

Managerial Metric Use in Marketing Decisions across 16 Countries: A Cultural Perspective

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Abstract

Research on metrics is consistently designated a priority by academics and practitioners. However, less is known about how culture and cross-national differences can potentially impact metric use, which is theoretically and managerially limiting. This work develops a model that examines national and organizational cultural antecedents while controlling for the decision setting. Testing the model on data collected from 4,384 managerial decisions from 1,637 firms in 16 countries, reveals both levels of culture are associated with metric use but each has varying effects. Our results enable multinational executives to better understand and increase managerial metric use across different cultures and settings.

Keywords: Metrics; International Marketing; GLOBE Cultural Variables; Organizational Culture; Managerial Decision-Making

In today's digital technology-intensive and data-rich environment, understanding managerial metric use for marketing decisions, i.e., managers' employment of quantitative information for considering, benchmarking, or monitoring when making their decisions, is crucial for managerial practice (Moorman & Day, 2016). Metrics quantify trends or outcomes in order to explain past decisions, understand current relationships, and predict results of future actions (Farris, Bendle, Pfeifer, & Reibstein, 2010). Metrics also provide information relevant to managers to help diagnose, coordinate, and monitor firms' actions (Rust, Ambler, Carpenter, Kumar, & Srivastava, 2004).

The theoretical benefits for managers to employ metrics for their individual marketing-mix decisions, as suggested by scholars in the judgment and decision-making (JDM), marketing, and management literatures, among others, are that the greater the managers' overall use of quantitative information or metrics when making decisions, the better should be the performance, accuracy, and overall quality of decisions (e.g., see Bettman, Luce, & Payne, 1998; Fredrickson & Mitchell, 1984; Menon, Bharadwaj, Adidam, & Edison, 1999). Subsequent empirical research on the use of marketing metric-based information has found that greater use of metrics in decisions is related to increased firm profits (Abramson, Currim, & Sarin, 2005), marketing-mix performance (Mintz & Currim, 2013), chief executive officers' (CEOs) satisfaction with the marketing department (O'Sullivan & Abela, 2007), and shareholder value (Schulze, Skiera, & Wiesel, 2012). Consequently, 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 1998-2020, ISBM B-to-B Trends 2008-2014).

Despite progress in the literature (see Web Appendix Table 1), it is well known that overall use of metrics by managers making marketing-mix decisions varies considerably across decision settings, and such variation is likely associated with variance in performance outcomes (Farris et al., 2010). The consequences of variation in metric use is posited to be directly associated with marketing's lack of performance, accountability, and its decreasing influence in the firm (Verhoef & Leeflang, 2009). For

example, much has been written over the past couple of decades on marketing's decreasing influence in the firm (Rust et al., 2004), in the boardroom (Whitler, Krause, & Lehmann, 2018), and at the corporate strategy level (McGovern, Court, Quelch, & Crawford, 2004). Marketing is increasingly viewed as a cost rather than as an investment (Morgan & Rego, 2009), with strategically important aspects of marketing having been moved to other functions in the organization (Sheth & Sisodia, 2005), despite the plethora of studies and empirical generalizations demonstrating the relationship between marketing-mix efforts, competitive sustainability, profits, and stock returns (e.g., see Hanssens, 2015 for a review). This variance in metric use has resulted in a detrimental credibility gap between marketers and others in the organization (e.g., Forbes, 2017). Thus, to overcome the credibility gap and increase marketing's stature in the firm, marketers are facing substantial demand from the firm's highest executive levels to employ metrics to increase their accountability (Lehmann & Reibstein, 2006).

Further, these demands to increase marketing's accountability are not just prevalent in a single country, but rather are impacting marketers around the world (O'Sullivan, Abela, & Hutchinson, 2009). For example, Verhoef et al., (2011) conduct a study on drivers of marketing's influence in the firm in seven different countries, and find that accountability is a crucial driver of marketing's influence and how it impacts the firm's performance in each of these seven countries. In addition, the Fournaise Marketing Group conducted a cross-national survey of 1,200 CEOs and found that 80 percent of these CEOs either ranked marketers low in the hierarchy of their organizations' executive committee, or did not include them at all (Lukovitz, 2012; Wirtz, Kuppelwieser, & Tuzovic, 2014). The Fournaise global survey also reported that nearly two-thirds of the CEOs have lost faith in marketers' ability to be accountable for their efforts, and this has led the CEOs to reduce their marketing function's responsibilities (Fournaise Marketing Group, 2012).

However, as summarized in Web Appendix Table 1, most past research on managerial metric use focuses on U.S. managers, and to our knowledge there has not been a systematic investigation to determine what explains differences in overall metric use by managers who reside in different countries or cultures, which is both a theoretical and managerial limitation. If there exists cross-country variation

that leads to less overall use of metrics by certain managers, there may be managers who are underperforming on the use of quantitative information, i.e., metric use, in their decisions because of cross-country cultural variation. If we as a discipline want to encourage worldwide metric use to help performance outcomes, it is crucial to first understand why such cross-country cultural variation occurs.

In order to overcome these theoretical and managerial limitations, we also need to address the false dichotomy or debate that, according to Farley and Lehmann (1994, p. 112), has plagued much of cross-national marketing, management, and international business (IB) theory, research, and practice, namely the polarization of views between “everything is the same” versus “everything is different” across and within countries. Despite calls from scholars and practitioners, there exists a theoretical and managerial knowledge gap on the drivers of metric use by managers around the world. This paper takes a first step to address this important gap and debate. Its purpose is to propose and test a theoretical model to explain the large differences in managerial metric use both *across* and *within* countries. Our unit of analysis is the marketing-mix decision, i.e., everyday decisions on marketing-mix efforts made by managers.

