Marketing Science Institute Working Paper Series 2017
Report No. 17-113

Drivers of Metric Use in Marketing Mix Decisions: An Investigation across the G7, BRIC, and MIST Countries

Ofer Mintz, Jan-Benedict E.M. Steenkamp, Martijn de Jong, and Imran S. Currim

Report Summary

Global competition is increasing, U.S. firms have an increasing global presence, and many of the world's largest firms are based abroad. Although research on metrics is consistently designated a priority by academics and practitioners, little is known about what drives metric use in a global setting.

In this report, Ofer Mintz, Jan-Benedict E.M. Steenkamp, Martijn de Jong, and Imran Currim address this knowledge gap by developing a conceptual model based on culture, resources, and institutional theories that combines micro-firm, meso-industry, and macro-national characteristics.

To test their model, they analyze over 4,000 marketing-mix decisions from 16 countries obtained via primary survey data collection, including all G7 countries (Canada, France, Germany, Italy, Japan, U.S., and U.K.), all BRIC countries (Brazil, Russia, India, and China), and all MIST countries (Mexico, Indonesia, South Korea, and Turkey), which account for 80% of the world's GDP.

Among their findings about important drivers of metric use:

- Of macro-national characteristics, uncertainty avoidance is positively associated with metric use. Collectivism, assertiveness, power distance, and future orientation are negatively associated with metric use.

- Micro-firm characteristics such as internal maintenance, organic processes, market orientation, marketing's influence in the firm, CMO presence in the firm, and firm size are positively associated with metric use.

- Meso-industry characteristics (life cycle stage, concentration, growth, and turbulence) are less impactful as drivers of metric use.

A subsequent analysis compared high income countries with emerging markets, and revealed that micro-firm characteristics such as internal maintenance, organic processes, and CMO presence drive metric use in high income countries but not emerging markets. Further, industry characteristics such as concentration, growth, and turbulence drive metric use in emerging markets but not high income countries.

These results enable top executives of multinationals to better understand and drive downstream managerial metric use across the countries and industry and firm settings in which they operate.

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Acknowledgments
This research was supported by grants from the Marketing Science Institute, UNC Kenan-Flagler Business School, and the Beall Center for Innovation and Entrepreneurship, Paul Merage School of Business, University of California, Irvine.

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Understanding the various drivers of metric use is important for managerial marketing practice (Moorman and Day 2016). Metrics are employed in diagnostic, coordinating, benchmarking, and monitoring roles in order to assist managerial decision making (Rust et al. 2004). Metrics quantify trends or characteristics in order to explain phenomena, understand relationships, and results of future actions (Farris et al. 2010). They help marketers be more accountable, and in the current environment with an increasing amount of data and digital technologies, the demand for marketers to employ metrics to increase such accountability has only increased (Lehmann and Reibstein 2006).

To develop a better understanding of the role of metrics in marketing mix decisions, the Marketing Science Institute (MSI) and the Institute for the Study of Business Markets (ISBM), among other organizations, have continuously called for further research on metrics and metric use (e.g., MSI Research Priorities 1998-2016, ISBM B-to-B Trends 2008-2014). Marketing scholars have responded by developing metrics for a variety of marketing mix decisions (e.g., Ambler 2003, Farris et al. 2010) and linking marketing mix efforts and assets to financial metrics (e.g., see Srinivasan and Hanssens 2009 for a review). In addition, scholars have also suggested that every metric employed matters to performance (Hauser and Katz 1998) and the more metrics employed, the better the marketing mix performance (Mintz and Currim 2013). These last authors also document that metric use varies substantially across firms in the U.S. However, we know little about metric use and what drives their use in other countries.

This lack of global insights on drivers of marketing metric use is an important *practical* or managerial limitation. With the growing trend in the globalization of marketing activities in

general (Erdem, Swait, and Valenzuela 2006) and the growth of economic activity in non-western countries in particular (Kumar and Steenkamp 2013), there is a need to investigate what drives metric use by firms on a global basis. It is by now well-established that organizational attitudes and behavior are affected by the culture of the country in which they operate (Hofstede, Hofstede, and Minkov 2010). For example, Deleersnyder et al. (2009) found that firms' response to business cycles through advertising efforts is systematically moderated by the national culture in which they operate.

The lack of global insights on drivers of marketing metrics use is also an important *scientific* or theoretical limitation. Marketing scholars have been urged to investigate substantive problems on an international basis to arrive at global insights, empirical generalizations, and boundary conditions (Burgess and Steenkamp 2006; Farley and Lehmann 1994; Grewal, Chandrashekaran, and Dwyer 2008). Can we arrive at global regularities, and if not, what are the contextual factors that limit global generalizability? Despite the practical impetus and growing theoretical interest, no work has examined what drives metric use across countries.

This study is an initial attempt to address this gap in existing research. We examine why managers in some firms in some countries and in some industries use more metrics than others. We focus this initial attempt towards understanding total metric use in marketing mix decisions because marketers are under an increasing amount of pressure to be accountable in their decisions (Verhoef and Leeflang 2009) and the use of metrics allow managers to justify their decisions across the organization (Moorman and Day 2016). In order to understand what drives total metric use, we take a broad perspective and account for the fact that prior literature has suggested organizational culture (Deshpandé, Farley, and Webster 1993), firm resources (Wernerfelt 1984), and industry norms (Meyer and Rowan 1977), in addition to the

aforementioned national culture, are likely to impact managerial behavior. Thus, we propose a conceptual model suggesting that managerial use of metrics are affected at the micro level by internal firm characteristics (organizational culture and resources), at the meso level by external, environmental characteristics (industry), and at the macro level by national demand factors (country culture). We identify 29 drivers of metric use, including 7 firm drivers, 4 industry drivers, 6 country drivers, and 12 control variables. The key managerial contribution further detailed in the conclusion section is how the estimated effects of our firm, industry, and country level drivers of metric use can be employed by top managers at headquarters seeking to encourage metric use by downstream managers operating across different country and organizational cultures and firms with varied resources.

We test our model on 4,384 marketing-mix decisions from 16 countries obtained by primary survey data collection from firms of various sizes and industries (see Table 1; following references). In doing so, our study makes three additional contributions to the study of metric use. First, we propose a conceptual model that suggests metric use is affected by prevailing cultural norms and values, resources available to the manager, and industry norms and traditions. Second, we combine insights and data at the micro (firm), meso (industry), and macro (country) level to estimate the effect of a number of theoretically motivated drivers of metric use. We find that each of these characteristics have significant effects on metric use, but that those effects are quite complex. Third, we study metric use in the world's most important economies, including all G7 countries (Canada, France, Germany, Italy, Japan, U.S., and U.K.), all BRIC countries (Brazil, Russia, India, and China), and all MIST countries (Mexico, Indonesia, South Korea, and Turkey). Collectively, these countries account for over 80% of world economic activity.

THEORY

Conceptual Framework

Metric use is part of the managerial decision process. Prior literature has suggested that at the firm level, managerial decision processes are systematically affected by the prevailing internal firm culture (Deshpandé, Farley, and Webster 1993; Moorman 1995) and its resources (Ambler 2003; Hanssens, Parsons, and Schultz 2003). That is, at the micro level, managerial decision making can, on the one hand, be affected by organizational culture and, on the other hand, be affected by the resources available to the manager. Organizational culture can be regarded as encouraging factors. Shared cultural priorities can help shape the social and economic reward contingencies to which managers must adapt to in their firm for it to function smoothly and effectively (Smith and Schwartz 1997). For example, Henri (2006) suggests that the firm's organizational control, flexibility, formalization, and rewards systems are key determinants of managerial use of information within a firm. Organizational resources, in contrast, can be regarded as enabling factors. Morgan, Anderson, and Mittal (2005) find that human and technological resources impact the firm's ability to employ customer satisfaction data, and Petersen et al. (2009) suggest that certain firm resources are needed in order to enable accurate forecasting of metrics, which would then affect their use.

In addition, prior literature has also suggested external to firm, industry characteristics will impact managerial decision making (Battilana and Casciaro 2012; Grewal and Dharwadkar 2002). Such characteristics often set precedence for how managers should make decisions in their firms (Eisenhardt 1988). Hence, at the meso level, external, institutional pressures can be regarded as factors which influence expectations. For example, Meyer and Rowan (1977) in their seminal work outlining institutional theory, suggest the resultant following of industry norms can

create similarities in thoughts and actions across the industry in terms of organizational processes, which we expect would impact managerial behavior and should influence metric use. To further complicate the analysis, we also need to accommodate for macro factors such as the fact that managers not only belong to a firm, but are also part of the national society with its own unique culture (Hofstede, Hofstede, and Minkov 2010; Tellis, Prabhu, and Chandy 2009).

The current status of the literature is a challenge as well as an opportunity for marketers interested in studying the drivers of metric use. It is a challenge as there is a relative dearth of theorizing or empirical evidence on metric use on a global scale that can be used to develop formal hypotheses. However, this challenge presents an opportunity to take a first step to developing such a theory. With this in mind, Figure 1 presents our framework, which specifies the micro, meso, and macro drivers of metric use. In the next section, we discuss our expectations based off extant literature and theory for drivers of metric use across the world. In Table 2, we summarize these expectations (see Figure 1 and Table 2, following References).

Micro-level Drivers of Metric Use (Firm Characteristics)

Organizational Culture

Deshpandé and Webster (1989, p. 4) define organizational culture as "the pattern of shared values and beliefs that help individuals understand organizational functioning and thus provide them with the norms for behavior in the organization." Multiple organizational culture typologies have been proposed (see Zohar and Hofmann 2012 for an overview), with the most influential being the Competing Values Framework (Deshpandé, Farley, and Webster 1993). The Competing Values Framework specifies two fundamental dimensions of organizational effectiveness (Figure 2; see following References).

