***	0.08*	0.17***
Low-cost defender <sup>a</sup>	0.12***	0.20***	0.12***	0.20***
Differentiated defender <sup>a</sup>	0.02	0.09**	0.02	0.09**
Organizational involvement	0.05	0.08**	0.05	0.08**
Metric compensation	0.16***	0.20***	0.16***	0.20***
Metric training	0.14***	0.15***	0.14***	0.15***
Marketing functional area	0.00	0.01	-0.01	0.01
Level in organization	0.04	0.06*	0.04	0.06*
Work experience	0.01	-0.04	0.01	-0.04
Quantitative background	-0.04	0.06*	-0.04	0.06*
Company size (Ln)	-0.08*	-0.14***	-0.08*	-0.14***
Type of ownership (public)	0.08*	0.13***	0.08*	0.13***
CMO presence	0.05*	0.12***	0.05*	0.12***
Recent business performance	0.06	0.08**	0.06	0.08**
B2C (vs B2B)	0.11***	0.07**	0.11***	0.07**
Services (vs Goods)	-0.09***	-0.18***	-0.09**	-0.18***
Maturity/declining product life cycle	-0.04	0.02	-0.04	0.02
Industry concentration (concentrated)	0.10***	0.08**	0.10***	0.08***
Market growth	-0.04	-0.02	-0.04	-0.02
Market turbulence (more)	-0.01	-0.01	-0.01	-0.01
Traditional advertising <sup>b</sup>	0.06	0.09**	0.06*	0.09**
Internet advertising <sup>b</sup>	0.11**	0.16***	0.11**	0.16***
Direct to consumer <sup>b</sup>	0.05	0.19***	0.05	0.19***
Social media <sup>b</sup>	0.06	-0.01	0.06	-0.01
Price promotions <sup>b</sup>	-0.04	0.07**	-0.04	0.07**
Pricing <sup>b</sup>	0.05	0.16***	0.05	0.16***
New product development <sup>b</sup>	0.14***	0.19***	0.14***	0.19***
Sales force <sup>b</sup>	-0.02	0.17***	-0.02	0.17***
Distribution <sup>b</sup>	0.00	0.08**	0.00	0.08**

**Table II.**  
Relationship between  
marketing and  
financial metric use  
and marketing mix  
performance-SUR-  
GLS estimation  
results

(continued)

Metric type	Marketing	Financial	Marketing	Financial
Separate or joint model estimation	Separate	Separate	Joint	Joint
<i>Model diagnostics for SUR system of equations</i>				
System-weighted MSE	1.00	1.00		1.00
Degrees of freedom	2,529	2,529		3,778
System-weighted $R^2$	0.20	0.28		0.24

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**Notes:** \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ ; <sup>a</sup>analyzers, low-cost defenders, and differentiated defenders are compared to prospectors; <sup>b</sup>all marketing mix activities are compared to PR/sponsorships decisions

Table II.

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 IV), the moderating effect of organizational involvement ( $H3$ ), which was insignificant with overall marketing mix performance, is now found to be significant for financial performance ( $p < 0.05$ ), 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 ( $p < 0.05$ ). 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 Tables AV and VI),  $H3$  is supported for financial metric use and financial and marketing performance (both  $p < 0.05$ ) and for general metric use and financial performance ( $p < 0.05$ ). In addition,  $H4$  is supported for:

- financial metric use and relative to stated objectives ( $p < 0.05$ ), compared to past ( $p < 0.01$ ), and marketing performance measures ( $p < 0.05$ );
- general metrics and compared to past performance ( $p < 0.05$ ); and
- specific metric use and compared to past performance and marketing performance (both  $p < 0.05$ ).

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 II-IV and summarized in Table V further strengthen the results of our original hypotheses that tested the moderators of total metric use and overall performance by finding that:

- when there is less organizational involvement in a marketing mix decision, managers do not need to use as many metrics to help “speak a common language” to reduce uncertainty; and
- 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.

Metric type	General	Specific	General	Specific
Separate or joint model estimation	Separate	Separate	Joint	Joint
<i>Metric use to performance (Equation 1)</i>				
Intercept	0.00***	0.00***		0.00***
Market orientation	0.12**	0.15**		0.17***
Organizational involvement	0.20***	0.24***		0.21***
Recent business performance	0.21***	0.15**		0.15**
Company Size (Ln)	0.16**	0.09*		0.15**
Marketing functional area	0.01	0.09		0.11
Level in organization	0.05	0.09		0.12*
Metric use	0.50**	0.36*	0.42*	0.25
Metric use × market orientation	-0.31*	-0.29*	-0.21	-0.25
Metric use × organizational involvement	0.10	0.06	0.08	0.01
Metric use × recent business performance	0.16	0.29*	0.04	0.25
Metric use × company size (Ln)	-0.18*	-0.05	-0.18*	0.02
Metric use × marketing functional area	-0.08	-0.22***	-0.02	-0.20**
Metric use × level in organization	-0.20**	-0.22***	-0.12	-0.15*
<i>Drivers of metric use (Equation 2)</i>				
Intercept	0.00***	0.00	0.00***	0.00
Market orientation	0.13***	0.01	0.13***	0.01
Analyzer <sup>a</sup>	0.12***	0.12***	0.12***	0.12***
Low-cost defender <sup>a</sup>	0.18***	0.10**	0.18***	0.10**
Differentiated defender <sup>a</sup>	0.05	0.06	0.05	0.06
Organizational involvement	0.07*	0.04	0.07*	0.05
Metric compensation	0.18***	0.15***	0.18***	0.15***
Metric training	0.14***	0.16***	0.14***	0.16***
Marketing functional Area	-0.04	0.08*	-0.04	0.08*
Level in organization	0.03	0.07*	0.03	0.07*
Work experience	0.02	-0.08**	0.02	-0.08**
Quantitative background	0.00	0.02	0.00	0.02
Company size (Ln)	-0.11**	-0.10**	-0.11**	-0.10**
Type of ownership (public)	0.10**	0.09**	0.10**	0.09**
CMO presence	0.08**	0.08**	0.08**	0.08**
Recent business performance	0.05	0.10***	0.05	0.10***
B2C (vs B2B)	0.09***	0.10***	0.09***	0.10***
Services (vs Goods)	-0.12***	-0.15***	-0.12***	-0.15***
Maturity/declining product life cycle	-0.02	0.01	-0.02	0.01
Industry concentration (concentrated)	0.08**	0.11***	0.08**	0.11***
Market growth	-0.03	-0.03	-0.03	-0.03
Market turbulence (more)	0.00	-0.03	0.00	-0.03
Traditional advertising <sup>b</sup>	0.12***	-0.02	0.12***	-0.02
Internet advertising <sup>b</sup>	0.06*	0.27***	0.06	0.27***
Direct to consumer <sup>b</sup>	0.09**	0.16***	0.09**	0.16***
Social media <sup>b</sup>	0.00	0.08*	0.00	0.08*
Price promotions <sup>b</sup>	0.06*	-0.08**	0.06*	-0.08**
Pricing <sup>b</sup>	0.14***	0.01	0.14***	0.01
New product development <sup>b</sup>	0.22***	0.02	0.22***	0.02
Sales force <sup>b</sup>	0.06*	0.08*	0.06*	0.08*
Distribution <sup>b</sup>	0.06*	0.00	0.06*	-0.01

(continued)

**Table III.**  
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	Joint
<i>Model diagnostics for SUR system of equations</i>				
System-weighted MSE	1.00	1.00		1.00
Degrees of freedom	2,529	2,529	3,778	
System-weighted $R^2$	0.20	0.28		0.24

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**Notes:** \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ ; <sup>a</sup>analyzers, low-cost defenders, and differentiated defenders are compared to prospectors; <sup>b</sup>all marketing mix activities are compared to PR/sponsorships decisions

Table III.