The main proposed theory that underlies our model of drivers of differences in managerial metric use is culture theory.¹ Managers making marketing-mix decisions are embedded in a country with its own culture, working for a firm with its own culture, and have various other firm, industry, manager, and decision characteristics, which can each potentially impact their decisions and their use of metrics. These factors which can potentially cause differences in managerial metric use are important to understand because from a scholarly and theoretical point of view, prior work has found that cultural orientation exerts a powerful influence on how individuals acquire, process, and make use of information (e.g., Hofstede, Hofstede, & Minkov, 2010; Shavitt, Lalwani, Zhang, & Torelli, 2006). However, less work has integrated culture’s multiple levels of abstraction (e.g., Kirkman, Lowe, & Gibson, 2006; Tsui, Nifadkar, & Ou, 2007; Tung & Stahl, 2018; Vora, Martin, Fitzsimmons, Pekerti, Lakshman, & Raheem, 2018) or focused on how different national and organizational cultures may affect managers’ overall use of information when making marketing decisions. From a managerial or practical point of view, it is critical

for modern businesses to understand differences related to how organizations should manage their employees across countries (Newman & Nollen, 1996). Hence, understanding differences in metric use across and within countries allows international executives to better understand and increase managerial metric use across different cultures and settings.ⁱⁱ

In attempting to explain differences in managerial metric use in our culture-based theoretical model, we first employ national culture to explain *across* country variation. National culture refers to the core set of attitudes and practices shared by members of a country that influence the behavior of members in the country (Schwartz, 1994). Newman and Nollen (1996: 755) describe national culture as “a central organizing principle of employees’ understanding of work, their approach to it, and the way in which they expect to be treated.” Thus, our corresponding first theoretical expectation is that national culture will impact managerial decision processes and the amount of quantitative information or metrics that managers will employ when making their decisions. Second, since all firms in the same country will not have the same culture, we employ organizational culture to explain *within* country firm-based variation in metric use. Deshpandé and Webster (1989: 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.” Consequently, our corresponding second theoretical expectation is that organizational culture should impact the total amount of metrics employed by managers. Third, we control for other characteristics of the decision setting that prior research and theories have suggested can impact managerial information use, such as firm resources (Wernerfelt, 1984), industry norms (DiMaggio & Powell, 1983), type of marketing-mix decision (Farris et al., 2010), and the decision maker’s characteristics (Perkins & Rao, 1990). Overall, we identify 29 variables associated with the overall use of metrics by managers making specific types of marketing-mix decisions, including six country culture variables, two organizational culture variables, and 21 firm, industry, manager, and decision characteristic control variables.

We test our theoretical model on 4,384 marketing-mix decisions from 16 countries (see Table 1) obtained by a combination of (i) primary survey data collection on metric use, organizational culture, and

control variables from firms of various sizes and industries and (ii) secondary published data on national culture across our included countries. In doing so, our study makes key contributions to the IB, marketing, and JDM literatures by proposing and testing a conceptual model that generates important managerial implications. The development and empirical test of the conceptual model bridges the IB literature with the JDM literature on decision quality and information use to examine how national (and organizational) culture can impact managerial information (metric) use in marketing decisions. This model overcomes a gap identified multiple times by scholars in the IB and culture literature by specifically examining the impact of multiple levels of culture (macro-national and micro-organizational), while controlling for the non-cultural drivers such as marketing-mix, manager, firm, and industry characteristics related to the decision setting (e.g., Caprar, Devinney, Kirkman, & Caligiuri, 2015; Kirkman et al., 2017; Leung, Bhagat, Buchan, Erez, & Gibson, 2005; Tung & Stahl, 2018). In addition, it permits us to further understand how culture can positively *and* negatively affect managerial behavior as opposed to only having positive or only having negative effects (e.g., Stahl & Tung, 2015; Tung & Verbeke, 2010). For example, some national cultural dimensions such as individualism are expected and found to have positive effects or increase metric use while others such as assertiveness are expected and found to have negative effects or decrease metric use. Further, we also propose that the broader substantive issue of managerial metric use is an additional and presumably new “mechanism” explaining why national culture is important to managerial behavior and how it can relate to firm performance. This is particularly important given that firms operate in an increasingly global business environment, and thus require better understanding and management of their strategies and decision-making processes across and within countries (e.g., see Hult, Katsikeas, and Samiee [2019] call for papers for the planned JIBS special issue on international marketing).

For the empirical test of our proposed conceptual model, we study metric use in the world’s most important economies, e.g., Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, South Korea, Turkey, U.K., and U.S.A. We find via analysis of a main effects model and 49 additional models examining moderators, that both national and organizational cultures

have significant effects on metric use, but these effects are quite complex. Theoretical implications of these results demonstrate the importance of accounting for both national and organizational levels of culture as drivers of managerial behavior. Our findings also provide a guide for future research in IB, marketing, and management that examines both types of cultures' potential multi-faceted effects, in contrast to focusing solely on either level of culture or solely on its positive or negative effects. Further, the results demonstrate the nuanced effects of national and organizational culture on managerial behavior in contrast to a polarization of views assuming either "everything is the same within a country" versus "everything is different across countries."

In addition, based on the empirical results, the key managerial contribution further detailed in the conclusion section is that the estimated effects of our firm- and country-level cultural drivers of metric use can be employed by top executives of international firms seeking to understand, set expectations, and encourage metric use by managers making marketing-mix decisions while operating across a variety of country, firm, industry, and managerial settings. Due to the scarcity of prior research on metric use by managers residing around the world, the potential contribution of studying metric use across nations is not to create uniformity in metrics use within multinational corporations (MNCs). Instead, the study of metric use allows managers to understand differences in the numbers and types of metrics employed across national and firm cultures as a means toward refining their control mechanisms and potentially their competitive advantage(s) and firm performance by encouraging metric use in culturally sensitive ways. The broader implications of our empirical results on managerial metric use across 16 countries can help establish expectations and help firms evaluate compatibility of managerial decision processes in other contexts such as in potential cross-national mergers, acquisitions, and joint ventures.

--- Table 1 about here ---

THEORY

Conceptual Framework

Metric use is part of the managerial decision process. Total metric use is defined as the manager's use of information for considering, benchmarking, or monitoring when making a particular marketing-mix

decision. It is a measure of the extent to which the manager makes a marketing-mix decision based on analytical, quantitative, and objective data compared to hearsay, qualitative, or subjective information (Farris et al., 2010). The measure of total metric use builds on the large literature examining the overall use of information and metrics by managers (e.g., see Fredrickson & Mitchell, 1984; Menon et al., 1999) and is operationalized as the total number of metrics employed in that decision (i.e., the use of marketing metrics, which are non-financial and typically more long-term, and the use of financial metrics, which are typically shorter-term) (Farris et al., 2010; Mintz & Currim, 2013).

To understand what may affect variation in total metric use, it is useful to consider that metric use at a more granular level has the potential to fulfill the following overlapping purposes. It can serve to (1) clarify rules and criteria on which performance will be assessed (Moorman & Day, 2016), (2) signal desired behaviors for strategy implementation and learning (Lehmann & Reibstein, 2006), (3) increase accountability of individual managers (Rust et al., 2004), (4) empower individual managers (Farris et al., 2010), and (5) improve the performance of the organization (O'Sullivan & Abela, 2007).