One dimension describes a continuum ranging from an emphasis on *organic* vs. *mechanistic processes*. It differentiates effectiveness criteria that emphasize flexibility, discretion, and dynamism from criteria that emphasize stability, order, and control. That is, some organizations are viewed as effective if they are changing, adaptable, and organic; neither the product mix nor the organizational form stays in place very long. Other organizations are viewed as effective if they are stable, predictable, and mechanistic. They are characterized by longevity and staying power in both design and outputs (Cameron and Quinn 2011).

The second dimension describes a continuum ranging from an emphasis on *external positioning* (competition, differentiation) vs. *internal maintenance* (organizational cohesion, integration, unity, and smoothing of activities). That is, some organizations are judged to be effective if they are focused on interacting or competing with others outside their boundaries; for example, companies that have adopted the "think globally, act locally" mantra have units adopt the attributes of the local environment rather than follow a centrally prescribed approach (Cameron and Quinn 2011). Others are viewed as effective if they have harmonious internal characteristics; for example, IBM has traditionally been recognized for a consistent "IBM way."

Moorman (1995) studied the effect of organizational cultures on four types of organizational market information processes in U.S. firms: information acquisition, transmission, conceptual utilization, and instrumental utilization processes. She found "organizational information processes are fundamentally 'people processes' that require trust and commitment among organizational members" (p. 328). White, Varadarajan, and Dacin (2003) investigated how organizational culture influenced managerial interpretation of their environment, and found that trust and commitment in organizations help create a decision making process conducive to collaborative communication which encourages greater horizontal communication and facilitates

more participation. Henri (2006) examined how the organizational culture of the firm impacted its use of performance measurement systems. He found the conditions in firms whose culture were more flexible than controlling encouraged greater managerial participation, collaboration, and use of information because the use of a measurement system helped guide versus controlled managerial actions, thoughts, and experimentation.

These previously reported conditions that facilitate a greater use of information more accurately describe conditions in firms whose organizational culture are more internally than externally positioned since decision processes in internally positioned firms typically emphasize greater organizational involvement, individual participation, and overall cohesiveness (Deshpandé, Farley, and Webster 1993). In addition, these characteristics better resemble firms whose organizational culture are more organic than mechanistic, as metrics in organic firms are more likely to reinforce broader themes throughout the firm and help focus and reign in more flexible decision making processes that enable independent managerial discretion and initiative (Henri 2006). Consequently, we expect managers to employ more metrics in firms with a greater internal (vs. external) and organic (vs. mechanistic) organizational culture.

In addition, the two dimensions of organizational culture may interact. For firms who are more mechanistic and external oriented, it may be difficult for managers to employ and monitor a more diverse range of metrics than in firms who are more organic and internal who rely on more managerial initiative, discretion, and group trust, which enable a greater range of metrics.

Firm Resources

Resources in our metrics context refer to the tangible and intangible assets that are available to assist managers when making their decisions. Based on previous research (e.g., Barney 1991; Wernerfelt 1984), we assume resources are scarce and finite, resulting in heterogeneity across

functions and firms where some managers will possess greater resources than others. We expect greater possession of such resources to enable more use of metrics. For example, with greater resources, managers have a greater capability to monitor current and past marketing efforts (Mintz and Currim 2013), capacity to compute and benchmark metrics (Morgan, Anderson, and Mittal 2005), and are more able to accurately forecast metrics (Petersen et al. 2009); traits which should facilitate greater metric use. An extensive body of literature suggests that five types of firm resources are particularly important for understanding metric use (e.g., Homburg, Workman, and Krohmer 1999; Kohli and Jaworski 1990; Mintz and Currim 2013; Verhoef and Leeflang 2009). These resources are the firm's level of market orientation, marketing's influence in the firm, whether the firm employs a Chief Marketing Officer (CMO), whether its Chief Executive Officer (CEO) has a marketing background, and its size.

Market orientation. Market orientation is 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 (Kohli and Jaworski 1990). By definition, a critical component of market orientation is the collection and dissemination of market intelligence, which for firms with greater market orientation, should result in superior resources related to metric use. Thus, even though it could be argued that managers in non-market oriented firms may need to employ more metrics in their marketing decisions in order to justify their decisions to superiors who on average will be less familiar with marketing (e.g., Frösén et al. 2016; Mintz and Currim 2015), from a resource point of view, we expect managers in market oriented firms to be facilitated a greater amount of resources which will enable them to employ a greater amount of metrics for their marketing mix decisions.

Marketing's influence in the firm. In the marketing and management literature, it is often posited that firms allocate their finite resources across the firm based on the importance of each function (e.g., Hillman, Withers, and Collins 2009; Pfeffer and Salancik 1978). Hence, when marketing's influence in the firm increases, i.e., when top management considers marketing strategically important, it is expected to be provided greater resources than in firms where it has a lesser influence (Homburg, Workman, and Krohmer 1999). Consequently, we expect managers in firms where marketing has a greater influence in the firm to employ more metrics in their marketing decisions than managers in firms where marketing has a lesser influence.

CMO presence. Prior literature in marketing and management has also posited that characteristics of the top management team will affect the resources provided to an individual department (e.g., Hambrick and Mason 1984; Nath and Mahajan 2011). Thus, the presence of a CMO should help attract greater resources for marketers (Germann, Ebbes, and Grewal 2015), which should enable marketers in such firms to employ a greater amount of metrics in their marketing decisions. Further, CMOs are often tasked internally to gather, analyze, and disseminate market information (Homburg et al. 2014), which would typically require such executives to employ a greater amount of metrics. In such firms, other managers making marketing decisions are also expected to focus on similar tasks mandated to their highest level executive and as a result be facilitated enough resources to support such tasks. Hence, we expect managers making marketing decisions in firms with a CMO to employ more metrics.

CEO background. Relatedly, firms with a CEO who has a marketing background often have a more sympathetic view of the marketing department (Hambrick and Mason 1984). Hence, previous research has suggested marketers are provided greater resources in such firms (e.g., Homburg, Workman, and Krohmer 1999; Verhoef and Leeflang 2009). Consequently, we expect

managers making marketing decisions in firms with a CEO that has a marketing background to employ a greater number of metrics.

Firm size. The size of the firm should also influence the amount of resources it possess and has available to assist managerial decision making (e.g., Frösén et al. 2016; Rubera and Kirca 2012). For example, managers in larger firms are typically able to rely on a greater internal knowledge base (Boyd, Chandy, and Cunha 2010), more access to external market information (Harmancioglu, Grinstein, and Goldman 2010), and superior resources overall (Macher and Mayo 2015). Thus, even though managers in larger firms are often more siloed into their own departments and have less organizational involvement in their decisions than managers in smaller firms (Greve 2011) which could lessen metric use, based on a resource point of view, we expect managers in larger firms to employ more metrics.

Meso-level Drivers of Metric Use (Industry Characteristics)

Another source of influence on managerial decision making is the environmental characteristics of the industry in which the firm primarily competes (Eisenhardt 1988). In order for the firm to obtain legitimacy and for managers within the firm to reduce their uncertainty when making their decisions, institutional theory suggests that firm processes, strategies, and traditions are mimicked across the industry (DiMaggio and Powell 1983). This creates a similarity in thought and action for managers based on industry trends (Meyer and Rowan 1977), which should influence expectations for how managers should act when making decisions and affect their use of metrics. We consider four commonly used sources of industry-based institutional pressure (e.g., Buzzell and Gale 1987; Glazer and Weiss 1993; Morgan, Anderson, and Mittal 2005; Song et al. 2005), i.e., product life cycle, industry concentration, growth, and turbulence.

Product life cycle. In the maturity and declining stages of the industry/product life cycle, the market is more stable than in the introductory and growth stages in terms of overall growth, cash flow, drivers of customer satisfaction, and future consumer demand (Porter 1980). As a result, the strategic focus for firms in maturity and declining stages of the industry/product life cycle typically centers around improving financial returns, operational efficiencies, etc. (Buzzell and Gale 1987). Hence, managers working in such industries are expected to be able to provide greater justification and accountability for their decisions (Gupta, Lehmann, and Stuart 2004). Metrics help marketers be more accountable since they act as decision aids that assist with considering, benchmarking, and monitoring marketing mix decisions (Mintz and Currim 2013), and are often employed to justify such decisions (Pauwels et al. 2009). Consequently, we expect managers in firms in maturity and declining stages to employ a greater amount of metrics than managers in firms in introductory and growth stages.

Industry concentration. In highly concentrated industries, firms face intense competition and rivalry among firms (Farris and Buzzell 1979). As a result, managers in such industries are expected to constantly compare and benchmark their actions versus their competitors, which will force them to continually employ and monitor their own and competitors' metrics in their decisions. Therefore, we expect managers in concentrated industries to employ more metrics.

Industry growth. Relatedly, when industry sales are growing, firms are increasingly trying to keep pace with their competition (Buzzell and Gale 1987). This would also force managers in such industries to also continuously monitor the inputs and outputs of their decisions and compare them with competitor actions. Thus, even though firms in less growth industries may pressure their managers to act with greater financial accountability (Deleersnyder et al. 2009) which could require managers to employ more of a financial subset of metrics (e.g., Mintz

and Currim 2013), we expect managers in industries with greater sales growth to employ a greater amount of overall metrics.

Market turbulence. In stable markets, consumers exhibit relatively invariant choices with more established and predictable preferences (Morgan, Anderson, and Mittal 2005), so it becomes easier although perhaps less necessary to compute metrics (Mintz and Currim 2013). In contrast, in more turbulent industries consumers exhibit variant preferences and firms have greater uncertainty regarding their consumer's future preferences (Song et al. 2005). Consequently, it becomes more important for firms in turbulent industries to better understand their customers, quickly adapt to such shifting preferences, and disseminate such information across the firm (Glazer and Weiss 1993). As a result, we expect managers in more turbulent industries to employ a larger, more diverse range of metrics in their decisions to account for such a multitude of information.