### *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 the five additional models, one 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 five other moderators are insignificant. Therefore, we conclude that 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 used or whether it is dependent on the setting, i.e. the characteristics of firms and managers using the metrics. Constructive choice theory (Bettman *et al.*, 1998) suggests that managers who expend more effort to use additional metrics will improve their marketing mix decisions accuracy and performance. However, managers who use 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 V 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 the 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

**Table IV.**  
Relationship between  
metric use and  
different measures of  
marketing mix  
performance-SUR-  
GLS estimation  
results

Performance type Separate or joint model estimation	Relative to objectives		Compared to past		Relative to objectives		Compared to Past		Marketing	
	Separate	Separate	Separate	Separate	Separate	Separate	Separate	Joint	Financial	Marketing
<i>Metric use to performance (Equation 1)</i>										
Intercept	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00**	0.00***	0.00***
Market orientation	0.15**	0.16***	0.07	0.14***	0.16***	0.16**	0.22***	0.22***	0.09	0.22***
Organizational involvement	0.24***	0.27***	0.14***	0.26***	0.18***	0.19***	0.27***	0.27***	0.19***	0.16**
Recent business performance	0.11*	0.06	0.26***	0.15**	0.16**	0.19***	0.11*	0.11*	0.28***	0.18***
Company size (Ln)	0.19***	0.15**	0.15**	0.13*	0.13*	0.15*	0.17**	0.17**	0.12	0.13*
Marketing functional area	0.03	0.11	0.14*	0.12*	0.09	0.07	0.16*	0.16*	0.13*	0.10
Level in organization	0.06	0.12*	0.16**	0.12*	0.06	0.06	0.13*	0.13*	0.14*	0.14*
Metric use	0.39*	0.41*	0.61***	0.58**	0.51**	0.51**	0.65***	0.65***	0.73***	0.59**
Metric use × market orientation	-0.24	-0.35*	-0.24	-0.45**	-0.23	-0.23	-0.50**	-0.50**	-0.31*	-0.42**
Metric use × organizational involvement	-0.01	-0.01	0.18*	0.10	-0.03	-0.03	0.01	0.01	0.12	0.15
Metric use × recent business performance	0.23	0.35*	0.04	0.19	0.07	0.07	0.29*	0.29*	0.01	0.13
Metric use × company size (Ln)	-0.21**	-0.19*	-0.14	-0.13	-0.17*	-0.17*	-0.21*	-0.21*	-0.10	-0.12
Metric use × marketing functional area	-0.06	-0.14*	-0.24***	-0.16*	-0.10	-0.10	-0.20**	-0.20**	-0.25***	-0.18**
Metric use × level in organization	-0.16*	-0.21**	-0.31***	-0.23**	-0.16*	-0.16*	-0.23**	-0.23**	-0.31***	-0.25***
<i>Drivers of metric use (Equation 2)</i>										
Intercept	0.00**	0.00**	0.00**	0.00**	0.00**	0.00**	0.00**	0.00**	0.00**	0.00**
Market orientation	0.10***	0.11***	0.11***	0.11***	0.11***	0.11***	0.11***	0.11***	0.12***	0.12***
Analyzer <sup>a</sup>	0.14***	0.13***	0.12***	0.12***	0.12***	0.12***	0.12***	0.12***	0.11***	0.11***
Low-Cost defender <sup>a</sup>	0.18***	0.17***	0.16***	0.16***	0.16***	0.16***	0.16***	0.16***	0.14***	0.14***
Differentiated defender <sup>a</sup>	0.06*	0.06*	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Organizational involvement	0.07**	0.07**	0.07*	0.07*	0.06*	0.06*	0.07*	0.07*	0.07*	0.07*
Metric compensation	0.20***	0.20***	0.21***	0.21***	0.21***	0.21***	0.21***	0.21***	0.21***	0.21***
Metric training	0.17***	0.16***	0.17***	0.17***	0.17***	0.17***	0.17***	0.17***	0.17***	0.17***
Marketing functional area	0.00	-0.01	-0.01	-0.01	0.00	0.00	-0.01	-0.01	0.01	0.01
Level in organization	0.05	0.04	0.03	0.04	0.04	0.04	0.03	0.03	0.03	0.03
Work experience	-0.02	-0.04	-0.03	-0.04	-0.04	-0.04	-0.03	-0.03	-0.04	-0.04

(continued)



Performance type Separate or joint model estimation	Relative to objectives		Compared to past		Marketing objectives		Compared to Past		Marketing
	Separate	Separate	Separate	Separate	Separate	Separate	Joint		
Quantitative background	0.00	0.02	0.00	0.00	0.00	0.01	0.01	0.01	
Company size (Ln)	-0.13***	-0.15***	-0.14***	-0.14***	-0.14***	-0.15***	-0.15***	-0.15***	
Type of ownership (public)	0.12***	0.13***	0.12**	0.12**	0.12**	0.12**	0.12**	0.12**	
CMO presence	0.10***	0.10***	0.12***	0.12***	0.12***	0.11***	0.11***	0.11***	
Recent business performance	0.08**	0.08**	0.08**	0.08**	0.07*	0.06*	0.06*	0.06*	
B2C (vs B2B)	0.11***	0.11***	0.12***	0.12***	0.12***	0.12***	0.12***	0.12***	
Services (vs Goods)	-0.15***	-0.14***	-0.14***	-0.14***	-0.14***	-0.13***	-0.13***	-0.13***	
Maturity/declining product life cycle	-0.01	-0.01	0.01	0.01	0.01	0.01	0.01	0.01	
Industry concentration (concentrated)	0.11***	0.12***	0.13***	0.13***	0.13***	0.15***	0.15***	0.15***	
Market growth	-0.04	-0.04	-0.03	-0.04	-0.04	-0.03	-0.03	-0.03	
Market turbulence (more)	-0.01	0.00	-0.01	-0.01	-0.01	0.00	0.00	0.00	
Traditional advertising <sup>b</sup>	0.09**	0.10**	0.09**	0.09**	0.09**	0.09**	0.09**	0.09**	
Internet advertising <sup>b</sup>	0.15***	0.15***	0.15***	0.15***	0.14***	0.14***	0.14***	0.14***	
Direct to consumer <sup>b</sup>	0.13***	0.13***	0.14***	0.14***	0.13***	0.14***	0.14***	0.14***	
Social media <sup>b</sup>	0.03	0.03	0.06	0.06	0.05	0.05	0.05	0.05	
Price promotions <sup>b</sup>	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.01	
Pricing <sup>b</sup>	0.11***	0.11***	0.12***	0.12***	0.12***	0.12***	0.12***	0.12***	
New product development <sup>b</sup>	0.19***	0.19***	0.19***	0.19***	0.19***	0.18***	0.18***	0.18***	
Sales force <sup>b</sup>	0.08**	0.08*	0.09*	0.09*	0.09**	0.08*	0.08*	0.08*	
Distribution <sup>b</sup>	0.04	0.06*	0.06*	0.06*	0.06*	0.06*	0.06*	0.06*	
<i>Model diagnostics for SUR system of equations</i>									
System-weighted MSE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Degrees of freedom	2,529	2,357	2,309	2,309	2,239	5,308	5,308	5,308	
System-weighted $R^2$	0.23	0.23	0.25	0.25	0.23	0.14	0.14	0.14	

**Notes:** \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.005$ ; <sup>a</sup>analyzers, low-cost defenders and differentiated defenders are compared to prospectors; <sup>b</sup>all marketing mix activities are compared to PR/sponsorships decisions

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**Table V.**  
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
<i>Overall performance</i>						
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
<i>Performance relative to objectives</i>						
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
<i>Compared to past performance</i>						
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

(continued)

Variable	Hypo-thesis	Total metric use	Marketing metric use	Financial metric use	General metric use	Specific metric use
<i>Financial performance</i>						
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
<i>Marketing performance</i>						
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

**Notes:** Supported =  $p < 0.05$ ; - = insignificant; only separate estimation results are displayed for ease of readability, for joint estimation results, please contact the authors directly

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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:

- 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.
- 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.
- 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, as prior research has generally focused on the development of metrics (Farris *et al.*, 2010) or the linking of marketing efforts with performance metrics (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 (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:

- Marketing metrics (e.g. customer satisfaction) to improve financial performance.
- Financial metrics 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 marketing metrics is in smaller firms, and non-marketing and lower-level managers, and for financial metrics, it 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, as objective performance data were 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 using 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 (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.