In attempting to explain variation in managerial metric use across and within countries and decision settings, we employ a cultural perspective (see Figure 1) at multiple levels of abstraction (macro-national and micro-organizational). Culture is a pattern of shared values and beliefs across organizations or individuals in a nation (Deshpandé, Farley, & Webster, 1993; Hofstede et al., 2010). Cultural theory posits that managers working in specific organizations and residing in certain countries share similar goals and beliefs regarding situational or behavioral domains, which leads them to behave differently than managers working in other organizations and countries (Newman & Nollen, 1996; Tan, Wei, Watson, Clapper, & Mclean, 1998). Consequently, our expectation is that managerial behavior (and their subsequent use of metrics) is affected by the national and organizational cultural context in which managers operate (Triandis, 1989; Yarbrough, Morgan, & Vorhies, 2011). This expectation is also widely shared by cultural theorists (e.g., Hofstede, 2001; Roberts & Greenwood, 1997). For example, Hofstede (1994: 4) suggests that: "... the culture of the human environment in which an organization operates affects the management processes."

However, it has been repeatedly observed that a fuller understanding of managerial and organizational behavior requires the investigation of both *macro-country* and *micro-organizational* antecedents as well as controls for non-cultural drivers of managerial behavior (e.g., see Hofstede et al., 2010; Tung & Stahl, 2018 for reviews). Thus, in our proposed, comprehensive conceptual model, first, we employ national culture to explain *across* country variation. National culture according to Triandis (1996: 407) “is reflected in shared cognitions and standard operating procedures.” Hence, our theoretical expectation, based on prior literature, is that since national culture affects such managerial operating procedures, it should also impact metric use. For example, national culture can impact the rigidity and enforcement of control systems designed to impose rules and criteria for how decisions should be made (Hofstede et al., 2010). In addition, it can focus the decision-making process more toward short- versus long-term performance objectives (Deleersnyder, Dekimpe, Steenkamp, & Leeflang, 2009). In this study, we operationalize national culture using the GLOBE national cultural values typology (House, Hanges, Javidan, Dorfman, & Gupta, 2004). GLOBE was started to address a number of frequently noted shortcomings in Hofstede’s work, namely that (i) the psychometric properties of the Hofstede measures were 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 ratings that were collected over 50 years ago (Javidan, House, Dorfman, Hanges, & Luque, 2006). As further detailed in the next section, we hypothesize that six GLOBE cultural values will impact overall metric use.

Second, we employ organizational culture to help explain *within* country firm-related variation in metric use. Previous research has documented that organizational culture often guides managerial decision norms (Morgan & Vorhies, 2018; Yarbrough et al., 2011) and can influence the information acquisition, transmission, and utilization by managers in one firm relative to another (Moorman, 1995). Consequently, organizational culture should impact the use, type, and amount of information managers employ for their decisions. For example, organizational culture can impact internal procedures designed to encourage managerial learning and use of information (Kale & Singh, 2007). Further, it can also impact the incentivization and rewards systems to spur managers to employ additional metrics in their

decisions (Henri, 2006). Thus, our theoretical expectation is that such organizational culture-based structures and practices should affect managerial use of metrics for marketing decisions. To operationalize organizational culture, we employ the widely used Competing Values Framework typology (Cameron & Quinn, 2011). This framework was proposed as a result of merging two major theoretical traditions from the organizational behavior literature, i.e., the systems-structural and transaction cost perspectives; and classifies organizations on two key cultural dimensions, i.e., how much the firm emphasizes (i) organic versus mechanistic processes and (ii) internal maintenance versus external positioning (Deshpandé et al., 1993).

Third, as noted earlier, we also need to control for the characteristics of the manager, firm, industry, and type of marketing-mix decision being made. Therefore, in Figure 1, we present our conceptual framework, which includes all three sets of variables. In this first work trying to explain both across and within country managerial variation in the overall use of metrics, we focus our conceptual framework and hypotheses on main effect drivers of overall metric use; i.e., the effects of national and organizational culture on overall metric use while controlling for the manager, firm, and industry decision setting. After discussing the results of the main effect drivers, in the additional analysis section, we follow Mintz and Currim (2013) and analyze the drivers of only marketing and only financial types of metrics. Further, in the additional analysis section, we conduct an exploratory analysis of potential moderators.

--- Figure 1 about here ---

Macro-National Level Culture Drivers of Metric Use

Our theoretical expectation, as discussed below and summarized in Table 2, is that six GLOBE cultural values, i.e., uncertainty avoidance, institutional collectivism, power distance, assertiveness, performance orientation, and future orientation, will impact total metric use. Due to (i) less theoretical relevance to our managerial metric use context, and (ii) conceptual overlap and empirical correlations between some of the aforementioned GLOBE cultural values, we do not consider (a) gender egalitarianism, which is the extent to which a society minimizes gender role differences, (b) humane orientation, which is the degree that

societies encourage individuals to be altruistic, friendly, and generous, and (c) in-group collectivism, which is the extent to which societies express pride, loyalty, and cohesiveness in their families.

--- Table 2 about here ---

To theoretically understand how the six proposed GLOBE dimensions we consider may affect across country variation in metric use, it is useful to consider the five granular overlapping purposes of metric use described earlier. The first aforementioned function of metrics is to clarify the rules and criteria on which performance will be assessed. The second is to signal desired behaviors for strategy implementation and learning. These functions should especially resonate in cultures that are high on uncertainty avoidance. Cultures that avoid uncertainty adopt strict codes of behavior (Steenkamp, Hofstede, & Wedel, 1999), rely on more formalized processes (House et al., 2004), and attempt to utilize more information during their decision process (Zaheer & Zaheer, 1997). This results in managerial decision-making that is more fact- than intuition-based (Naor, Linderman, & Schroeder, 2010) and that 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 & Javidan, 2004). Clearly defined metrics that signal desired behaviors help define the rules of the game for managers and provide the orderly bureaucratic context that is valued in these societies. Hence, we expect:

H1: Managers residing in higher (lower) uncertainty avoidant societies employ a larger (smaller) number of metrics in their marketing-mix decisions.