Macro-level Drivers of Metric Use (National Culture)

National culture refers to a core set of attitudes and practices that are shared by the members of a collective entity, such as a country (Tellis, Prabhu, and Chandy 2009). According to Triandis (1996, p. 407), "culture is reflected in shared cognitions and *standard operating procedures*" (emphasis added). We expect that managers' behavior is affected by the national cultural context in which they reside. This view is widely shared by cultural theorists (Hofstede 2001; Roberts and Greenwood 1997; Schneider and Barsoux 2003). Hofstede (1994, p. 4) put it as follows: "...the culture of the human environment in which an organization operates affects the management processes."

In this study, we use the GLOBE national cultural values typology (House et al. 2004). GLOBE consists of nine dimensions, which can be regarded as a refinement, elaboration, and

update of Hofstede's (1980) work. The GLOBE project was started to address multiple frequently noted shortcomings in Hofstede's work, namely that (i) the psychometric properties of the Hofstede measures was problematic; (ii) the results were based on managers in a single corporation (IBM), which happens to have a strong organizational culture of its own; and (iii) questions about the continued validity of culture ratings that were collected over 50 years ago, in a world that is vastly different of today's world (Javidan et al. 2006). The GLOBE dimensions were developed using a sequence of qualitative and quantitative phases, using advanced psychometric techniques to establish their cross-cultural fidelity, involving data from 17,300 managers in 951 organizations in 62 cultures. Table 3, which is displayed after References, provides the six GLOBE national cultural dimensions used in this research and their definitions.

To understand how various GLOBE dimensions may affect metric use in their society, it is useful to consider that use of metrics by managers has the potential to fulfill multiple overlapping purposes. Metric use can serve to (1) clarify rules and criteria on which performance will be assessed (Moorman and Day 2016), (2) increase accountability of individual managers (Rust et al. 2004), (3) empower individual managers (Farris et al. 2010), and (4) improve the performance of the organization (O'Sullivan and Abela 2007). According to Schwartz (1994), national-cultural priorities reflect the basic issues and problems that societies must confront in order to regulate human activity. The shared cultural priorities in society help to shape the social and economic reward contingencies to which people (in this case, managers) must adapt in the institutions in which they spend most of their time (families, schools, businesses, etc.) in order to function smoothly and effectively (Smith and Schwartz 1997). Thus, we should be looking at an alignment – or misalignment – between national cultural values and the functions performed by

metric use. When they are aligned, we can expect a positive effect, when they are misaligned, we can expect a negative effect.

One function of metrics is to clarify rules and criteria on which performance will be assessed; something that should especially resonate in cultures that are high on uncertainty avoidance. Cultures that avoid uncertainty adopt strict codes of behavior (Steenkamp, Hofstede, and Wedel 1999), rely on more formalized processes (House et al. 2004), and keep meticulous records in an effort to alleviate the uncertainty of future events (Grove 2005). This results in managerial decision making that is more fact than intuition-based (Naor, Linderman, and Schroeder 2010) and focuses on risk avoidance and reduction (Roth 1995). The implementation of procedures allows greater predictability of behavior and orderly meticulous record keeping which reduces risk (de Luque and Javidan 2004). Clearly defined metrics help to define the rules of the game for managers and provide the orderly bureaucratic context that is valued in these societies. Hence, we expect metric use to be greater in more uncertainty avoidant societies.

A second role of metric use is to increase the accountability of individual managers. Managers cannot hide behind the collective or the firm, as their performance will be assessed on these metrics (Farris et al. 2010; Rust et al. 2004). This suggests that heavier metric use is aligned with cultures that encourage and reward individual performance as opposed to collective performance (i.e., low on institutional collectivism). Institutional collectivism downplays rewards given to the individual, and encourages rewards based on equality rather than equity (Scheer, Kumar, and Steenkamp 2003). This is also related to the role of assertiveness. Den Hartog (2004) reports a strong correlation between society's emphasis on assertiveness and humane-oriented leadership. She explains this by noting that this is "likely due to the need for leaders to provide social support in a highly assertive and likely threatening environment" (p.

430), which follows from the path-goal theory of leadership (House 1971, 1996). Plus, in more assertive cultures, managers also often exude more confidence in their decisions and initial instincts, and are less open to utilize more information that contradicts such instincts (Flynn and Saladin 2006), which would likely result in less metric use.

A third role of metric use is that it empowers managers. Their performance can be evaluated on hard and verifiable criteria rather than on contextual or soft criteria. In high power distance societies, this may not be seen as necessarily desirable, at least not by top management. In these societies, less powerful people should be dependent on more powerful people (Flynn and Saladin 2006) and management by objective metrics is less accepted because it presupposes some form of negotiation between subordinate and superior with which neither party may feel comfortable (Hofstede, Hofstede, and Minkov 2010, pp. 72,74). Consequently, we expect metric use to be lower in high power distance societies.

A fourth role of metric use is to improve the performance of the firm. This should especially resonate in cultures that are characterized by a strong performance orientation. Thus, we expect that metric use will be higher, ceteris paribus, in societies that emphasize performance orientation. On the other hand, heavy reliance on metrics is aligned with a low score on future orientation (i.e., high present orientation; Ashkanasy et al. 2004). "Persistence" is a key word describing future cultural orientation - persistence in achieving one's goals, more or less irrespective of short-term considerations and fluctuations in the environment (Hofstede 2001, p. 360). Conversely, in present-oriented cultures, the "bottom line" (the results to be achieved in the next quarter is a major concern) and "control systems are focused on it and managers are constantly judged by it." (Deleersnyder et al. 2009, p. 626; Hofstede 2001, p. 361). Metrics are part of such a control system, and their performance can be tracked in the short-term (Gupta and

Zeithaml 2006). Hence, we expect that marketing metrics use is higher in societies emphasizing the short term (present orientation) over the long run (future orientation).

Control Variables

We include personal characteristics of the manager and type of marketing mix decision as control variables. While they are not the focal interest of our study, controlling for these variables provides for a stronger test of our hypotheses as these factors have been shown in previous research to influence managerial information use (e.g., Jaworski and Kohli 1993; Lehmann and Reibstein 2006; Mintz and Currim 2013; Verhoef and Leeflang 2009). Moreover, given the global scope of our data, their actual results are of interest in their own right.

METHOD

Data Collection

Our empirical context is at the individual marketing mix decision level. Our main variable of interest, metric use, is the practice of employing information, e.g., for consideration, benchmarking, or monitoring, when managers are making such a decision (Mintz and Currim 2013, 2015). To obtain data on metric use and our other variables of interest, we combine primary survey data and secondary country level data. For the primary survey data, we collaborated with the market research firm Survata to collect data using an online survey of 16 countries in Asia (China, India, Indonesia, Japan, South Korea, Turkey), Australasia (Australia), Europe (France, Germany, Italy, Russia, U.K.), North America (Canada, U.S.), and Latin America (Brazil, Mexico). Our set of countries includes all G7, BRIC, and MIST countries. Collectively, these countries account for over 80% of the world's total GDP.

The questionnaire was first developed in English and translated into Chinese, French, German, Indonesian, Italian, Japanese, Korean, Portuguese, Russian, Spanish, and Turkish using

back-translation. Screening of respondents was done by Survata, who implemented quality control checks before, during, and after managers interacted with the survey based on managerial qualifications, attention checks, and analysis for patterned responses. Our final dataset consists of 4,384 decisions by 1,637 firms/managers (each firm had one manager answer the questionnaire) with an average of 274 decisions per country. See Table 1 for summary statistics on the number of decisions reported by managers in each country. The Appendix includes the measures included in the survey, to which we now turn.

Measurement

Managerial metric use. We adopted the measurement instrument developed by Mintz and Currim (2013). These authors developed their instrument based on earlier work 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). Managers were asked to indicate which of 10 marketing-mix decisions they recently undertook, with the clarification following Menon et al. (1999, p. 28) that they were to select decisions that "(1) were not so recent that performance evaluation is premature and (2) not so long ago that memory about the decision and performance is fuzzy." For *each* decision, managers were tasked to indicate which of 24 general metrics (i.e., metrics that apply to many types of decisions) and 6 specific to a marketing mix decision metrics (i.e., metrics suited to that particular type of decision) they employed when making that particular marketing mix decision (see Web Appendix A for the listing of metrics). Managers could view the definitions of the metrics and were also allowed to write-in the use of any additional metric employed, but almost none did (<1%). Following previous research, managerial metric use was the number of metrics used in the decision, which ranged from 0 to 30.

Micro-level drivers. Organizational culture was measured by the Organizational Culture Assessment Instrument (Cameron and Quinn 2011; Deshpandé, Farley, and Webster 1993). This six-item instrument was specifically developed to operationalize the Competing Values Framework. The six items refer to specific aspects of organizational culture – dominant characteristics, organizational leadership, management of employees, organizational glue, strategic emphasis, and criteria of success. For each item, there are four response options, each reflecting one of four ideal organizational culture types specified in Figure 2. For each item, the respondent has to distribute 100 points between the four response options depending on how similar each description is to his or her firm.

Market orientation was measured with eight items taken from Deshpande and Farley (1998) and Verhoef and Leeflang (2009). Items were scored on a seven-point Likert scale. Marketing's influence in the firm was measured based on van Bruggen and Wierenga (2005) and Verhoef and Leeflang (2009) as a seven-point Likert scale rating the extent to which top management considers marketing strategically important. Whether the CEO had a marketing background followed Homburg, Workman, and Krohmer (1999) and Verhoef and Leeflang (2009), and was operationalized as whether the primary background of the CEO was in marketing or one of five other functions. CMO presence was a 0-1 variable and firm size was operationalized as the log of the number of employees.

Meso-level drivers. Following Deshpande and Zaltman (1982), the manager had to indicate the stage of the product lifecycle - introductory, growth, maturity, and decline. Industry concentration was based on Kuester, Homburg, and Robertson (1999) as whether the market share percentage of the four largest companies in the industry was >50%. Market growth was taken from Homburg, Workman, and Krohmer (1999) and operationalized as a 1-9 scale for the

average annual growth or decline of the industry. Finally, we used three items from Miller, Burke, and Glick (1998) to measure market turbulence. The items were measured on a seven-point Likert scale.