## Notes

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. In total, 57 per cent of the managers were top managers. Their firms ranged from 1-2,00,000 employees and \$30,000-43,00,00,00,000 in sales. Further, 62 per cent of the companies were publicly listed, while 38 per cent were privately held; 57 per cent of the firms competed in turbulent markets; 62 per cent in concentrated industries; and 34 per cent in mature or declining industries.
2. We thank a reviewer for suggesting this clarification.
3. In other words, metrics are classified by a  $2 \times 2$  matrix categorized by being marketing and financial metrics and general and specific to a marketing mix metrics. Note the  $2 \times 2$  classification of metrics allows overlap between marketing and general and specific to a marketing mix metrics; financial and general and specific to a marketing mix metrics; general and marketing and financial metrics; and specific to a marketing mix and marketing and financial metrics.

4. In Tables AIII and AIV, 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 0.40 (Leeflang *et al.*, 2000). The null hypothesis that variance of the residuals is homogenous cannot be rejected in any of the two equations (both  $p < 0.01$ ), indicating no heteroskedasticity in Equations (1 or 2).

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## Appendix 1

Variable	Definition and operational measures	Source(s)	$\alpha$
Marketing mix performance	<p>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</p> <p>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)</p> <p>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)</p> <p>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)</p> <p>Profitability, Sales, ROI</p> <p>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)</p> <p>Customer satisfaction, Customer loyalty, Market share</p>	Jaworski and Kohli, 1993; Moorman and Rust, 1999; Verhoef and Leeflang, 2009	0.94
Metric use	<p>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</p> <p>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</p> <p>Financial metric definition: Financial metrics are either monetary based, based on financial ratios, or readily converted to monetary outcomes</p> <p>General metric definition: General metrics are defined as metrics suited to many marketing mix decisions</p> <p>Specific metric definition: Specific metrics are defined as metrics largely suited to each of 10 marketing mix decisions considered.</p>	(Ambler, 2003; Ambler <i>et al.</i> , 2004; Barwise and Farley, 2004; Du <i>et al.</i> , 2007; Farris <i>et al.</i> , 2010; Hoffman and Fodor, 2010; Lehmann and Reibstein, 2006; Pauwels <i>et al.</i> , 2009; Srinivasan <i>et al.</i> , 2010)	-

*(continued)*

**Table A1.**  
Variables,  
definitions,  
operational measures  
and their sources

Variable	Definition and operational measures	Source(s)	$\alpha$
Market orientation	<p>Measure: Please indicate if you used any of the following <b>MARKETING</b> or <b>FINANCIAL</b> 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</p> <p>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.</p> <p>Measures: How strongly do you agree or disagree with each of the following statements: (1 = strongly disagree, 7 = strongly agree)</p> <p>Our business objectives are driven primarily by customer satisfaction</p> <p>We constantly monitor our level of commitment and orientation to serving customer needs</p> <p>We freely communicate information about our successful and unsuccessful customer experiences throughout all business functions</p> <p>Our strategy for competitive advantage is based on our understanding of customer needs</p> <p>We measure customer satisfaction systematically and frequently</p> <p>We have routine or regular measures for customer service</p> <p>We are more customer focused than our competitors</p> <p>I believe this business exists primarily to serve customers</p> <p>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</p> <p>Measures: How strongly do you agree or disagree with each of the following statements: (1 = strongly disagree, 7 = strongly agree)</p> <p>This marketing action was a real company-wide effort</p> <p>People from all over the organization were involved in this marketing action</p> <p>A wide range of departments or functions in the company got involved in this marketing action</p>	Deshpande and Farley, 1998; Jaworski and Kohli, 1993; Verhoef and Leeflang, 2009	0.86
Organization involvement		Noble and Mokwa, 1999	0.94

*(continued)*

When does metric use matter less?

Table A1.

Variable	Definition and operational measures	Source(s)	$\alpha$
Recent business performance	<p>Definition: A business unit's overall performance last year, relative to its own expectations and its competitors' performance</p> <p>Measures: To what extent did the overall performance of the business unit meet expectations last year: (1 = poor, 7 = excellent)</p> <p>To what extent did the overall performance of your business unit relative to your major competitors meet expectations last year: (1 = poor, 7 = excellent)</p>	Jaworski and Kohli, 1993	0.84
Firm size	<p>Definition: The number of full-time employees in a firm</p> <p>Measure: Approximately how many full-time employees does your firm have?</p>	Verhoef and Leeftang, 2009	-
Functional area and level in the organization	<p>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)</p> <p>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)</p>	Finkelstein <i>et al.</i> (2009)	-
Strategic orientation	<p>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</p> <p>Measures: Please select one of the following descriptions that best characterizes your organization:  <i>Prospectors</i>: 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.</p>	Olson <i>et al.</i> (2005); Slater and Olson (2000)	-

*(continued)*

Variable	Definition and operational measures	Source(s)	$\alpha$
	<p><i>Analysts:</i> 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</p> <p><i>Low-Cost Defenders:</i> 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</p> <p><i>Differentiated Defenders:</i> 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</p> <p><i>Definition:</i> The importance of metrics in a manager's compensation package</p> <p><i>Measures:</i> Please indicate how important each metric type is related to your compensation package: (1 = not at all important, 7 = extremely important)</p> <p>Overall Metrics, Marketing Metrics, Financial Metrics</p> <p><i>Definition:</i> A manager's level of training on the use of metrics</p> <p><i>Measures:</i> 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)</p> <p>Overall metrics, marketing metrics, financial metrics</p> <p><i>Definition:</i> A manager's experience in number of years as a manager, at the firm, and in the current position</p> <p><i>Measures:</i> 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?</p>	Mintz and Currim (2013)	0.82
		Mintz and Currim (2013)	0.94
		Mintz and Currim (2013)	0.68

*(continued)*

When does metric use matter less?

Variable	Definition and operational measures	Source(s)	$\alpha$
Quantitative background	<p>Definition: A manager's qualitative/quantitative orientation based on education and work experience</p> <p>Measures: Please rate your qualitative/quantitative background: (1 = entirely qualitative, 7 = entirely quantitative)</p> <p>Overall orientation</p> <p>Educational background</p> <p>Work experience background</p>	Mintz and Currim (2013)	0.85
Ownership	<p>Definition: Whether a firm is publicly traded or privately held</p> <p>Measure: Is your firm publicly traded?</p>	Verhoef and Leeflang, 2009	-
CMO presence	<p>Definition: Whether a firm employs a Chief Marketing Officer (CMO)</p> <p>Measure: Does your firm employ a Chief Marketing Officer (CMO)?</p>	-	-
B2C vs B2B	<p>Definition: The extent to which a manager's sales come from B2B or B2C markets</p> <p>Measure: Please indicate the extent to which your sales come from B2B or B2C markets: (1 = mostly B2B, 7 = mostly B2C)</p>	Verhoef and Leeflang, 2009	-
Services vs goods	<p>Definition: The extent to which a manager's sales come from goods or services markets</p> <p>Measure: Please indicate the extent to which your sales come from goods or services markets: (1 = mostly goods, 7 = mostly services)</p>	Verhoef and Leeflang, 2009	-
Product life cycle	<p>Definition: The stage of the product life cycle</p> <p>Measure: At which one of the following stages would you place your product? (shown in a product life cycle diagram, introductory, growth, maturity, decline)</p>	Deshpande and Zaltman (1982)	-
Industry concentration	<p>Definition: The percentage of sales the four largest businesses competing in a market control</p> <p>Measure: Approximately what percentage of sales does the largest 4 competing businesses in your market control? 0-50 %, 51-100 %</p>	Kuester <i>et al.</i> (1999)	-

*(continued)*



Variable	Definition and operational measures	Source(s)	$\alpha$
Market growth	<p>Definition: The average annual growth or decline of the company and the industry over the last three years</p> <p>Measures: Over the last three years, what was the average annual market growth or decline for your company?</p> <p>Over the last three years, what was the average annual market growth or decline for your industry?</p>	Homburg <i>et al.</i> (2012)	0.66
Market turbulence	<p>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</p> <p>Measures: How strongly do you agree or disagree with each of the following statements (1 = strongly disagree, 7 = strongly agree): ® = reverse scored</p> <p>Products/services become obsolete very slowly in your firm's principal industry ®</p> <p>Your firm seldom needs to change its marketing practices to keep up with competitors ®</p> <p>Consumer demand and preferences are very easy to forecast in your firm's principal industry ®</p> <p>Your firm must frequently change its production/service technology to keep up with competitors and/or consumer preferences</p>	Miller <i>et al.</i> (1998)	0.63

**Note:** Table A1 is taken from Mintz and Currim (2013)

Table A1.