The third aforementioned role of metrics 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 metrics (Farris et al., 2010). This suggests that greater metric use is aligned with cultures that encourage and reward individual performance as opposed to collective performance. For example, managers in individualistic (low institutional collectivist) societies are more likely to act independently (Shavitt et al., 2006), make decisions on their own (Schuler & Rogovsky, 1998), and be judged according to the results of such actions (Griffin, Guedhami, Kwok, Li, & Shao, 2017). Consequently, this should increase the likelihood for managers in such societies to employ metrics in their marketing-mix decisions.

H2: Managers residing in lower (higher) institutional collectivistic societies employ a larger (smaller) number of metrics in their marketing-mix decisions.

The fourth aforementioned 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 & Saladin, 2006) and management by objective-based metrics is less accepted because it presupposes some form of negotiation between subordinate and superior with which neither party may feel comfortable (Hofstede et al., 2010). Further, in high power distance societies, managers are more likely to use heuristics in their decision-making (Lalwani & Forcum, 2016) and are less likely to use diverse sets of information (Aaker, 2006), which should result in less use of metrics. In contrast, in less power distant societies, managers are more likely to employ a more comprehensive amount of information in their decisions (Lalwani & Forcum, 2016), and executives of firms are more likely to empower and objectively assess their managers (Flynn & Saladin, 2006), e.g., based on metrics, which should lead to managers employing a greater number of metrics in their decisions. This behavior is also associated with people residing in cultures with higher levels of assertiveness. In such cultures, managers may be more likely to use more metrics because they are motivated to be “right” and have less pushback on decisions (e.g., Rucker, Hu, & Galinsky, 2014). However, managers in assertive cultures also exude more confidence in their decisions and initial instincts, and are less open to utilize more information that contradicts such instincts (Flynn & Saladin, 2006), which are all characteristics which would suggest managers in such countries employ less metrics overall in their decisions. Therefore, we expect:

H3: Managers residing in less (more) power distant societies employ a larger (smaller) number of metrics in their marketing-mix decisions.

H4: Managers residing in less (more) assertive societies employ a larger (smaller) number of metrics in their marketing-mix decisions.

The fifth aforementioned role of metric use is to improve the performance of the firm. This should especially resonate in cultures characterized by a strong performance orientation, who are likely to

constantly monitor competitors' and own managers' performance (Autio, Pathak, & Wennberg, 2013). Thus, we expect that metric use will be higher, *ceteris paribus*, in societies that emphasize performance orientation. For managers residing in countries with greater future (lower present) orientation, on the one hand, there are both short and long-term metrics for managers to employ, and managers in such societies may use additional metrics in their decisions to enable the firm to monitor performance and provide insights for future strategy and implementation related decision-making. On the other hand, for managers in such future oriented societies, "persistence" is a key word - persistence in achieving one's goals, irrespective of short-term considerations and fluctuations in the environment (Hofstede, 2001), which should lead to less reliance on metrics in their decisions. In contrast, for managers residing in countries with greater present (lower future) oriented cultures, the "bottom line" results to be achieved in the next quarter are heavily emphasized as are control systems to constantly monitor such performance (Deleersnyder, Dekimpe, Steenkamp, & Leeflang, 2009). Metrics are part of these control systems, and their performance can be tracked in the short-term (O'Sullivan & Abela, 2007). Hence, we expect managers in present (lower future) oriented societies to employ more metrics in their decisions.

H5: Managers residing in more (less) performance oriented societies employ a larger (smaller) number of metrics in their marketing-mix decisions.

H6: Managers residing in less (more) future oriented societies employ a larger (smaller) number of metrics in their marketing-mix decisions.

Micro-Organizational Level Culture Drivers of Metric Use

Based on prior research on the impact of organizational culture on managerial decision-making (e.g., Henri, 2006; Moorman, 1995), our theoretical expectation is that the two dimensions of organizational culture from the Competing Values Framework will impact within country firm-based variation of metric use. The first dimension, *external positioning vs. internal maintenance*, differentiates external culture-based firms that emphasize a focus on interacting or competing with others outside their boundaries from internal culture-based firms that emphasize harmonious internal characteristics (Cameron & Quinn, 2011). In internally positioned firms, managerial decision processes typically emphasize greater organizational involvement, overall cohesiveness, and trust (Deshpandé et al., 1993). Based on such

factors, an internal maintenance emphasis is likely to pressure managers in these types of firms to employ more knowledge sharing based on articulating and disseminating information between different functions (e.g., Kale & Singh, 2007). Consequently, this should lead managers in such firms to employ a greater amount of information when making their decisions. Further, internal organizational culture-based firms are more likely to focus on their own rules and criteria to assess managerial performance, enforce accountability, and facilitate managerial empowerment (Henri, 2006), which are all aforementioned functions metric use has the potential to fulfill. Therefore, even though external organizational culture-based firms could motivate their managers to employ and monitor metrics related to their competitors, we expect managers working for firms with a greater internal organizational culture will use more metrics overall when making their marketing decisions. Hence, we hypothesize:

H7: Managers working in more (less) internal-focused organizational cultures employ a larger (smaller) number of metrics in their marketing-mix decisions.

The second dimension, *organic vs. mechanistic processes*, differentiates organic culture-based firms that emphasize flexibility, discretion, and dynamism from mechanistic culture-based firms that emphasize stability, order, and control. That is, some organizational cultures are more positioned as changing, adaptable, and flexible; others are viewed as stable, predictable, and structured (Cameron & Quinn, 2011). Past research focusing on how organizational culture can impact managerial decision-making (e.g., Huang, Rode, & Schroeder, 2011) has suggested that firms with more flexible decision-making environments such as in organic cultures promote trust, managerial empowerment, commitment, and continuous learning among members in organic firms. As a result, this type of organizational culture creates a more participatory decision environment within the firm as it involves managers with different priorities and goals (White, Varadarajan, & Dacin, 2003), enables managerial discretion, empowerment, initiative, and experimentation (Moynihan & Pandey, 2010), and should encourage a greater, diverse use of information by managers (Henri, 2006). In addition, prior work investigating how organizational culture impacts marketing managers' perceived decision-making contexts (e.g., Berthon, Pitt, & Ewing, 2001) suggests that organic-like firm cultures value adaptability, flexibility, and spontaneity, which

creates less programmatic decision-making contexts. Managers, when facing such contexts, typically require greater judgment, effort, and use of information to reduce the uncertainty inherent with such decisions (Perkins & Rao, 1990), which should lead to a greater use of metrics. Consequently, even though mechanistic firms will also try to pressure their managers to focus on using metrics in their decisions via control systems they employ to evaluate such managers, which could lead to an increase in the use of metrics, we expect that managers in organic-culture firms will use a greater number of metrics in their marketing-mix decisions. Therefore, we expect:

H8: Managers working in more (less) organic-focused organizational cultures employ a larger (smaller) number of metrics in their marketing-mix decisions.