Macro-level drivers. Country scores on the GLOBE dimensions were taken from House et al. (2004).

Control variables. See the Appendix for information on the measurement and sources for the control variables.

Sample Descriptive Information

The average firm in the sample has 8,934 full-time employees (median of 500), employs a CMO (67%), and competes in less concentrated industries (73%). The sample has a mixture of firms in introductory/growth (62%) vs. maturity/declining (38%) stages of the life cycle. In addition, it has a moderately high number of CEO's with a marketing background (30%) and marketing is considered relatively a strategic asset by top management (average of 5.92 out of 7.00). However, there is good variation in the sample, which makes it a good empirical sample to test.

Data Quality

In addition to Survata providing quality assessment of our data, we also conducted the following tests. First, we do not detect non-response bias in our sample based on the Armstrong and Overton (1977) test in which late and early respondents scores are compared on the included constructs ($p > .05$). Second, as recommended by Podsakoff et al. (2003), we used multiple response scales (nominal, constant sum, Likert scales) in our survey. This should lessen concerns about common method variance. We also do not find evidence of common-method bias based on Harman's one-factor test and Lindell and Whitney (2001) post hoc tests.

Third, to counter possible self-selection bias where managers only participate or will only report decisions in which they employ large amounts of metrics, we followed Fredrickson and Mitchell's (1984) instructions and stated in our recruitment letter and in the introduction to the questionnaire that we were interested in responses from managers who do and do not employ metrics in their decisions and that their answers would remain anonymous (Chang, van Witteloostuin and Eden 2010). Out of the 4,384 marketing mix decisions reported in the total sample, 624 (14%) involved managers who only employed zero to three metrics; evidence that managers were not reluctant to describe decisions in which no metrics or a very small number of metrics were involved.

Finally, we derived cross-nationally comparable scores on two focal antecedents that are measured with Likert scales – market orientation and market turbulence. Given the large number of countries, the traditional multigroup confirmatory factor analysis model (Steenkamp and Baumgartner 1998) becomes cumbersome. One solution is to reduce the number of groups by creating regional groupings like in Tellis et al. (2009). However, that assumes that measurement invariance exists within each group, an assumption that may not be valid. Therefore, we turned to the alignment method, which was recently developed by Asparouhov and Muthén (2014). This method was designed explicitly for simultaneous analysis of many groups, and is based on earlier work by Jennrich (2006). We applied the alignment method to our two constructs and found that metric invariance was supported across all countries for two out of three market turbulence items and all eight market orientation items. Scalar invariance was supported for all market turbulence items and six out of eight market orientation items. We calculated the factor scores based on the partial scalar invariance model (Steenkamp and Baumgartner 1998) and correlated them with the summated scores. The correlation for market turbulence was .963 and

for market orientation .983. These findings support the measurement invariance of the constructs (Asparouhov and Muthén 2014).

Analytical procedure

Deriving scores on the organizational culture dimensions. As a first step, we need to relate the observed constant sum responses to the six items in the Organizational Culture Assessment Instrument to the underlying continuous latent variables of external positioning vs. internal maintenance and mechanistic vs. organic processes (Figure 2). Because constant-sum data represent a form of ipsative-measurement, the organizational culture scores are more complex to derive than the other explanatory variables in our econometric model. We developed a new Dirichlet specification, building on earlier research by Desarbo, Ramaswamy, and Chatterjee (1995).

We denote the four observed constant-sum answers to each of six items l (l=1,...,6) for respondent i in country j by ($p_{ijl1}, p_{ijl2}, p_{ijl3}, p_{ijl4}$). The sum of this vector equals 1. In other words, we rescale the data from (0,100) to (0,1) by dividing the four observed scores per item by 100. Then, the organizational culture data for person ij and item l are distributed as:

(1) $\left(p_{ijl1}, p_{ijl2}, p_{ijl3}, p_{ijl4}\right) \sim Dirichlet(\alpha_{ijl1}, \alpha_{ijl2}, \alpha_{ijl3}, \alpha_{ijl4})$,

Therefore, the likelihood for the organizational culture item l for respondent i in country j is given by the Dirichlet likelihood:

(2) $$L_{ijl} = \frac{\Gamma\left(\sum_{c=1}^{4} \alpha_{ijlc}\right)}{\sum_{c=1}^{4} \Gamma(\alpha_{ijlc})} \prod_{c=1}^{4} (p_{ijlc})^{\alpha_{ijlc}-1}$$

The parameters of the Dirichlet distribution are specified as a function of the organizational culture variables:

(3) $\alpha_{ijl1} = \exp(\mu_{l1} + \lambda_{l1} Clan_{ij1})$

(4) $\alpha_{ijl2} = \exp(\mu_{l2} + \lambda_{l2} Adhocracy_{ij2})$

(5) $\alpha_{ijl3} = \exp(\mu_{l3} + \lambda_{l3} Hierarchy_{ij3})$

(6) $\alpha_{ijl4} = \exp(\mu_{l4} + \lambda_{l4} Market_{ij4})$

We then derive the score of the two organizational culture dimensions as:

(7) $IntMain_{ij} = (Clan_{ij} + Hierarchy_{ij}) - (Adhocracy_{ij} + Market_{ij})$

(8) $Organic_{ij} = (Clan_{ij} + Adhocracy_{ij}) - (Hierarchy_{ij} + Market_{ij})$

Relating antecedents to marketing metric use. Our dependent variable metric use by respondent *i* in country *j* for decision *d* (MU_{ijd}) is operationalized by summing the number of metrics used by a specific manager for a given type of marketing decision *d* (recall there were 10 marketing-mix decisions). As mentioned earlier, there are 30 marketing metrics that respondents could select. Thus:

(9) $MU_{ijd} = \sum_{t=1}^{30} Y_{ijdt}$,

Where $Y_{ijdt} \in \{0,1\}$ indicates whether manager *i* in country *j* selected metric *t* for decision *d*. To account for the nonnegative and discrete nature of our dependent variable in which its variance exceeds its mean (M = 9.08, variance = 30.78) in the data, we use a Poisson-Gamma regression, also known as a negative binomial regression model (Greene 2003) to estimate the effects of the antecedents on metric use. A Poisson density $g(MU_{ijd} \mid \phi_{ijd})$ with mean ϕ_{ijd} and a random intercept ε_{ij} in the mean ϕ_{ijd} can be written as:

(10) $$g(MU_{ijd}; \phi_{ijd}) = \frac{\exp(-\phi_{ijd})\phi_{ijd}}{MU_{ijd}!}$$

(11) $$\phi_{ijd} = \exp(\beta' X_{ij} + \gamma W_j + \varepsilon_{ij}) = \nu_{ij} \exp(\beta' X_{ij} + \gamma W_j) = \nu_{ij} \eta_{ij}$$

Here, the term η_{ij} is the log-link between the Poisson mean and the covariates that represents the latent marketing metrics usage rate, ν_{ij} is a transformed error term that takes care of the overdispersion, X_{ij} contains individual-level covariates, and W_j contains cultural variables. Then,

the density of MU_{ijd} is obtained by integrating over the Gamma-distributed error term v_{ij}, with v_{ij}~Gamma(α_1,α_2)

(12) $f(MU_{ijd} \mid \eta_{ij}) = \int g(MU_{ijd} \mid \eta_{ij}) h(v_{ij}) dv_{ij}$

If we set $\alpha_1=\alpha_2$ so that $E(v_{ij})=1$ and $V(v_{ij})=1/\alpha_1$ it can be shown that the expected value and the variance of MU_{ijd} are given by:

$E(MU_{ijd}) = \eta_{ij}$

$V(MU_{ijd}) = \eta_{ij} + \eta_{ij}^2 / \alpha_1$

where α_1 is the dispersion parameter. Manager i's latent marketing metrics usage rate η_{ij} is then modeled as a function of our micro, meso, and macro antecedents and control variables:

(13) $\eta_{ijd} = \exp(\beta_0 + \beta_1 IntMain_{ij} + \beta_2 Organic_{ij} + \beta_3 IntMain_{ij} \times Organic_{ij} + \beta_4 MarkOr_{ij} + \beta_5 MarkInf_{ij} + \beta_6 CMO_{ij} + \beta_7 CEO_{ij} + \beta_8 FirmSize_{ij} + \beta_9 PLCycle_{ij} + \beta_{10} Mconc_{ij} + \beta_{11} Mgrowth_{ij} + \beta_{12} Mturb_{ij} + \beta_{13} UA_j + \beta_{14} InstCol_j + \beta_{15} Assert_j + \beta_{16} PD_j + \beta_{17} PO_j + \beta_{18} FO_j + \beta_{19} ManLevel_{ij} + \beta_{20} Experience_{ij} + \beta_{21} QuantOr_{ij} + \sum_{k=1}^{9} \beta_{21+k} DecisionType_{ijd})$

where IntMain and Organic are the score of the firm in which the manager works on the organizational culture dimensions external positioning (low score) versus internal maintenance (high score) and mechanistic (low score) versus organic (high score) processes. MarkOr is the market orientation of the firm. MarkInf is marketing's influence in the firm, which is the extent to which top management considers marketing strategically important. CMO indicates CMO presence (=1) or not, CEO is whether the CEO had a marketing background (=1) or not, and firm size is the log of the firm size. PLCycle indicates whether the industry in which the firm is operating is in the mature or declining phase (=1) versus the introductory or growth phase (=0). Mconc, Mgrowth, and Mturb denote market concentration, growth, and turbulence, respectively. UA, InstCol, Assert, PD, PO, and FO indicate the national cultural dimensions uncertainty avoidance, institutional collectivism, assertiveness, power distance, performance orientation, and

future orientation, respectively. ManLevel, Experience, and QuantOr are three individual-level control variables, viz., the rank of the manager in the organization (CEO/CMO/(S)VP =1, else = 0), work experience, and quantitative orientation. Finally, we include 9 dummies to control for the type of marketing mix decision.