When does  
metric use  
matter less?

Marketing mix activity	Marketing metrics	Financial metrics	
General metrics	Market share (units or dollars)	Net profit	
	Awareness (product or brand)	Return on Investment (ROI)	
	Satisfaction (product or brand)	Return on Sales (ROS)	
	Likeability (product or brand)	Return on Marketing Investment (ROMI)	
	Preference (product or brand)	Net Present Value (NPV)	
	Willingness to recommend (product or brand)	Economic Value Added (EVA)	
	Loyalty (product or brand)	Marketing expenditures (% specifically on brand building activities)	
	Perceived product quality	Stock prices/stock returns	
	Consideration set	Tobin's $q$	
	Total customers	Target volume (Units or Sales)	
	Share of customer wallet	Customer segment profitability	
	Share of voice	Customer Lifetime Value (CLV)	
	Traditional advertising	Impressions	Cost per Customer Acquired/Cost per Thousand Impressions (CPM)
		Reach	Lead Generation
		Recall	Internal Rate of Return (IRR)
Internet advertising	Impressions	Cost per click	
	Hits/visits/page views	Conversion rate	
	Click-through rate	Internal Rate of Return (IRR)	
Direct to consumer	Reach	Cost per customer acquired	
	Number of responses by campaign	Conversion rate	
Social media	New customer retention rate	Lead generation	
	Hits/visits/page views	Lead generation	
	Number of followers/tags	Cost per exposure	
Price promotions	Volume of coverage by media	Total costs	
	Impressions	Promotional sales/incremental lift	
	Reach	Redemption rates (coupons, etc.)	
Pricing	Trial/repeat volume (or ratio)	Internal Rate of Return (IRR)	
	Price premium	Unit margin/margin %	
	Reservation price	Price elasticity	
	Relative price	Optimal price	
New product development	Belief in new product concept	Expected MArgin %	
	Attitude toward product/brand	Level of cannibalization/cannibalization rate	
	Expected annual growth rate	Internal Rate of Return (IRR)	
Sales force	Reach	Sales potential forecast	
	Number of responses by campaign	Sales force productivity	
	New customer retention rate	Sales funnel/sales pipeline	

**Table AII.** Marketing, financial, general and specific to a marketing mix metrics

(continued)

When does  
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Table AII.

Marketing mix activity	Marketing metrics	Financial metrics
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: Table AII is taken from Mintz and Currim (2013)

### Appendix 3. Estimation equations

*Marketing metric use separate estimation equations*

$$\begin{aligned}
 \text{PERF} = & \beta_0 + \beta_1 \text{MKTMET} + \beta_2 \text{MKTOR} + \beta_3 \text{ORGINV} + \beta_4 \text{BUSPERF} + \beta_5 \text{SIZE} \\
 & + \beta_6 \text{MKT} + \beta_7 \text{MGRLVL} + \beta_8 \text{MKTMET} * \text{MKTOR} + \beta_9 \text{MKTMET} * \text{ORGINV} \\
 & + \beta_{10} \text{MKTMET} * \text{BUSPERF} + \beta_{11} \text{MKTMET} * \text{SIZE} + \beta_{12} \text{MKTMET} * \text{MKT} \quad (\text{A1}) \\
 & + \beta_{13} \text{MKTMET} * \text{MGRLVL} + \varepsilon_{\text{PERF}}
 \end{aligned}$$

Where:

$$\begin{aligned}
 \text{MKTMET} = & \delta_0 + \sum_{p=1}^5 \delta_p \text{FS}_p + \sum_{d=1}^2 \delta_{d+5} \text{MO}_d + \sum_{g=1}^4 \delta_{g+7} \text{MC}_g + \sum_{q=1}^6 \delta_{q+11} \text{FC}_q \\
 & + \sum_{c=1}^4 \delta_{c+17} \text{EC}_c + \sum_{i=1}^9 \delta_{i+21} \text{MA}_i + \varepsilon_{\text{MKTMET}} \quad (\text{A2})
 \end{aligned}$$

*Financial metric use separate estimation equations*

$$\begin{aligned}
 \text{PERF} = & \beta_0 + \beta_1 \text{FINMET} + \beta_2 \text{MKTOR} + \beta_3 \text{ORGINV} + \beta_4 \text{BUSPERF} + \beta_5 \text{SIZE} \\
 & + \beta_6 \text{MKT} + \beta_7 \text{MGRLVL} + \beta_8 \text{FINMET} * \text{MKTOR} + \beta_9 \text{FINMET} * \text{ORGINV} \\
 & + \beta_{10} \text{FINMET} * \text{BUSPERF} + \beta_{11} \text{FINMET} * \text{SIZE} + \beta_{12} \text{FINMET} * \text{MKT} \quad (\text{A3}) \\
 & + \beta_{13} \text{FINMET} * \text{MGRLVL} + \varepsilon_{\text{PERF}}
 \end{aligned}$$

Where:

$$\begin{aligned}
 \text{FINMET} = & \alpha_0 + \sum_{p=1}^5 \alpha_p \text{FS}_p + \sum_{d=1}^2 \alpha_{d+5} \text{MO}_d + \sum_{g=1}^4 \alpha_{g+7} \text{MC}_g + \sum_{q=1}^6 \alpha_{q+11} \text{FC}_q \\
 & + \sum_{c=1}^4 \alpha_{c+17} \text{EC}_c + \sum_{i=1}^9 \alpha_{i+21} \text{MA}_i + \varepsilon_{\text{FINMET}} \quad (\text{A4})
 \end{aligned}$$

*Marketing and financial metric use joint estimation equations*

$$\begin{aligned} \text{PERF} = & \beta_0 + \beta_1\text{MKTMET} + \beta_2\text{FINMET} + \beta_3\text{MKTOR} + \beta_4\text{ORGINV} + \beta_5\text{BUSPERF} \\ & + \beta_6\text{SIZE} + \beta_7\text{MKT} + \beta_8\text{MGRLVL} + \beta_9\text{MKTMET} * \text{MKTOR} \\ & + \beta_{10}\text{MKTMET} * \text{ORGINV} + \beta_{11}\text{MKTMET} * \text{BUSPERF} + \beta_{12}\text{MKTMET} * \text{SIZE} \\ & + \beta_{13}\text{MKTMET} * \text{MKT} + \beta_{14}\text{MKTMET} * \text{MGRLVL} + \beta_{15}\text{FINMET} * \text{MKTOR} \\ & + \beta_{16}\text{FINMET} * \text{ORGINV} + \beta_{17}\text{FINMET} * \text{BUSPERF} + \beta_{18}\text{FINMET} * \text{SIZE} \\ & + \beta_{19}\text{FINMET} * \text{MKT} + \beta_{20}\text{FINMET} * \text{MGRLVL} + \varepsilon_{\text{PERF}} \end{aligned} \quad (\text{A5})$$

Where:

$$\begin{aligned} \text{MKTMET} = & \delta_0 + \sum_{p=1}^5 \delta_p \text{FS}_p + \sum_{d=1}^2 \delta_{d+5} \text{MO}_d + \sum_{g=1}^4 \delta_{g+7} \text{MC}_g + \sum_{q=1}^6 \delta_{q+11} \text{FC}_q \\ & + \sum_{c=1}^4 \delta_{c+17} \text{EC}_c + \sum_{i=1}^9 \delta_{i+21} \text{MA}_i + \varepsilon_{\text{MKTMET}} \end{aligned} \quad (\text{A6})$$

$$\begin{aligned} \text{FINMET} = & \alpha_0 + \sum_{p=1}^5 \alpha_p \text{FS}_p + \sum_{d=1}^2 \alpha_{d+5} \text{MO}_d + \sum_{g=1}^4 \alpha_{g+7} \text{MC}_g + \sum_{q=1}^6 \alpha_{q+11} \text{FC}_q \\ & + \sum_{c=1}^4 \alpha_{c+17} \text{EC}_c + \sum_{i=1}^9 \alpha_{i+21} \text{MA}_i + \varepsilon_{\text{FINMET}} \end{aligned} \quad (\text{A7})$$