Control Variables

To address concerns expressed in the marketing, management, and IB literatures on the lack of non-cultural controls in studies investigating the effects of culture, we account for the following other characteristics: the type of manager making the decision, and the firm and industry setting in which the decision is made. The controls proposed are based on prior literature on metrics and information use (e.g., Lehmann & Reibstein, 2006; Mintz & Currim, 2013; Verhoef & Leeflang, 2009), and should be of interest in their own right as it is likely that their effects in this global study could be different from prior, single-country based studies.

First, prior research on the resource based theory of the firm (Wernerfelt, 1984), suggests that greater firm resources enhance managers' capabilities to monitor current and past marketing efforts (Mintz & Currim, 2013) and their capacity to compute and benchmark metrics (Morgan et al., 2005); aspects which should facilitate greater metric use. Hence, we control for five firm characteristics previously identified in the literature on information use (e.g., Kohli & Jaworski, 1990; Verhoef & Leeflang, 2009) that should facilitate greater resources for metric use in marketing decisions: the firm's market orientation, marketing's influence in the firm, Chief Marketing Officer (CMO) presence, Chief Executive Officer (CEO) having a marketing background, and its size.

Second, prior work across different business disciplines has suggested that industry characteristics can potentially impact managerial decision processes (e.g., Eisenhardt, 1988; Morgan et al., 2005). One reason for this, as suggested by institutional theory, is that firm processes, strategies, and traditions are often mimicked across the industry (DiMaggio & Powell, 1983). Therefore, we control for four commonly employed industry environment characteristics: product life cycle, growth, industry concentration, and turbulence (e.g., Homburg, Workman, & Krohmer, 1999; Morgan et al., 2005). Third, the decision maker's perspective-based theory suggests that characteristics of decision makers can often influence their objectives, interpretation of a situation, and overall use of information (Curren, Folkes, & Steckel, 1992; Perkins & Rao, 1990). Hence, we control for three managerial characteristics previously identified in the marketing strategy literature as likely to influence decision-making processes: managerial level in the firm (mid vs. top-level), work experience, and quantitative background. Finally, value chain theory posits that the type of marketing-mix decision being made should impact the metrics managers employ when making their decisions because different types of decisions have divergent goals and objectives (Farris et al., 2010; Lehmann & Reibstein, 2006). Thus, we control for 10 types of marketing-mix decisions (listed in the results section).

METHOD

Data Collection

To obtain data on metric use and other variables of interest, we combine primary survey data and secondary country level data. For the primary data, we collaborated with the market research firm Survata to collect data by employing an online survey of 16 countries in Asia (China, India, Indonesia, Japan, South Korea, Turkey), Oceania (Australia), Europe (France, Germany, Italy, Russia, U.K.), North America (Canada, U.S.), and Latin America (Brazil, Mexico). For the secondary data, we employ data on the GLOBE national cultures dimensions for each country (House et al., 2004). We focus on this set of 16 countries because they account for over 80% of the world's total GDP, are the countries in which MNCs are more likely to operate, and represent various regions with significant business and marketing activity as well as economic development—i.e., highly advanced, developed, and emerging economies.

The primary data collection instrument or questionnaire was first developed in English and then translated into Chinese, French, German, Indonesian, Italian, Japanese, Korean, Portuguese, Russian, Spanish, and Turkish using back-translation. Following Mintz and Currim (2013), the central requirements for managers to partake in our study were that they needed to have (i) a job title in marketing at a rank of marketing, product, or brand manager or above (i.e., CMO, VP/marketing, director of marketing), or be a top-level executive in the firm (S/VP or C-level); and (ii) must have been involved in making marketing-mix decisions in the recent past. No restrictions were included based on the size of the firm or the type of industry since we were interested in obtaining managerial respondents from a wide range of firms and industries. Unfortunately, we were unable to accurately collect information on whether the managers worked for a MNC.

The recruitment of such managers was handled by Survata who paid panelists in each of the 16 countries. Initial screening of respondents was also conducted by Survata, who implemented quality control checks before, during, and after managers interacted with the survey based on managerial qualifications, attention checks, analysis for patterned responses, and minimum survey completion times. Respondents were only paid for quality submissions, i.e., they needed to pass these aforementioned quality control checks, which were unknown to the respondents. In addition, respondents were informed by Survata that if they did not pass the quality assurance requirements, they could be omitted from future panels. Consequently, these multiple methods helped motivate respondents to be engaged and provide truthful answers.

The data collection occurred over a four-month period in 2015 and comprised of two steps. First, for each country, we conducted an initial soft launch targeting 15-20% of our sample to assess the quality of translations of our survey instruments and the quality of the managerial respondents. Second, we subsequently launched our main survey wave. 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. Table 1 provides summary statistics on the number of decisions reported by managers in each country.

Measurement

Managerial metric use. Overall metric use is the number of metrics employed for a specific marketing-mix decision. This unit of analysis is important since we are interested in how national and organizational cultures can potentially impact the variation in total metric use for a specific decision. We focus on actual individual decisions, which managers are likely to remember more accurately and hence be less likely to feel pressured to respond more normatively, in contrast to a typical or ideal decision-based scenario which often suffer from representativeness and availability biases and heuristics (Tversky & Kahneman, 1974).

To measure overall metric use, we adopted the measurement instrument developed by Mintz and Currim (2013). A total of 84 marketing and financial metrics were identified based on 11 published studies (see Web Appendix Table 2). Managers were asked to indicate which of 10 marketing-mix decisions they recently undertook,ⁱⁱⁱ with the clarification following Menon et al. (1999: 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 (12 marketing and 12 financial) general metrics (i.e., metrics that apply to many types of decisions) and 6 metrics specific to each of 10 marketing-mix decisions (i.e., metrics suited to that particular type of decision) they employed when making that particular marketing-mix decision. 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%).