The model is estimated using a robust maximum-likelihood procedure with cluster-robust standard errors, to incorporate the dependency between observations belonging to the same country. Variance inflation scores are all below 4. 185 of 190 (97%) pairwise correlation coefficients displayed in Web Appendix B are <.4 and >-.4; four of the exceptions are a combination of national culture variables. Therefore, we estimated a model which excluded future orientation and assertiveness, and found its results to be similar to our main model. Hence, estimation is not expected to suffer from multicollinearity (e.g., Leeflang et al. 2000).

RESULTS

Descriptive Information on Metric Use

In Table 4 (displayed following the References), we present statistics on the use of metrics for each of the 16 individual countries. Across our sample, managers employed an average of 9.08 metrics per marketing mix decision. The 5 countries reporting the greatest average amount of metric use are South Korea (11.72), China (11.14), India (10.72), Russia (10.19), and Australia (10.11); while the 5 countries reporting the least amount of use are Japan (4.29), France (5.79), U.S. (7.38), U.K. (8.00), and Italy (8.35). Across the sample, satisfaction (53%), awareness (45%), ROI (43%), net profit (42%), and likeability (40%) were the five most used individual metrics. In fact, satisfaction was reported to be the most used metric in 8 of our 16 countries and in the top 5 of used metrics in 14 of 16 countries. The highest use of an individual metric in any country was awareness in India, where 71% of managers used this metric. However, we also note

that these statistics are aggregated by country and do not account for the aforementioned micro or meso level drivers of metric use, unlike in our negative binomial regression model whose results we discuss next.

Results of Micro, Meso, and Macro Drivers of Metric Use

Table 5 (displayed following the References) reports the coefficients of the negative binomial model with cluster-robust standard errors across the full sample (2nd column). For both of our proposed organizational culture micro drivers, we find expected effects on metric use. Specifically, we find a significant positive relationship between firms who have more of an internal (vs. external) (β_1 = .08, p<.01) and organic (vs. mechanistic) culture (β_2 = .06, p<.1) and metric use. However, we do not find a significant effect for the interaction term (β_3 = .04, n.s.). For our resources based micro drivers, we also find broad support of our expected effects as market orientation (β_4 = .06, p<.05), marketing's influence in the firm (β_5 = .08, p<.01), CMO presence (β_6 = .13, p<.05), and firm size (β_8 = .05, p<.01) are each found positively associated with metric use, but whether the CEO has a marketing background is not (β_7 = .03, n.s.). Overall, these results support our firm-level micro characteristics as drivers of metric use, since we find support for 6 of our 7 main effects.

In contrast, for these industry-level predictors, we find less support as we only find a significant relationship between industry growth and metric use (β_{10} = .02, p<.05); the remaining variables are insignificant. Third, we find broad support for our macro drivers of metric use. Specifically, we find uncertainty avoidance (β_{13} = .20, p<.05) is positively associated with metric use and institutional collectivism (β_{14} = -.23, p<.01), assertiveness (β_{15} = -.10, p<.1), power distance (β_{16} = -.71, p<.05), and future orientation (β_{18} = -.32, p<.1) are negatively associated with metric use. The anticipated positive effect of performance orientation does not reach

statistical significance (β_{17} = .15, n.s.). This is most likely a power issue as the variance on this dimension is considerably lower than that of the other national culture dimensions. Hence, these results support our national culture-level macro characteristics as drivers of metric use since we find support for 5 of our 6 national cultural-level macro variables.

Our three individual respondent controls, i.e., managerial level, work experience, and extent of quantitative orientation, do not systematically affect metric use, but we do find that metric use varies by decision type. For 8 of our 9 decisions we find significant effects, as managers making internet advertising (β_{22} = .06, p<.01), direct to consumer (β_{23} = .08, p<.01), social media (β_{24} = .09, p<.01), sales force (β_{25} = .20, p<.01), pricing (β_{27} = .10, p<.05), PR/sponsorship decisions (β_{28} = .15, p<.01), new product distribution (β_{29} = .13, p<.01), and distribution (β_{30} = .17, p<.05) all employ more metrics in their decisions in comparison to managers making traditional advertising decisions.

Post-hoc Analysis on Differences between High Income Countries and Emerging Markets

The results of individual drivers with respect to their expectations are summarized in Table 2, which shown following the References. These results account for differences between country-level macro characteristics through the inclusion of the six GLOBE cultural variables. However, various authors (e.g., Aguiar and Gopinath 2007; Burgess and Steenkamp 2006; London and Hart 2004) have argued that there are important differences between high income countries (HICs) and emerging markets (EMs). For example, in the metrics context, market research information and data to evaluate marketing actions are harder to obtain in EMs than in HICs (Cateora, Gilly, and Graham 2013), which would likely impact metric use. Our dataset allows us to explore whether there are differences between these subsets of countries as half of our countries are HICs (Australia, Canada, France, Germany, Italy, Japan, UK, and US) and half are

EMs (Brazil, China, India, Indonesia, Mexico, Russia, South Korea, and Turkey). That is, we are able to estimate the effects of the firm-level micro and industry-level meso variables on metric use for each subset of countries, and examine which of our drivers have effects in the same direction and which do not. As there is little extant theorizing to guide us, we conduct an exploratory analysis where we do not develop a priori predictions, but we believe our findings can give an impetus to future theorizing and testing.

In Table 5, the 3rd column displays the results of the HICs and the 4th column displays the EMs. For our firm-level micro drivers, we find the two main effects of our organizational culture variables have a positive effect on metric use in HICs but not in EMs. In contrast, in EMs, the interaction term between the two variables is significant and positive but it is not in HICs. A slope analysis of the significant interaction effect in EMs, where we examined the mean value of organic culture and one standard deviation above and below the mean, and its effect with internal organizational culture, demonstrates a very linear effect (i.e., see Figure 3, following References). Based on these results, it appears independent managerial discretion and initiative, trust, and group cohesion are the most important organizational culture characteristics that lead to greater metric use. For the resource based firm drivers, we find marketing's influence in the firm and firm size effect metric use for both HICs and EMs, but CMO presence is only significant for HICs.

Next, for the industry-level meso drivers, in HICs we do not find much an effect on metric use but in EMs, 3 of the 4 drivers (concentration, industry growth, and turbulence) are significant. In EMs managers appear to be more reliant in their decision making process based on their established industry environment to help their firms gain more of legitimacy and long-term profitability, while in HICs this is less important since there are more supplementary sources of

information and legitimacy is easier to obtain. This is the position advanced by institutional theory (e.g., DiMaggio and Powell 1983; Meyer and Rowan 1977), which suggests that decision processes and strategies are mimicked across the industry to reduce managerial uncertainty when making decisions (Grewal and Dharwadkar 2002) and help reduce negative pushback in case of making the wrong decision (Battilana and Casciaro 2012), especially in situations where obtaining legitimacy is harder to gain. Finally, we find that in HICs the type of marketing mix decision does not appear to impact metric use while in EMs all 9 types are significant.

CONCLUSION

All firms need to coordinate and guide firm activities, and metric use – and the monitoring, planning, transparency, and accountability that entails – is one way to achieve this. Thus, the Marketing Science Institute (MSI) and the Institute for the Study of Business Markets (ISBM) have consistently designated research on metrics as a priority (e.g., MSI Research Priorities 1998-2016, ISBM B-to-B Trends 2008-2014). While global competition has only increased marketers need to be accountable through the use of metrics in their marketing decisions (Lehmann and Reibstein 2006), little prior research has investigated what drives metric use in global settings, limiting prior research's practical implications. Further, the lack of insights on metric use by managers in a more global setting has hindered marketers from establishing boundary conditions and empirical generalizations, which are theoretical limitations.

To develop a conceptual model of global drivers of metric use, we needed to overcome the false dichotomy that according to Farley and Lehmann (1994, p. 112) has plagued much of marketing research and practice, namely the polarization of views between "everything is the same" versus "everything is different." In other words, we needed to account for the fact prior research (e.g., Eisenhardt 1988; Homburg, Workman, and Krohmer 1999; Moorman 1995) has

suggested that internal, firm culture and resources characteristics and external, industry environmental characteristics can influence managerial and firm practices, and consequently not every manager in a country would act the same. Therefore, we took a broad perspective and proposed a conceptual model of *micro-organizational, meso-industry,* and *macro-country* drivers of metric use. Key theoretical contributions of this work were to suggest culture could be regarded as encouraging factors of metric use, organizational resources as enabling factors, and external, institutional pressures as factors which influence expectations; and to develop hypotheses based on such factors for each individual driver of metric use.

To test our model, we analyzed over 4,000 decisions from 16 countries obtained via primary survey data collection. In addition, we conducted additional exploratory analysis to explore differences between countries which are more highly developed to those which are emerging. A key managerial contribution of this work based on the empirical results is that executives of multinational firms can better understand and drive downstream managerial metric use across the countries and settings in which the firm operates. For example, one of our main results was the impact of culture on metric use; i.e., managers who reside in national cultures with greater (less) institutional collectivism, assertiveness, power distance, and future orientation (uncertainty avoidance), and whose firm culture lacks internal maintenance and organic processes, are found to employ fewer metrics in their marketing decisions. Hence, an executive at headquarters can employ such results to form expectations on metric use by downstream managers operating in settings characterized by country and organization cultures, in addition to accounting for the firm's resources, industry's characteristics (particularly for Emerging Markets) and the type of marketing mix decision being made. Importantly, such insights are at the micro, meso, and macro level, which allow the executives to account for such characteristics

instead of just assuming that everything is the same or everything is different for their managers who may reside in different countries. Consequently, an executive at headquarters who wishes to drive greater use of metrics in a particular downstream setting will have a better understanding of the factors that limit the expectation of metric use in the setting.