*Total metric use to different performances separate estimation equations*

$$\begin{aligned} \text{PERFOBJ} = & \beta_0 + \beta_1\text{METUSE} + \beta_2\text{MKTOR} + \beta_3\text{ORGINV} + \beta_4\text{BUSPERF} \\ & + \beta_5\text{SIZE} + \beta_6\text{MKT} + \beta_7\text{MGRLVL} + \beta_8\text{METUSE} * \text{MKTOR} \\ & + \beta_9\text{METUSE} * \text{ORGINV} + \beta_{10}\text{METUSE} * \text{BUSPERF} \\ & + \beta_{11}\text{METUSE} * \text{SIZE} + \beta_{12}\text{METUSE} * \text{MKT} \\ & + \beta_{13}\text{METUSE} * \text{MGRLVL} + \varepsilon_{\text{PERFFIN}} \end{aligned} \quad (\text{A8})$$

Where:

$$\begin{aligned} \text{METUSE} = & \omega_0 + \sum_{p=1}^5 \omega_p \text{FS}_p + \sum_{d=1}^2 \omega_{d+5} \text{MO}_d + \sum_{g=1}^4 \omega_{g+7} \text{MC}_g + \sum_{q=1}^6 \omega_{q+11} \text{FC}_q \\ & + \sum_{c=1}^4 \omega_{c+17} \text{EC}_c + \sum_{i=1}^9 \omega_{i+21} \text{MA}_i + \varepsilon_{\text{METUSE}} \end{aligned} \quad (\text{A9})$$

*Total metric use to different performances joint estimation equations*

$$\begin{aligned} \text{PERFOBJ} = & \beta_0 + \beta_1\text{METUSE} + \beta_2\text{MKTOR} + \beta_3\text{ORGINV} + \beta_4\text{BUSPERF} + \beta_5\text{SIZE} \\ & + \beta_6\text{MKT} + \beta_7\text{MGRLVL} + \beta_8\text{METUSE} * \text{MKTOR} + \beta_9\text{METUSE} * \text{ORGINV} \\ & + \beta_{10}\text{METUSE} * \text{BUSPERF} + \beta_{11}\text{METUSE} * \text{SIZE} \\ & + \beta_{12}\text{METUSE} * \text{MKT} + \beta_{13}\text{METUSE} * \text{MGRLVL} + \varepsilon_{\text{PERFOBJ}} \end{aligned} \quad (\text{A10})$$

$$\begin{aligned}
\text{PERFPAST} = & \beta_0 + \beta_1\text{METUSE} + \beta_2\text{MKTOR} + \beta_3\text{ORGINV} + \beta_4\text{BUSPERF} \\
& + \beta_5\text{SIZE} + \beta_6\text{MKT} + \beta_7\text{MGRLVL} + \beta_8\text{METUSE} * \text{MKTOR} \\
& + \beta_9\text{METUSE} * \text{ORGINV} + \beta_{10}\text{METUSE} * \text{BUSPERF} \\
& + \beta_{11}\text{METUSE} * \text{SIZE} + \beta_{12}\text{METUSE} * \text{MKT} \\
& + \beta_{13}\text{METUSE} * \text{MGRLVL} + \varepsilon_{\text{PERFPAST}}
\end{aligned} \tag{A11}$$

When does  
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$$\begin{aligned}
\text{PERFFIN} = & \beta_0 + \beta_1\text{METUSE} + \beta_2\text{MKTOR} + \beta_3\text{ORGINV} + \beta_4\text{BUSPERF} + \beta_5\text{SIZE} \\
& + \beta_6\text{MKT} + \beta_7\text{MGRLVL} + \beta_8\text{METUSE} * \text{MKTOR} + \beta_9\text{METUSE} * \text{ORGINV} \\
& + \beta_{10}\text{METUSE} * \text{BUSPERF} + \beta_{11}\text{METUSE} * \text{SIZE} + \beta_{12}\text{METUSE} * \text{MKT} \\
& + \beta_{13}\text{METUSE} * \text{MGRLVL} + \varepsilon_{\text{PERFFIN}}
\end{aligned} \tag{A12}$$

$$\begin{aligned}
\text{PERFMKT} = & \beta_0 + \beta_1\text{METUSE} + \beta_2\text{MKTOR} + \beta_3\text{ORGINV} + \beta_4\text{BUSPERF} \\
& + \beta_5\text{SIZE} + \beta_6\text{MKT} + \beta_7\text{MGRLVL} + \beta_8\text{METUSE} * \text{MKTOR} \\
& + \beta_9\text{METUSE} * \text{ORGINV} + \beta_{10}\text{METUSE} * \text{BUSPERF} \\
& + \beta_{11}\text{METUSE} * \text{SIZE} + \beta_{12}\text{METUSE} * \text{MKT} \\
& + \beta_{13}\text{METUSE} * \text{MGRLVL} + \varepsilon_{\text{PERFMKT}}
\end{aligned} \tag{A13}$$

Where:

$$\begin{aligned}
\text{METUSE} = & \omega_0 + \sum_{p=1}^5 \omega_p \text{FS}_p + \sum_{d=1}^2 \omega_{d+5} \text{MO}_d + \sum_{g=1}^4 \omega_{g+7} \text{MC}_g + \sum_{q=1}^6 \omega_{q+11} \text{FC}_q \\
& + \sum_{c=1}^4 \omega_{c+17} \text{EC}_c + \sum_{i=1}^9 \omega_{i+21} \text{MA}_i + \varepsilon_{\text{METUSE}}
\end{aligned} \tag{A14}$$

*Marketing and financial metric use to different performances joint estimation equations*

$$\begin{aligned}
\text{PERFOBJ} = & \beta_0 + \beta_1\text{MKTMET} + \beta_2\text{FINMET} + \beta_3\text{MKTOR} + \beta_4\text{ORGINV} \\
& + \beta_5\text{BUSPERF} + \beta_6\text{SIZE} + \beta_7\text{MKT} + \beta_8\text{MGRLVL} \\
& + \beta_9\text{MKTMET} * \text{MKTOR} + \beta_{10}\text{MKTMET} * \text{ORGINV} \\
& + \beta_{11}\text{MKTMET} * \text{BUSPERF} + \beta_{12}\text{MKTMET} * \text{SIZE} \\
& + \beta_{13}\text{MKTMET} * \text{MKT} + \beta_{14}\text{MKTMET} * \text{MGRLVL} \\
& + \beta_{15}\text{FINMET} * \text{MKTOR} + \beta_{16}\text{FINMET} * \text{ORGINV} \\
& + \beta_{17}\text{FINMET} * \text{BUSPERF} + \beta_{18}\text{FINMET} * \text{SIZE} \\
& + \beta_{19}\text{FINMET} * \text{MKT} + \beta_{20}\text{FINMET} * \text{MGRLVL} + \varepsilon_{\text{PERFOBJ}}
\end{aligned} \tag{A15}$$

$$\begin{aligned}
\text{PERFPAST} = & \beta_0 + \beta_1\text{MKTMET} + \beta_2\text{FINMET} + \beta_3\text{MKTOR} + \beta_4\text{ORGINV} \\
& + \beta_5\text{BUSPERF} + \beta_6\text{SIZE} + \beta_7\text{MKT} + \beta_8\text{MGRLVL} \\
& + \beta_9\text{MKTMET} * \text{MKTOR} + \beta_{10}\text{MKTMET} * \text{ORGINV} \\
& + \beta_{11}\text{MKTMET} * \text{BUSPERF} + \beta_{12}\text{MKTMET} * \text{SIZE} \\
& + \beta_{13}\text{MKTMET} * \text{MKT} + \beta_{14}\text{MKTMET} * \text{MGRLVL} \\
& + \beta_{15}\text{FINMET} * \text{MKTOR} + \beta_{16}\text{FINMET} * \text{ORGINV} \\
& + \beta_{17}\text{FINMET} * \text{BUSPERF} + \beta_{18}\text{FINMET} * \text{SIZE} \\
& + \beta_{19}\text{FINMET} * \text{MKT} + \beta_{20}\text{FINMET} * \text{MGRLVL} + \varepsilon_{\text{PERFPAST}}
\end{aligned} \tag{A16}$$