Organizational culture. Organizational culture was measured using the six-item Organizational Culture Assessment Instrument (Cameron & Quinn, 2011). For each item, there were four response options; and respondents were tasked with distributing 100 points between the four options depending on how similar each description is to their firm (see Web Appendix Table 3). This use of constant-sums represents a form of ipsative-measurement, which is more complex to derive than for the other explanatory variables in our econometric model. Thus, in the analytical procedure section, we describe our new method to assess organizational culture based on this measurement technique.

National culture. Country scores on the GLOBE business practices dimensions were taken from House et al. (2004).

Control variables. See Web Appendix Table 3 for information on the measurement and sources for the control variables, all from the extant literature.

Sample Descriptive Information

Managerial respondents in our sample had an average of 9.5 years of work experience and nearly half (43%) were top-level managers, i.e., VP or C-level. The average firm has 8,921 full-time employees (median of 498) and is relatively market oriented (average of 5.61 out of 7.00). The variation in the sample is good, i.e., 62% of firms compete in the introductory/growth stages in the life cycle and 38% of firms compete in the mature/declining stages; and 73% compete in less concentrated industries (i.e., 4 largest firms control $\leq 50\%$ of market share) and 27% compete in more concentrated industries, which makes it an appropriate empirical sample to test our hypotheses. Due to word space limitations, further information regarding the means and standard deviations of our measures are provided in Web Appendix Table 4.

Data Quality

We conducted the following tests to assess data quality. First, based on Harman's one-factor and Lindell and Whitney (2001) post hoc tests, we do not find evidence of common-method bias. Further, as recommended by Podsakoff, MacKenzie, Lee, and Podsakoff (2003), we used multiple response scales (nominal, constant sum, Likert scales) in our survey, which should lessen concerns about common method variance. Second, 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 ($p=n.s.$). Third, to counter possible self-selection or non-responses biases where managers only participated or will only report decisions in which they employ large amounts of metrics, we followed Fredrickson and Mitchell (1984) and stated 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 Witteloostuijn & Eden, 2010). 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.

Deriving Cross-Nationally Comparable Scores

Since our hypothesis testing involves collecting data across a number of different countries, we need to address the question of measurement invariance (e.g., Singh, 1995). Therefore, we derived cross-nationally comparable scores on the two control variables measured with Likert scales – market orientation (8 items) and market turbulence (3 items). Given the large number of countries, the traditional multi-group confirmatory factor analysis model (Steenkamp & Baumgartner, 1998) becomes cumbersome. Therefore, we turned to the alignment method, which was recently developed for simultaneous analysis of many groups, and could be applied for our multi-country context (Asparouhov & Muthén, 2014).

This method has two steps. First, the multigroup configural model is estimated in which loadings and intercepts are free across countries, factor means are fixed at 0 in all countries, and factor variances are fixed at 1 in all countries. Second, alignment optimization frees the factor means and variances, and chooses their values to minimize the total amount of noninvariance using a simplicity function for every pair of countries and every intercept and loading using a component loss function f from EFA rotations (Jennrich, 2006). For our two Likert scaled constructs, we applied this method 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 & Baumgartner, 1998) and correlated them with the summated scores. The correlation for market turbulence was 0.963 and for market orientation 0.983. These findings support the measurement invariance of the constructs (Asparouhov & Muthén, 2014).

Analytical procedure

Deriving scores on the organizational culture dimensions. To relate the observed constant sum responses to the six items in the Organizational Culture Assessment Instrument and the underlying

continuous latent variables of external positioning vs. internal maintenance and mechanistic vs. organic processes, we build on earlier research by DeSarbo, Ramaswamy, and Chatterjee (1995) to develop a new Dirichlet specification.

To begin, we denote the four observed constant-sum answers to each of the six items l ($l=1,\dots,6$) for respondent i in country j by $(P_{ijl1}, P_{ijl2}, P_{ijl3}, P_{ijl4})$. The sum of this vector equals 1. Hence, 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:

$$(3) \quad (P_{ijl1}, P_{ijl2}, P_{ijl3}, P_{ijl4}) \sim \text{Dirichlet}(\alpha_{ijl1}, \alpha_{ijl2}, \alpha_{ijl3}, \alpha_{ijl4}),$$

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

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

The parameters of the Dirichlet distribution are specified as a function of the four base-level organizational culture variables:

$$(5) \quad \alpha_{ijl1} = \exp(\mu_{l1} + \lambda_{l1} \text{Clan}_{ij1})$$

$$(6) \quad \alpha_{ijl2} = \exp(\mu_{l2} + \lambda_{l2} \text{Adhocracy}_{ij2})$$

$$(7) \quad \alpha_{ijl3} = \exp(\mu_{l3} + \lambda_{l3} \text{Hierarchy}_{ij3})$$

$$(8) \quad \alpha_{ijl4} = \exp(\mu_{l4} + \lambda_{l4} \text{Market}_{ij4})$$

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

$$(9) \quad \text{IntMain}_{ij} = (\text{Clan}_{ij} + \text{Hierarchy}_{ij}) - (\text{Adhocracy}_{ij} + \text{Market}_{ij})$$

$$(10) \quad \text{Organic}_{ij} = (\text{Clan}_{ij} + \text{Adhocracy}_{ij}) - (\text{Hierarchy}_{ij} + \text{Market}_{ij})$$

Relating antecedents to marketing metric use. Each manager's overall metric use is modeled as a function of our micro-organizational and macro-country cultural antecedents in addition to our control variables. To account for the nonnegative and discrete nature of our metric use dependent variable in which its variance exceeds its mean ($M = 9.08$, variance = 30.78), we employ a negative binomial regression model. This type of modelling approach also accounts for (i) the log-link between the Poisson

mean and the covariates that represent the latent metric usage rate and (ii) a transformed error term that takes care of the overdispersion (Greene, 2003). To incorporate the dependency between observations belonging to the same country, we employ a robust maximum-likelihood procedure with cluster-robust standard errors. This approach allows us to test for macro-national and micro-organizational cultural effects while controlling for the country, firm, manager, industry, and decision setting in a converging model (Beugelsdijk, Kostova, & Roth, 2017). Further details, including analysis demonstrating that our estimation is not expected to suffer from multicollinearity, are provided in Web Appendix A.

RESULTS

Descriptive Information on Metric Use

In Table 3, we present statistics on the average use of metrics by managers in each of the 16 individual countries and by type of marketing-mix decision. In Figure 2, we provide histograms for the range of metrics employed per country. Across our entire sample, managers employed an average of 9.08 metrics per marketing-mix decision. The three countries reporting the greatest average amount of metric use are South Korea (11.72), China (11.14), and India (10.72); while the three countries reporting the least amount of use are Japan (4.29), France (5.79), and the U.S. (7.38).