This understanding should aid the upstream executive to propose or provide resources and incentives to promote metric use, and employ communications which are culturally sensitive to the country and organization in which the downstream manager operates. For example, in settings where we found managers are likely to use fewer metrics, such as in firms without a CMO or in firms who compete in industries with less sales growth, resources could be provided to train managers on metric use, facilitate data collection for metric computation, and develop compensation based incentives to promote additional metric use. In addition, when executives at headquarters are attempting to communicate the need for greater downstream metric use, culturally sensitive communications could reflect an understanding of the country culture on the variables we have considered (uncertainty avoidance, institutional collectivism, assertiveness, power distance, and performance and future orientations) as well as the variables which reflect the organization culture (internal maintenance and organic processes) in which the downstream manager operates.

In summary, as a result of this study, we hope going forward that the understanding of differences in downstream managerial metric use across countries and settings will not be just based on an upstream manager's realizations or observations of metric use across settings, but also based on the study's empirical results on drivers of metric use, i.e., the statistically significant βs or parameter estimates, which can be employed to set expectations of downstream managerial metric use. Hence, the empirical results of our micro, meso, and macro level large

scale global study can enable expectation setting for metric use across downstream settings, which will be useful to upstream executives seeking to enhance downstream metric use with what to say, and how to say it, in order to achieve compliance.

Limitations of this research are that we were forced to conduct primary research on self-reported data on managerial metric use and firm, industry and managerial characteristics. Further, the data is cross-sectional and may not be fully representative of national samples, as is common with survey methodologies. It would have been preferable for our study to obtain objective, behavioral data from larger samples, but such data were unavailable to the authors and is very difficult if not nearly impossible to obtain on a large-scale. Hence, we are not aware of any academic marketing study that has gained access to such objective, behavioral data on metric use. In contrast, a key strength of our data collection is that we were able to obtain data from a wide variety of countries, firms, industries, and types of marketing mix decisions. The data also considers 84 different metrics across 10 types of marketing mix decisions based on 10 different published studies, and was not limited to just a small handful of metrics a certain organization may employ.

Future research can investigate how individual metrics impact marketing mix decision performance to propose "right metrics" for managers to employ for their situation. Additional research could also investigate how managers make trade-offs between metrics when making their decisions, and how managers value metrics differently when internally deciding on a marketing-mix effort versus selling their decisions to others in the organization. In addition, it would be interesting to examine how firm's learn from metrics, and how they adapt their use in different settings. Our study considers how resources and culture effects metric use in 16 highly developed and developing countries; future research could investigate metric use in less

developed countries. We hope our research offers guidance to these future metrics and international marketing related endeavors.

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Figure 1. Micro-Meso-Macro Framework of Drivers of Marketing Metric Use

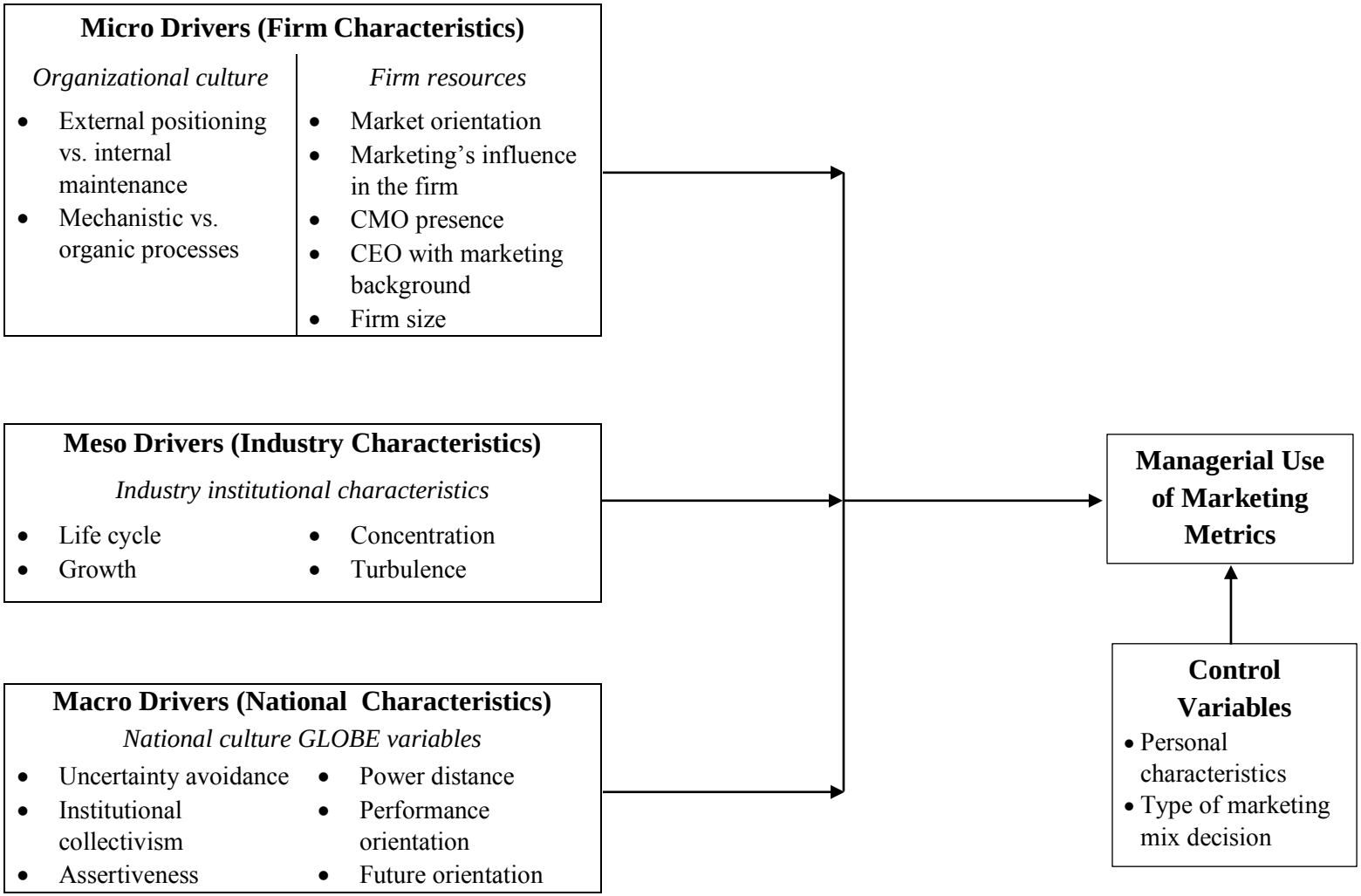

Figure 2. Organizational Culture Types

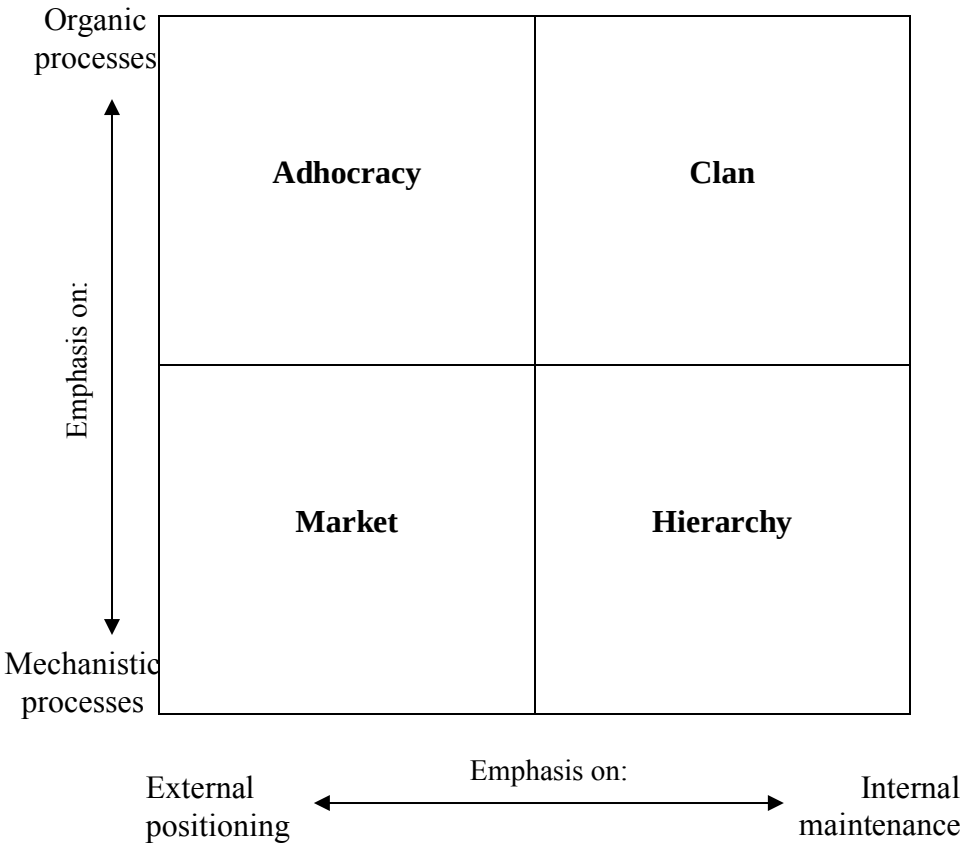

Figure 3. Interaction Effect of Organic and Internal Organizational Culture on Metric Use in Emerging Markets