$$\begin{aligned}
 \text{PERFFIN} = & \beta_0 + \beta_1 \text{MKTMET} + \beta_2 \text{FINMET} + \beta_3 \text{MKTOR} + \beta_4 \text{ORGINV} \\
 & + \beta_5 \text{BUSPERF} + \beta_6 \text{SIZE} + \beta_7 \text{MKT} + \beta_8 \text{MGRLVL} \\
 & + \beta_9 \text{MKTMET} * \text{MKTOR} + \beta_{10} \text{MKTMET} * \text{ORGINV} \\
 & + \beta_{11} \text{MKTMET} * \text{BUSPERF} + \beta_{12} \text{MKTMET} * \text{SIZE} \\
 & + \beta_{13} \text{MKTMET} * \text{MKT} + \beta_{14} \text{MKTMET} * \text{MGRLVL} \\
 & + \beta_{15} \text{FINMET} * \text{MKTOR} + \beta_{16} \text{FINMET} * \text{ORGINV} \\
 & + \beta_{17} \text{FINMET} * \text{BUSPERF} + \beta_{18} \text{FINMET} * \text{SIZE} \\
 & + \beta_{19} \text{FINMET} * \text{MKT} + \beta_{20} \text{FINMET} * \text{MGRLVL} + \varepsilon_{\text{PERFFIN}}
 \end{aligned} \tag{A17}$$

$$\begin{aligned}
 \text{PERFMKT} = & \beta_0 + \beta_1 \text{MKTMET} + \beta_2 \text{FINMET} + \beta_3 \text{MKTOR} + \beta_4 \text{ORGINV} \\
 & + \beta_5 \text{BUSPERF} + \beta_6 \text{SIZE} + \beta_7 \text{MKT} + \beta_8 \text{MGRLVL} \\
 & + \beta_9 \text{MKTMET} * \text{MKTOR} + \beta_{10} \text{MKTMET} * \text{ORGINV} \\
 & + \beta_{11} \text{MKTMET} * \text{BUSPERF} + \beta_{12} \text{MKTMET} * \text{SIZE} \\
 & + \beta_{13} \text{MKTMET} * \text{MKT} + \beta_{14} \text{MKTMET} * \text{MGRLVL} \\
 & + \beta_{15} \text{FINMET} * \text{MKTOR} + \beta_{16} \text{FINMET} * \text{ORGINV} \\
 & + \beta_{17} \text{FINMET} * \text{BUSPERF} + \beta_{18} \text{FINMET} * \text{SIZE} \\
 & + \beta_{19} \text{FINMET} * \text{MKT} + \beta_{20} \text{FINMET} * \text{MGRLVL} + \varepsilon_{\text{PERFMKT}}
 \end{aligned} \tag{A18}$$

Where:

$$\begin{aligned}
 \text{MKTMET} = & \delta_0 + \sum_{p=1}^5 \delta_p \text{FS}_p + \sum_{d=1}^2 \delta_{d+5} \text{MO}_d + \sum_{g=1}^4 \delta_{g+7} \text{MC}_g + \sum_{q=1}^6 \delta_{q+11} \text{FC}_q \\
 & + \sum_{c=1}^4 \delta_{c+17} \text{EC}_c + \sum_{i=1}^9 \delta_{i+21} \text{MA}_i + \varepsilon_{\text{MKTMET}}
 \end{aligned} \tag{A19}$$

$$\begin{aligned}
 \text{FINMET} = & \alpha_0 + \sum_{p=1}^5 \alpha_p \text{FS}_p + \sum_{d=1}^2 \alpha_{d+5} \text{MO}_d + \sum_{g=1}^4 \alpha_{g+7} \text{MC}_g + \sum_{q=1}^6 \alpha_{q+11} \text{FC}_q \\
 & + \sum_{c=1}^4 \alpha_{c+17} \text{EC}_c + \sum_{i=1}^9 \alpha_{i+21} \text{MA}_i + \varepsilon_{\text{FINMET}}
 \end{aligned} \tag{A20}$$

Appendix 4

When does  
metric use  
matter less?

	METUSE	MKTOR	ORGINV	BUSPERF	SIZE	MKT	MGRLVL	PERF
METUSE	1.00							
MKTOR	0.14	1.00						
ORGINV	0.21	0.16	1.00					
BUSPERF	0.09	0.30	0.02	1.00				
SIZE	0.04	-0.14	-0.02	0.17	1.00			
MKT	-0.08	-0.09	-0.04	0.11	0.27	1.00		
MGRLVL	0.09	0.03	0.08	-0.08	-0.23	-0.53	1.00	
PERF	0.23	0.17	0.28	0.28	0.10	-0.01	-0.04	1.00

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**Table AIII.**  
Correlation matrix  
for Equation 1 metric  
use to performance



**Table AIV.**  
Correlation matrix  
for Equation2 drivers  
of metric use

	MKTOR	ANALYZER	LOWCOST	DIFFDEF	ORGINV	METCOMP	METTRAIN	MKT	MGRVL	WORKEXP	QUANT	SIZE	OWN
MKTOR	1.00												
ANALYZER	0.03	1.00											
LOWCOST	-0.21	-0.20	1.00										
DIFFDEF	-0.04	-0.41	-0.27	1.00									
ORGINV	0.16	0.01	-0.07	-0.09	1.00								
METCOMP	0.19	0.08	-0.09	-0.13	0.26	1.00							
METTRAIN	0.17	-0.01	-0.06	-0.12	0.23	0.33	1.00						
MKT	-0.09	-0.09	-0.01	0.03	-0.04	-0.09	-0.03	1.00					
MGRVL	0.03	0.07	-0.14	-0.02	0.08	0.13	0.08	-0.53	1.00				
WORKEXP	-0.03	0.13	-0.03	-0.13	0.08	0.16	0.31	-0.12	0.16	1.00			
QUANT	0.13	0.09	-0.04	0.01	0.11	0.11	0.03	-0.29	0.39	0.09	1.00		
SIZE	-0.14	0.04	-0.06	0.07	-0.02	0.03	0.10	0.27	-0.23	0.12	-0.12	1.00	
OWN	-0.15	0.08	0.00	-0.03	0.06	0.05	0.15	0.14	-0.11	0.14	-0.03	0.66	1.00
CMO	-0.06	0.09	-0.02	-0.06	0.04	0.07	0.04	0.06	0.04	0.05	0.13	0.21	0.14
BUSPERF	0.30	0.05	-0.11	0.00	0.02	0.03	0.07	0.11	-0.08	-0.01	-0.05	0.17	0.02
B2C	0.06	0.07	0.10	-0.10	0.09	0.03	0.05	0.05	-0.01	0.08	0.00	0.10	-0.03
SERV	0.11	0.01	0.09	0.07	-0.04	-0.17	-0.09	0.04	0.00	-0.14	0.03	-0.17	-0.19
LIFECYCLE	-0.16	0.10	0.00	0.19	-0.09	-0.07	-0.02	-0.03	0.01	0.07	0.15	0.21	0.15
INDCONC	-0.09	-0.06	-0.04	-0.01	-0.03	0.03	0.07	0.02	-0.05	0.03	0.01	0.12	0.12
MKTGRW	0.06	-0.04	-0.04	-0.13	0.08	0.12	0.06	0.00	-0.01	0.01	-0.14	0.01	0.04
MKTTURN	-0.03	-0.07	0.00	0.07	0.01	-0.05	-0.01	0.03	-0.02	-0.06	-0.05	-0.03	0.00
TRAD	0.00	0.02	0.03	0.00	-0.05	-0.02	0.00	0.06	-0.05	-0.01	0.01	0.02	-0.05
INTAD	-0.01	0.01	0.00	-0.01	-0.13	-0.03	-0.02	0.02	0.00	0.00	-0.03	-0.03	-0.04
D2C	0.04	-0.02	0.01	0.02	-0.01	-0.01	-0.03	0.04	-0.06	-0.04	-0.04	-0.01	-0.02
SM	0.05	0.01	0.00	-0.01	0.05	-0.02	-0.02	0.00	0.00	-0.02	-0.02	-0.12	-0.12
PP	-0.01	-0.01	-0.02	-0.02	0.05	0.05	0.02	-0.09	0.05	0.03	0.05	0.02	0.04
PRI	-0.05	-0.01	-0.01	0.02	0.04	0.02	0.01	-0.03	0.02	0.04	-0.02	0.05	0.04
NPD	-0.01	0.01	-0.02	-0.01	0.03	0.03	0.04	-0.02	0.05	0.03	0.01	0.03	0.07
SF	-0.04	0.00	0.02	-0.05	0.20	0.04	0.07	-0.04	0.05	0.06	0.05	0.04	0.11
DIST	-0.01	0.04	0.01	-0.02	0.00	0.05	0.06	-0.03	-0.01	0.05	0.03	0.02	0.08
METUSE	0.14	0.12	0.07	-0.15	0.21	0.34	0.31	-0.08	0.09	0.15	0.08	0.04	0.13