Based on the descriptive statistics provided in Table 3 and Figure 2, we find model-free support for our expectations of *across* and *within* country managerial variation in metric use. Regarding variation in metric use *across* countries in our sample, we find a range of 7.43 metrics employed between managers residing in the country with the greatest average use of metrics (South Korea) vs. managers residing in the country with the least average use of metrics (Japan), even though the overall average use of metrics is only 9.08 (see Table 3). Hence, this indicates large variation in metric use by managers across different countries. For variation in metric use *within* countries, we find standard deviations in each country in the range of 3.52-6.43, even though again the average use of metrics in our sample is only 9.08. Therefore, substantial variation in metric use exists across and within countries, and it does not appear there is standardization either across or within countries. However, we also note that these model-free statistics are aggregated by country and do not account for the aforementioned micro-organizational or macro-

national level cultural drivers of metric use nor our controls, unlike in our negative binomial regression model whose results we discuss in the next section.

--- Figure 2 and Table 3 about here ---

Regarding individual metrics, in Table 4 we document that satisfaction (53%), awareness (45%), and ROI (43%) were the three most used metrics in our sample. In fact, satisfaction was reported to be the most used metric in 8 of the 16 countries and in the top 3 of used metrics in 13 of the 16 countries. The highest use of an individual metric in any country was awareness in India, where 71% of managers used this metric. In Table 5, we report on the three most used metrics for each type of marketing-mix decision for each of the 16 countries in our sample. Interestingly, some metrics such as satisfaction and awareness are consistently in the top three most employed metrics by managers residing in different countries for a variety of marketing-mix decisions. Other metrics like total customers are most employed by managers for a certain type of decision (i.e., sales force) and metrics such as target volume (i.e., Indonesia) and net profit (i.e., Mexico and Russia) are more employed by managers in a certain country. Overall, the statistics provided in Tables 3, 4, and 5 provide valuable benchmarks on the current use of metrics by managers residing in a number of countries making 10 different types of marketing-mix decision. As a result, these tables should be useful for researchers, managers, and consultants.

--- Tables 4 and 5 about here ---

Results of Drivers of Metric Use

Table 6 provides the results of our empirical analysis. To begin, we find broad support for our macro-national cultural drivers of metric use. Specifically, we find uncertainty avoidance ($p < .01$) is positively associated with metric use and institutional collectivism ($p < .01$), power distance ($p = .01$), assertiveness ($p = .02$), and future orientation ($p = .02$) are each negatively associated with metric use. The anticipated positive effect of performance orientation does not reach statistical significance ($p = .39$). Thus, with 5 of our 6 hypotheses supported (H1, H2, H3, H4, and H6), we find support for our main theoretical proposition of an association between macro-national culture characteristics and metric use. Second, we find both of our proposed micro-organizational cultural variable based hypotheses (H7 and H8) are

supported. Specifically, we find a significant positive relationship between firms with internal ($p=.01$) and organic cultures ($p=.06$), and metric use. Consequently, we find support for our theoretical expectations of an association between culture, both at a macro-country and micro-organizational levels, and metric use.

Third, we compare the effect sizes of our cultural variables reported in Table 6 to allow for better interpretability of our results (Kirkman et al., 2017). When comparing our standardized coefficients, regarding the relative impact of macro-national cultural variables on metric use, we find the order is power distance > institutional collectivism > future orientation > uncertainty avoidance > assertiveness > performance orientation. We discuss managerial implications of these results in the conclusion section. Fourth, we find that even though internal and organic organizational cultural variables have somewhat similar effect sizes, organic culture has a slightly larger effect (0.15 vs. 0.12).

--- Table 6 about here ---

Next, we discuss the results of our control variables (bottom-half of Table 6). For firm resource theory-based control variables, we find broad support as market orientation ($p=.03$), marketing's influence in the firm ($p<.01$), CMO presence ($p=.03$), and firm size ($p<.01$) are each found positively associated with metric use, but whether the CEO has a marketing background is not associated with metric use ($p=.56$). Similarly, we find broad, strong support for type of marketing-mix decisions (value chain theory) as control variables with 8 of 9 decisions having a significant effect. More specifically, we find managers making internet advertising ($p<.01$), direct to consumer ($p<.01$), social media ($p<.01$), sales force ($p<.01$), pricing ($p=.03$), PR/sponsorships ($p<.01$), new product development ($p<.01$), and distribution decisions ($p=.06$) are more likely to employ metrics than when making traditional advertising decisions. The sole non-significant type of marketing mix decision is price promotions ($p=.14$). In contrast, for industry-level predictors (institutional theory), we find limited support as the only significant relationship is between industry growth and metric use ($p=.03$); the remaining industry variables are non-significant. A possible reason for the lack of support of industry predictors is that there are supplementary sources of information and methods for managers around the world to enable greater metric use to reduce

uncertainty when making their marketing-mix decisions, i.e., national and organizational culture, firm resources, and type of decision, so the industry institutional environment matters less. In addition, we do not find support for significant relationships between managerial characteristics (decision maker's perspective based theory) and metric use in our international sample. Interestingly, Mintz and Currim (2013) also find limited support of managerial characteristics affecting metric use in their U.S. focused sample.

Additional Analysis

We now summarize over 60 additional models conducted to provide more nuanced insights regarding the relationships between national culture, organizational culture, and metric use by managers residing in different countries. Due to word space limitations, this section is brief. Therefore, we refer the reader to Web Appendix B for greater details on motivation, operationalization, and results of such analyses.

Relationship between Metric Use and Performance. For each of the 16 countries in our sample, we empirically test the relationship between total metric use and subjective assessments of performance outcomes of the same decision while controlling for the endogeneity of drivers of variation of managerial metric use. In each of the 16 countries in our sample, we find *a significant and positive relationship* between total metric use and marketing-mix performance (each $p < .05$). These results provide robust support for (a) prior research conducted in one country (the US) showing that an increasing use of metrics is beneficial to decision outcomes, and (b) the importance of the current research to IB practice by identifying culture-based reasons for variation in managerial metric use across and within countries.