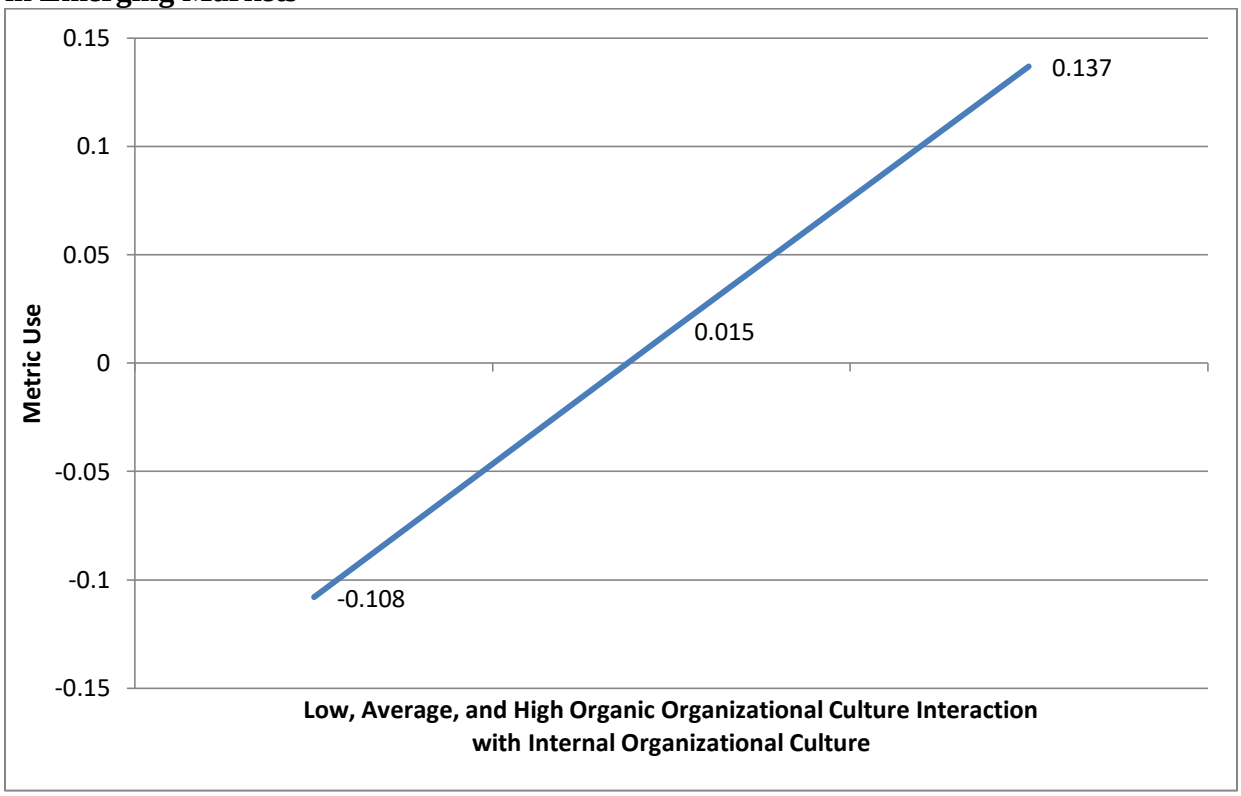

Table 1. Number of Managerial Decisions by Country

Country	Number of decisions in our sample	Percentage
Australia	295	6.7%
Brazil	280	6.4%
Canada	239	5.5%
China	322	7.3%
France	159	3.6%
Germany	333	7.6%
India	333	7.6%
Indonesia	281	6.4%
Italy	372	8.5%
Japan	160	3.6%
Mexico	322	7.3%
Russia	260	5.9%
South Korea	245	5.6%
Turkey	279	6.4%
UK	282	6.4%
US	222	5.1%
Total	*4,384*	---

Table 2. Expected Main Effects of Drivers of Marketing Metric Use

Variable	Expected sign	Supported in Main Model	Supported for High Income Countries	Supported for Emerging Market Countries
Micro Drivers (Firm Characteristics)				
Organizational Culture				
Internal Maintenance	+	Yes	Yes	No
Organic Process	+	Yes	Yes	No
Internal Maintenance x Organic Process	+	No	No	Yes
Firm Resources				
Market Orientation	+	Yes	No	No
Marketing's Influence in the Firm	+	Yes	Yes	Yes
CMO Presence	+	Yes	Yes	No
Whether CEO has a Marketing Background	+	No	No	No
Firm Size	+	Yes	Yes	Yes
Meso Drivers (Industry Characteristics)				
Mature/Declining Life Cycle	+	No	No	No
Industry Concentration (more)	+	No	No	Yes
Industry Growth	+	Yes	No	Yes
Industry Turbulence (more)	+	No	No	Yes
Macro Drivers (National Culture)				
Uncertainty Avoidance	+	Yes	---	---
Institutional Collectivism	-	Yes	---	---
Assertiveness	-	Yes	---	---
Power Distance	-	Yes	---	---
Performance Orientation	+	No	---	---
Future Orientation	-	Yes	---	---

NOTES, + = a positive hypothesized relationship; - = a negative hypothesized relationship; --- = not applicable

Table 3. Culture Construct Definitions in the GLOBE Framework

Culture dimension	Definition
Uncertainty Avoidance	The extent to which members of a society avoid uncertainty by relying on established norms, rules, and bureaucratic practices and procedures.
Institutional Collectivism	The degree to which organizational and societal institutional practices encourage and reward collective distribution of resources and collective action.
Assertiveness	The degree to which individuals are assertive, confrontational, and aggressive in their relationships with others.
Power Distance	The degree to which members of a society expect and agree that power should be stratified and concentrated at higher levels of an organization or government.
Performance Orientation	The degree to which a collective encourages and rewards group members for performance improvement and excellence.
Future Orientation	The extent to which individuals focus on the long-term as opposed to the short-term and engage in future-oriented behaviors such as delaying gratification, planning, and investing in the future.

Source: House et al. (2004)

Table 4. Metric Use by Country

Country	Average Use of Metrics Per Decision	Country Rank in Metric Use	Metric Used Most	% Used	Metric Used 2nd Most	% Used	Metric Used 3rd Most	% Used	Metric Used 4th Most	% Used	Metric Used 5th Most	% Used
Australia	10.11	5	Satisfaction	58%	ROS	50%	ROI	48%	Mkt Shr	45%	Net Profit	43%
Brazil	8.91	8	Satisfaction	64%	ROI	46%	Preference	45%	Net Profit	43%	Perc Qual	41%
Canada	8.52	10	Satisfaction	50%	ROI	50%	Awareness	47%	Total Custs	44%	Likeability	38%
China	11.14	2	Target Vol	61%	Satisfaction	60%	Mkt Shr	51%	Awareness	51%	ROS	50%
France	5.79	15	Satisfaction	47%	Total Custs	35%	Net Profit	32%	Mkt Shr	28%	Perc Qual	28%
Germany	8.88	9	Satisfaction	56%	ROI	50%	Awareness	46%	Cust Seg Prof	46%	ROMI	45%
India	10.72	3	Awareness	71%	Satisfaction	66%	ROI	59%	ROS	58%	Shr of Voice	55%
Indonesia	8.48	11	Target Vol	61%	Net Profit	57%	Total Custs	53%	Mkt Shr	44%	Awareness	42%
Italy	8.35	12	ROI	52%	Likeability	48%	Satisfaction	48%	Net Profit	44%	Total Custs	42%
Japan	4.29	16	Awareness	27%	Net Profit	24%	Target Vol *(tied)*	24%	Cust Seg Prof *(tied)*	24%	Mkt Shr	24%
Mexico	9.66	6	Satisfaction	55%	Net Profit	53%	Awareness	49%	Total Custs	46%	Likeability	46%
Russia	10.19	4	Likeability	59%	Net Profit	52%	Awareness	48%	Satisfaction *(tied)*	45%	ROS *(tied)*	45%
South Korea	11.72	1	Satisfaction	64%	Preference	54%	Likeability	52%	ROI	49%	EVA	48%
Turkey	9.23	7	Net Profit	67%	Mkt Shr	64%	Satisfaction	58%	ROS	52%	Preference	44%
UK	8.00	13	Satisfaction	51%	Awareness	46%	ROI	45%	ROS	40%	Likeability	39%
US	7.38	14	Awareness	45%	ROI	37%	Satisfaction	36%	Likeability	36%	Target Vol	30%
Overall	*9.08*	---	*Satisfaction*	*53%*	*Awareness*	*45%*	*ROI*	*43%*	*Net Profit*	*42%*	*Likeability*	*40%*

Table 5. Drivers of Metric Use

Variable	All Countries	HICs	EMs
Intercept (β_0)	.63**	.56	1.05***
Micro Drivers (Firm Characteristics)			
Organizational Culture			
Internal Maintenance (β_1)	.08***	.11***	.02
Organic Process (β_2)	.06*	.08***	.01
Internal Maintenance x Organic Process (β_3)	.04	-.01	.18***
Firm Resources			
Market Orientation (β_4)	.06**	.04	.02
Marketing's Influence in the Firm (β_5)	.08***	.09***	.07**
CMO Presence (β_6)	.13**	.16***	.10
Whether CEO has a Marketing Background (β_7)	.03	.07	-.02
Ln(Firm Size) (β_8)	.05***	.06***	.02**
Meso Drivers (Industry Characteristics)			
Mature/Declining Life Cycle (vs. Introductory/Growth) (β_9)	.03	.03	.05
Industry Concentration (β_{10})	.03	-.01	.07*
Industry Growth (β_{11})	.02**	.01	.03*
Industry Turbulence (β_{12})	.01	.00	.04**
Macro Drivers (National Culture)			
Uncertainty Avoidance (β_{13})	.20**	---	---
Institutional Collectivism (β_{14})	-.23***	---	---
Assertiveness (β_{15})	-.10*	---	---
Power Distance (β_{16})	-.71**	---	---
Performance Orientation (β_{17})	.15	---	---
Future Orientation (β_{18})	-.32*	---	---
Type of Manager and Marketing Mix Decision Controls			
Top-level Manager (β_{19})	.00	-.01	-.01
Work Experience (β_{20})	.00	.01	.00
Quantitative Orientation (β_{21})	.02	.02	.01
Internet Advertising[1] (β_{22})	.06***	.02	.08***
Direct to Consumer[1] (β_{23})	.08***	.03	.11***
Social Media[1] (β_{24})	.09***	.03	.12***
Sales Force[1] (β_{25})	.20***	.05	.29***
Price Promotions[1] (β_{26})	.06	-.01	.08*
Pricing[1] (β_{27})	.10**	-.03	.17***
PR/Sponsorships[1] (β_{28})	.15***	.11	.16***
New Product Development[1] (β_{29})	.13***	.04	.18***
Distribution[1] (β_{30})	.17**	-.06	.32***
Model Diagnostics			
α (Dispersion Parameter)	.21***	.21***	.20***
Number of Observations	4384	2062	2322
Log Likelihood	-12949.69	-588.36	-7031.70
AIC	25963.37	11812.72	14115.40
BIC	26167.71	11959.14	14264.90
Sample-Size Adjusted BIC	26066.03	11876.53	14182.29