(continued)

	CMO	BUSPERF	B2C	SERV	LIFECYCLE	INDCONC	MKTGRW	MKTTURB	TRAD	INTAD	D2C	SM	PP	PRI	NPD	SF	DIST	METUSE
MKTOR																		
ANALYZER																		
LOWCOST																		
DIFFDEF																		
ORGINV																		
METCOMP																		
METTRAIN																		
MKT																		
MGRLVL																		
WORKEXP																		
QUANT																		
SIZE																		
OWN																		
CMO	1.00																	
BUSPERF	-0.02	1.00																
B2C	0.07	0.03	1.00															
SERV	0.02	-0.06	0.04	1.00														
LIFECYCLE	0.02	-0.12	0.06	0.06	1.00													
INDCONC	0.03	0.04	-0.17	-0.23	-0.04	1.00												
MKTGRW	0.04	0.37	-0.03	-0.21	-0.34	0.17	1.00											
MKTTURB	0.01	0.03	0.01	0.03	0.01	-0.01	0.03	1.00										
TRAD	-0.02	0.00	0.11	0.02	0.03	-0.02	-0.07	0.00	1.00									
INTAD	-0.01	0.03	0.02	0.01	-0.02	-0.04	0.02	0.03	-0.15	1.00								
D2C	-0.03	-0.03	0.05	0.10	0.00	-0.06	-0.06	0.03	-0.15	-0.16	1.00							
SM	-0.02	-0.01	-0.02	0.07	-0.04	-0.04	-0.04	0.00	-0.12	-0.13	-0.16	1.00						
PP	0.04	-0.01	-0.06	-0.01	-0.03	0.02	0.06	-0.03	-0.11	-0.12	-0.15	-0.12	1.00					
PRI	0.04	0.00	0.01	-0.12	0.03	0.04	0.04	-0.02	-0.08	-0.09	-0.11	-0.08	-0.08	1.00				
NPD	0.00	-0.01	-0.01	-0.08	0.06	0.05	0.01	-0.03	-0.10	-0.11	-0.13	-0.10	-0.10	-0.07	1.00			
SF	0.00	-0.03	-0.04	-0.10	-0.01	0.08	0.06	0.01	-0.12	-0.13	-0.16	-0.12	-0.12	-0.09	-0.11	1.00		
DIST	0.01	0.04	-0.03	-0.11	0.00	0.05	0.06	-0.02	-0.07	-0.07	-0.09	-0.07	-0.06	-0.05	-0.06	-0.07	1.00	
METUSE	0.11	0.09	0.13	-0.20	-0.04	0.12	0.08	-0.02	-0.01	0.04	0.00	-0.09	0.00	-0.03	0.07	0.16	0.04	1.00

When does metric use matter less?

Appendix 5. Relationships between different types of metric use and different measures of marketing mix performance - separate SUR-GLS estimation results

**Table AV.**  
Relationship between marketing and financial metric use and different measures of marketing mix performance

Metric type	Marketing Relative to objectives		Marketing Compared to past		Marketing Financial		Marketing Financial	
	Marketing Relative to objectives	Financial	Marketing Compared to past	Financial	Marketing Financial	Marketing Financial	Marketing Financial	
<i>Metric use to performance (Equation 1)</i>								
Intercept	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***	0.00***
Market orientation	0.13**	0.13**	0.12*	0.14**	0.08	0.18***	0.18***	0.18***
Organizational involvement	0.27***	0.22***	0.29***	0.26***	0.19***	0.14**	0.23***	0.16***
Recent business performance	0.20***	0.12*	0.16**	0.09	0.16**	0.11*	0.16**	0.07
Company size (Ln)	0.15***	0.11*	0.12**	0.06	0.32***	0.21***	0.21***	0.14**
Marketing functional area	-0.01	0.03	0.09	0.06	0.07	0.11*	0.01	0.09
Level in organization	0.02	0.06	0.09	0.08	0.08	0.13*	0.03	0.14*
Metric use	0.49**	0.15	0.49**	0.19	0.64***	0.35*	0.72***	0.19
Metric use × market orientation	-0.24	-0.13	-0.28	-0.26	-0.15	-0.20	-0.44**	-0.26
Metric use × organizational involvement	-0.07	0.04	-0.03	0.01	0.10	0.18*	0.00	0.18*
Metric use × recent business performance	0.15	0.27*	0.22	0.39***	-0.12	0.24	0.05	0.31*
Metric use × company size (Ln)	-0.24***	-0.10	-0.21**	-0.10	-0.15*	-0.09	-0.18*	-0.04
Metric use × marketing functional area	-0.02	-0.08	-0.13*	-0.09	-0.18**	-0.21***	-0.09	-0.18**
Metric use × level in organization	-0.11	-0.18**	-0.17**	-0.17**	-0.21**	-0.31***	-0.11	-0.27***
<i>Drivers of metric use (Equation 2)</i>								
Intercept	0.00	0.00***	0.00*	0.00**	0.00*	0.00***	0.00	0.00***
Market orientation	0.15***	0.02	0.16***	0.02	0.16***	0.02	0.15***	0.03
Analyzer <sup>a</sup>	0.08*	0.17***	0.07*	0.18***	0.06	0.16***	0.07*	0.16***
Low-cost defender <sup>a</sup>	0.12***	0.20***	0.12***	0.18***	0.10**	0.18***	0.10**	0.19***
Differentiated defender <sup>a</sup>	0.02	0.09**	0.03	0.08**	0.01	0.08*	0.01	0.09**
Organizational involvement	0.05	0.08**	0.05	0.08**	0.05	0.07**	0.04	0.07**
Metric compensation	0.16***	0.20***	0.15***	0.20***	0.14***	0.21***	0.15***	0.22***
Metric training	0.14***	0.15***	0.13***	0.16***	0.14***	0.16***	0.14***	0.16***
Marketing functional area	-0.01	0.01	-0.01	0.00	-0.02	0.01	-0.02	0.01
Level in organization	0.04	0.06*	0.02	0.05	0.01	0.04	0.02	0.05
Work experience	0.01	-0.04	-0.01	-0.06*	0.00	-0.06*	-0.01	-0.05
Quantitative background	-0.04	0.06*	-0.02	0.07*	-0.05	0.06*	-0.05	0.06*
Company size (Ln)	-0.08*	-0.14***	-0.10*	-0.16***	-0.09*	-0.16***	-0.10*	-0.15***

(continued)