*p<.1;**p<.05;***p<.01; [1] in comparison to Traditional Advertising Decisions

Appendix. Primary Survey Data Operational Measures

Construct Basis	Definition and Operational Measures
Micro Drivers (Firm Characteristics)	
Organizational Culture	

External Positioning vs. Internal Maintenance; and Mechanistic vs. Organic Processes (Cameron and Quinn 2011)	**Organizational Culture Assessment Instrument:**
	• 6 Questions, each requiring the manager to allocate 100 points between the 4 items
	  o The 1st item in each question is associated with clan organizations
	  o The 2nd item in each question is associated with adhocracy organizations
	  o The 3rd item in each question is associated with hierarchy organizations
	  o The 4th item in each question is associated with market organizations
	  o Internal = (clan + hierarchy) – (adhocracy + market)
	  o Organic = (clan + adhocracy) – (hierarchy + market)
	Dominant Characteristics:
	• My organization is a very personal place. It is like an extended family. People seem to share a lot of themselves.
	• My organization is a very dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.
	• My organization is very results oriented. A major concern is with getting the job done. People are very competitive and achievement oriented.
	• My organization is a very controlled and structured place. Formal procedures generally govern what people do.
	Organizational Leadership:
	• The leadership in my organization is generally considered to exemplify mentoring, facilitating, or nurturing.
	• The leadership in my organization is generally considered to exemplify entrepreneurship, innovating, or risk taking.
	• The leadership in my organization is generally considered to exemplify an aggressive, results-oriented, no-nonsense focus.
	• The leadership in my organization is generally considered to exemplify coordinating, organizing, or smooth-running efficiency.
	Management of Employees:
	• The management style in my organization is characterized by teamwork, consensus, and participation.
	• The management style in my organization is characterized by individual risk-taking, innovation, freedom, and uniqueness.
	• The management style in my organization is characterized by hard-driving competitiveness, high demands, and achievement.
	• The management style in my organization is characterized by security of employment, conformity, predictability, and stability in relationships.
	Organizational Cohesiveness:
	• My organization is held together by loyalty and mutual trust. Commitment to this organization runs high.
	• My organization is held together by commitment to innovation and development. There is an emphasis on being on the cutting edge.
	• My organization is held together by the emphasis on achievement and goal accomplishment. Aggressiveness and winning are common themes.
	• My organization is held together by formal rules and policies. Maintaining a smooth-running organization is important.
	Strategic Emphasis:
	• My organization emphasizes human development. High trust, openness, and participation persists.
	• My organization emphasizes acquiring new resources and creating new challenges. Trying new things and prospecting for opportunities are valued.

	• My organization emphasizes competitive actions and achievement. Hitting stretch targets and winning in the marketplace are dominant. • My organization emphasizes permanence and stability. Efficiency, control and smooth operations are important. Criteria of Success: • My organization defines success on the basis of the development of human resources, teamwork, employee commitment, and concern for people. • My organization defines success on the basis of having the most unique or the newest products. It is a product leader and innovator. • My organization defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key. • My organization defines success on the basis of efficiency. Dependable delivery, smooth scheduling, and low cost production are critical.
Firm Resources	
Market Orientation (Deshpande and Farley 1998; Verhoef and Leeflang 2009)	How strongly do you agree or disagree with each of the following statements: (1 = strongly disagree, 7 = strongly agree) • Our business objectives are driven primarily by customer satisfaction • We constantly monitor our level of commitment and orientation to serving customer needs • We freely communicate information about our successful and unsuccessful customer experiences throughout all business functions • Our strategy for competitive advantage is based on our understanding of customer needs • We measure customer satisfaction systematically and frequently • We have routine or regular measures for customer service • We are more customer focused than our competitors • I believe this business exists primarily to serve customers
Marketing's Influence in the Firm (van Bruggen and Wierenga 2005; Verhoef and Leeflang 2009)	How strongly do you agree or disagree with the following statement: (1 = strongly disagree, 7 = strongly agree) • Top management in my firm considers marketing strategically important
CMO Presence	Does your firm employ a Chief Marketing Officer (CMO)?
CEO with marketing background (Homburg, Workman, and Krohmer 1999; and Verhoef and Leeflang 2009)	What is the primary background of the CEO within your firm? • General management, finance, technical, marketing, law, or other
Firm Size	Approximately how many full-time employees does your firm have?
Meso Drivers (Industry Characteristics)	
Product Life Cycle (Deshpande and Zaltman 1982)	At which one of the following stages would you place your product? • Introductory, growth, maturity, or decline
Industry Concentration (Kuester, Homburg, and Robertson 1999)	Approximately what percentage of sales does the largest 4 competing businesses in your market control? • 0-50%, 51-100%
Market Growth (Homburg, Workman, & Krohmer 1999)	Over the last three years, what was the average annual market growth or decline for your industry? (1 = decrease by more than 20%, 2 = decrease of 10% to 20%, 3 =decrease of 5% to 10%, 4 = decrease of up to 5%, 5 = relatively constant market volume, 6 = increase of up to 5%, 7 = increase of 5% to 10%, 8 = increase of 10% to 20%, 9 = increase of more than 20%)
Market Turbulence (Miller, Burke, and Glick 1998)	How strongly do you agree or disagree with each of the following statements (1 = strongly disagree, 7 = strongly agree): ® = reverse scored • Products/services become obsolete very slowly in your firm's principal

	industry ® • Your firm seldom needs to change its marketing practices to keep up with competitors ® • Consumer demand and preferences are very easy to forecast in your firm's principal industry ®
Macro Drivers (National Culture)	
Uncertainty Avoidance (House et al. 2004)	GLOBE national culture value scores matched based on country of residence of respondent (see Table 3 for definitions)
Institutional Collectivism (House et al. 2004)	
Assertiveness (House et al. 2004)	
Power Distance (House et al. 2004)	
Performance Orientation (House et al. 2004)	
Future Orientation (House et al. 2004)	
Control Variables	
Top Level Manager Level (Mintz and Currim 2013)	Please indicate your job title (*whether a manager is (a) VP-level or higher (e.g., SVP, C-level or Owner) or (b) lower than VP-level (e.g., Director, Manager)*: 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)
Work Experience (Mintz and Currim 2013)	How many years of managerial experience do you have?
Quantitative Background (Mintz and Currim 2013)	Please rate your overall qualitative/quantitative orientation: (1 = entirely qualitative, 7 = entirely quantitative)
Type of Marketing-mix Decision (Menon et al. 1999)	Please indicate which types of major marketing decisions you have undertaken (or implemented) that (1) were not so recent that performance evaluation is premature and (2) not so long ago that memory about the decision and performance is fuzzy: • Traditional Advertising (i.e., TV, Magazine, Radio, etc.) • Internet Advertising (i.e., Banner Ads, Display Ads, SEO, etc.) • Direct to Consumer (i.e., Emails, CRM, Direct mail, etc.) • Social Media (i.e., Twitter, Facebook, MySpace, etc.) • Price Promotions • Pricing • New Product Development • Sales Force • Distribution • PR/Sponsorships

Web Appendix A. Table of Metrics

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

Web Appendix B. Correlation Matrix

	Int Main	Org-anic	Mark Or	Mark Inf	CMO	CEO	LN Fsize	PL Cycle	Mconc	Mgro wth	Mturb	UA	Inst Col	Assert	PD	PO	FO	Man Level	Work Exp	Quant Or
IntMain	1																			
Organic	-.02	1																		
MarkOr	.01	-.08	1																	
MarkInf	.02	-.02	.54	1																
CMO	.06	.11	.23	.20	1															
CEO	.06	.12	.12	.08	.13	1														
LNFsize	.10	.12	.13	.17	.35	.09	1													
PLCycle	-.09	-.10	-.14	-.12	-.10	-.06	.04	1												
Mconc	-.03	.00	.00	.03	-.05	-.05	-.03	.03	1											
Mgrowth	.03	.05	.21	.18	.16	.07	.15	-.10	.00	1										
Mturb	-.03	-.03	-.05	-.05	-.01	.01	.00	.03	-.01	-.07	1									
UA	.01	.02	.12	.10	.00	-.06	-.06	-.03	-.05	.07	-.18	1								
InstCol	.09	-.05	.20	.17	.11	.03	.08	-.10	-.03	.06	.21	.19	1							
Assert	-.08	.03	-.11	-.09	-.14	.01	-.07	.05	.05	-.06	-.12	.01	-.34	1						
PD	-.01	-.02	-.02	-.02	-.06	-.08	.05	.12	.06	-.04	-.30	-.14	-.17	.25	1					
PO	.08	-.02	.09	.10	.09	.07	.18	-.05	.06	.04	-.09	-.46	.27	-.20	.44	1				
FO	.02	.00	.01	.01	.07	.00	-.08	-.07	-.03	-.03	.16	.13	.21	-.49	-.71	-.14	1			
ManLevel	-.01	.00	.00	.02	.07	-.03	.00	.02	-.01	-.03	.08	-.08	.03	-.08	.03	.09	.05	1		
WorkExp	-.02	-.08	.02	-.01	-.02	-.05	.03	.11	.05	-.06	.06	-.20	-.05	.02	.14	.12	-.08	.15	1	
QuantOr	.02	.06	.22	.13	.16	.14	.19	.00	-.03	.11	-.04	.00	.02	-.07	.03	.05	-.05	.05	.04	1

This information is based on each manager, not each decision. Hence, type of marketing mix decision and use of metrics are excluded.