Metric type	Marketing		Financial		Marketing		Financial		Marketing		Financial	
	Relative to objectives		Compared to past		Financial		Marketing		Financial		Marketing	
Type of ownership (Public)	0.08*	0.13***	0.09*	0.14***	0.08*	0.13***	0.08*	0.13***	0.08*	0.13***	0.08*	0.13***
CMO Presence	0.05*	0.12***	0.06*	0.12***	0.06*	0.14***	0.06*	0.14***	0.06*	0.14***	0.06*	0.14***
Recent Business Performance	0.06	0.08**	0.06	0.09**	0.05	0.09**	0.05	0.09**	0.05	0.09**	0.05	0.08**
B2C (vs B2B)	0.11***	0.07**	0.12***	0.08**	0.13***	0.08**	0.13***	0.08**	0.13***	0.08**	0.13***	0.09***
Services (vs Goods)	-0.09**	-0.18***	-0.09**	-0.17***	-0.08**	-0.17***	-0.08**	-0.17***	-0.08**	-0.17***	-0.08**	-0.17***
Maturity/declining product life cycle	-0.04	0.02	-0.04	0.02	-0.01	0.03	-0.02	0.03	-0.02	0.03	-0.02	0.03
Industry concentration (concentrated)	0.10***	0.08***	0.11***	0.09***	0.12***	0.10***	0.12***	0.10***	0.12***	0.10***	0.12***	0.10***
Market growth	-0.04	-0.02	-0.04	-0.04	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
Market turbulence (More)	-0.01	-0.01	0.00	0.00	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	-0.01
Traditional advertising <sup>b</sup>	0.06*	0.09**	0.07*	0.09**	0.07*	0.09**	0.06	0.09**	0.06	0.09**	0.06	0.09**
Internet Advertising <sup>b</sup>	0.11***	0.16***	0.11***	0.16***	0.11**	0.17***	0.11**	0.17***	0.11**	0.17***	0.11**	0.15***
Direct to consumer <sup>b</sup>	0.05	0.19***	0.04	0.20***	0.04	0.20***	0.04	0.20***	0.04	0.19***	0.04	0.19***
Social media <sup>b</sup>	0.06	-0.01	0.06	0.00	0.09*	0.01	0.08*	0.01	0.08*	0.00	0.08*	0.00
Price promotions <sup>b</sup>	-0.04	0.07**	-0.05	0.08**	-0.05	0.08**	-0.04	0.08**	-0.04	0.08*	-0.04	0.08*
Pricing <sup>b</sup>	0.05	0.16***	0.05	0.16***	0.04	0.17***	0.05	0.17***	0.05	0.17***	0.05	0.17***
New product development <sup>b</sup>	0.14***	0.19***	0.14***	0.19***	0.14***	0.20***	0.14***	0.20***	0.14***	0.20***	0.14***	0.20***
Sales force <sup>b</sup>	-0.02	0.17***	-0.02	0.17***	-0.02	0.18***	-0.02	0.18***	-0.02	0.18***	-0.02	0.19***
Distribution <sup>b</sup>	0.00	0.08**	0.02	0.10***	0.01	0.10***	0.01	0.10***	0.01	0.10***	0.01	0.10***
<i>Model diagnostics for SUR system of equations</i>												
System-weighted MSE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Degrees of freedom	2,529	2,529	2,357	2,357	2,309	2,309	2,309	2,309	2,239	2,239	2,239	2,239
System-weighted R <sup>2</sup>	0.18	0.25	0.18	0.25	0.20	0.27	0.18	0.27	0.18	0.26	0.26	0.26

**Notes:** \*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001; <sup>a</sup> analyzers, low-cost defenders and differentiated defenders are compared to prospectors; <sup>b</sup> all marketing mix activities are compared to PR/sponsorships decisions

When does metric use matter less?

Table AV.

**Table AVI.**  
Relationship between  
general and specific  
metric use and  
different measures of  
marketing mix  
performance

Metric type	General Relative to objectives	Specific Compared to past	General Financial	Specific Marketing
<i>Metric use to performance (Equation 1)</i>				
Intercept	0.00***	0.00***	0.00***	0.00***
Market orientation	0.12**	0.16***	0.05	0.21***
Organizational involvement	0.24***	0.28***	0.14***	0.18***
Recent business performance	0.18***	0.12*	0.17**	0.13*
Company size (Ln)	0.14***	0.10*	0.28***	0.23***
Marketing functional area	0.00	0.06	0.07	0.01
Level in organization	0.03	0.08	0.12*	0.09
Metric use	0.35*	0.26	0.60***	0.69***
Metric use × market orientation	-0.18	-0.23	-0.22	-0.52***
Metric use × organizational involvement	-0.01	0.06	0.19*	0.11
Metric use × recent business performance	0.18	0.25	0.02	0.12
Metric use × company size (Ln)	-0.21**	-0.08	-0.18*	-0.15
Metric use × marketing functional area	-0.03	-0.10	-0.17**	-0.07
Metric use × level in organization	-0.14*	-0.16*	-0.30***	-0.21**
<i>Drivers of metric use (Equation 2)</i>				
Intercept	0.00***	0.00	0.00***	0.00
Market orientation	0.13***	0.01	0.13***	0.13***
Analyzer <sup>a</sup>	0.12***	0.12***	0.11***	0.10**
Low-cost defender <sup>a</sup>	0.18***	0.09**	0.17***	0.17***
Differentiated defender <sup>a</sup>	0.05	0.06	0.04	0.04
Organizational involvement	0.07*	0.04	0.06*	0.06*
Metric compensation	0.18***	0.15***	0.18***	0.18***
Metric training	0.13***	0.16***	0.14***	0.14***
Marketing functional area	-0.04	0.08*	-0.04	-0.04
Level in organization	0.03	0.07*	0.01	0.02
Work experience	0.02	-0.08**	0.00	-0.09**
Quantitative background	0.00	0.02	0.00	0.01
Company size (Ln)	-0.11**	-0.10**	-0.13***	-0.13**

(continued)

Metric type	General		Specific		General		Specific		General		Specific	
	Relative to objectives		Compared to past		Financial		Marketing		Marketing		Marketing	
Type of ownership (public)	0.10**	0.09**	0.11**	0.10**	0.10**	0.10**	0.11**	0.08*	0.11**	0.10**	0.08*	0.10**
CMO presence	0.08**	0.08**	0.09**	0.10**	0.10**	0.10**	0.10**	0.09**	0.10**	0.10**	0.10**	0.10**
Recent business performance	0.05	0.10**	0.05	0.11**	0.05	0.11**	0.04	0.11**	0.04	0.09**	0.09**	0.09**
B2C (vs B2B)	0.09**	0.10**	0.09**	0.10**	0.09**	0.10**	0.09**	0.12**	0.09**	0.09**	0.14**	0.14**
Services (vs Goods)	-0.12**	-0.15**	-0.11**	-0.14**	-0.11**	-0.14**	-0.11**	-0.14**	-0.11**	-0.11**	-0.15**	-0.15**
Maturity/declining product life cycle	-0.02	0.01	-0.02	0.01	0.00	0.03	-0.01	0.03	-0.01	-0.01	0.03	0.03
Industry concentration (concentrated)	0.08**	0.11**	0.09**	0.12**	0.10**	0.12**	0.10**	0.12**	0.10**	0.10**	0.14**	0.14**
Market growth	-0.03	-0.03	-0.03	-0.05	-0.02	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
Market turbulence (more)	0.00	-0.03	0.01	-0.02	0.00	-0.03	0.01	-0.03	0.01	0.01	-0.03	-0.03
Traditional advertising <sup>b</sup>	0.12**	-0.02	0.13**	-0.02	0.12**	-0.02	0.12**	-0.02	0.12**	0.12**	-0.03	-0.03
Internet advertising <sup>b</sup>	0.06*	0.27**	0.06	0.27**	0.06	0.28**	0.07*	0.28**	0.07*	0.07*	0.24**	0.24**
Direct to consumer <sup>b</sup>	0.09**	0.16**	0.09**	0.16**	0.09**	0.16**	0.09**	0.17**	0.09**	0.09**	0.15**	0.15**
Social media <sup>b</sup>	0.00	0.08*	0.01	0.08*	0.03	0.10**	0.01	0.10**	0.01	0.01	0.10**	0.10**
Price promotions <sup>b</sup>	0.06*	-0.08**	0.06*	-0.09**	0.06	-0.08**	0.06	-0.08**	0.06	0.06	-0.09**	-0.09**
Pricing <sup>b</sup>	0.14**	0.01	0.14**	Q	0.14**	0.02	0.14**	0.02	0.14**	0.14**	0.01	0.01
New product development <sup>b</sup>	0.22**	0.02	0.22**	0.03	0.22**	0.03	0.23**	0.03	0.23**	0.23**	0.03	0.03
Sales force <sup>b</sup>	0.06*	0.08*	0.06	0.09*	0.06	0.10**	0.07*	0.10**	0.07*	0.07*	0.09**	0.09**
Distribution <sup>b</sup>	0.06*	0.00	0.07*	0.01	0.07*	0.01	0.07*	0.01	0.07*	0.07*	0.01	0.01
<i>Model diagnostics for SUR system of equations</i>												
System-weighted MSE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Degrees of freedom	2,529	2,529	2,357	2,357	2,309	2,309	2,239	2,239	2,239	2,239	2,239	2,239
System-weighted $R^2$	0.22	0.20	0.21	0.21	0.23	0.22	0.21	0.22	0.21	0.21	0.21	0.21

**Notes:** \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ ; <sup>a</sup> analyzers, low-cost defenders and differentiated defenders are compared to prospectors; <sup>b</sup> all marketing mix activities are compared to PR/sponsorships decisions

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metric use  
matter less?

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