Marketing and Financial Metric Use. Since national and organizational culture could affect managerial use of certain types of metrics, we analyze the results of two additional models with differing dependent variables; first with marketing metrics and second with financial metrics, based on Mintz and Currim's (2013) classifications. For the national culture variables, we find similar effects on marketing and financial metric use as we did for our earlier results on overall metric use. Likewise, for the organizational culture variables, we also find a similar effect on marketing and financial metric use for internal-focused firms and a similar effect on financial metrics for organic-focused firms. Hence, for

seven of eight hypothesized variables (see Table 7), we find similar results with type of metric used to overall use of metrics, so it appears that national and organizational culture largely affect managerial metric use in aggregate and not just by type of metric.

--- Table 7 about here ---

Interactions between National and Organizational Culture. Prior research has found conflicting evidence on whether national culture impacts organizational culture or whether each culture operates independently of the other (e.g., see Naor et al., 2010 for a review). For example, managers may experience compatibilities and conflicts between their own organizational and national cultural priorities (Hofstede et al., 2010). To conduct an exploratory analysis of potential moderation between the two levels of culture, we first test for interactions by including all potential interaction terms between the two levels of culture in a single model (Bass, 1995). The results of this analysis do not provide much support for such interaction effects, as we only find four of the twelve interactions to be statistically significant; internal-focused and future orientation, internal-focused and power distance, and organic-focused and performance orientation are associated with an increase in metric use, and organic-focused and future orientation is associated with a decrease in metric use.

As a follow-up, we examine the potential moderation effect of each of the six national and two organizational culture variables by splitting the sample into higher and lower than median sub-samples, and estimating a model for each of such 16 different sub-samples. The main finding from these analyses is that for the high organic organizational culture sub-sample, all six national culture variables have significant coefficients, but for the low organic sub-sample, we find that only institutional collectivism has a significant effect. Consequently, it appears that moderation between organic organizational culture and national culture mostly occurs in firms with higher and equal to the median organic cultures.

Moderation by Type of Marketing-Mix Decision. Next, we explore potential moderation by type of marketing-mix decision (value chain theory). The main takeaway from these analyses is that for each of the 10 types of decisions, we find the signs of the coefficients for uncertainty avoidance, institutional collectivism, and assertiveness are exactly the same as hypothesized, while the signs of the remainder of

our national and organizational culture variables vary only slightly (i.e., same signs for 7-9 decisions depending on the variable). Thus, we find consistency in the direction of impact of our cultural variables on the use of metrics by managers across 10 different types of marketing-mix decisions, similar to our expectations.

Further, we identify the types of marketing-mix decisions for which national and organizational culture matter more or less to managerial use of metrics. We find that (i) both national and organizational culture impact overall use of metrics for managers making traditional advertising, direct to consumer, social media, price promotion, and distribution decisions, (ii) national culture matters but organizational culture does not appear to matter for sales force, pricing, PR/sponsorships, and new product development decisions, and (iii) neither national or organizational culture appear to matter for internet advertising decisions.

Moderators based on Control Variables. We also examine potential moderation based on firm size (resource based theory), work experience (decision maker's perspective based theory), and industry growth (institutional theory) sub-segments (higher versus lower than median). For firm size, we find both national and organizational culture variables matter for each sub-sample, but the main differences between larger and smaller firms are (i) performance orientation has a significant positive effect on metric use for larger firms but is a non-significant factor for smaller firms, and (ii) assertiveness and future orientation both have significant negative effects on metric use for smaller firms but no significant effect for larger firms.^{iv} For work experience and industry growth, we find that while national culture variables affect metric use by managers in each sub-sample, organizational culture variables affect metric use in just the high sub-samples.

Analysis by Country. Finally, we assess the impact of organizational culture on metric use in each country. Most importantly, we find the signs of the significant coefficients in 12 of the 16 countries are consistent with our proposed expectations. In addition, we find (i) both organizational culture variables significantly impact managerial metric use in Australia, Brazil, Canada, Russia, and the United Kingdom; (ii) neither type of organizational culture impacts the use of metrics by managers residing in China,

France, Germany, Japan, South Korea, and the USA; and (iii) only one type of organizational culture impacts the use of metrics by managers residing in India, Indonesia, Italy, Mexico, and Turkey. An additional takeaway from these results is that the impact of organizational culture drivers on metric use varies *across* countries, which provides evidence that national culture variables need to be included in such analysis in order to help explain and account for such across country variation.

To summarize the results of the 65 additional analyses briefly overviewed, we find an increase in metric use is associated with an increase in marketing-mix performance, which demonstrates that investigating the sources of managerial variation in metric use across and within countries is important to IB practice. In addition, we find that both national culture and organizational culture are important factors that help explain such variation in overall managerial metric use. Further, we find that the effects of national and organizational culture on types of metrics used and overall metric use are largely similar; and the interaction effects between national and organizational cultures on metric use are limited, apart from the effects of national culture on organizations with higher than median organic cultures. Finally, and most importantly, we find through these analyses that it is critical to account for varying levels of theoretical abstraction (i.e., national, firm, industry, manager, and decision) when investigating causes of across and within country managerial variation in the overall use of metrics.

CONCLUSION

Marketers around the world are facing intensified demands to increase the accountability of their decisions via the use of metrics (e.g., Lehmann & Reibstein, 2006; O'Sullivan et al., 2009; Rust et al., 2004). The reasons are clear: prior research demonstrates that an increase in marketing's accountability enhances its stature within the firm which in turn improves the performance of the firm (e.g., Verhoef et al., 2011; Verhoef & Leeflang, 2009). Consequently, the existence, nature, and business impact of cross-cultural differences on managerial metric use for individual marketing-mix decisions at both the firm and national levels are important to both IB, marketing, and management theory and practice. Despite this importance, little prior research has investigated what drives managerial metric use, which is a key to accountability in global settings.

In this paper, we address this gap in the literature and practice by examining the use of metrics by managers residing in 16 countries. We propose and empirically test a conceptual model hypothesizing that cultural effects, at both the organizational and country levels, are important factors driving both across and within country managerial variation in metric use. After controlling for a host of variables, we empirically find that managerial metric use is influenced by both the culture of the organization in which the manager operates as well as by the prevailing culture of the country in which the manager lives. Although prior research in the IB, marketing, and management literature has found that cultural orientation exerts a powerful influence on managerial behavior (e.g., Cameron & Quinn, 2011; Deleersnyder et al., 2009; Naor et al., 2010), few studies have integrated culture's multiple levels of abstraction while accounting for the decision setting, leading to a polarization of views between "everything is the same within a country" and "everything is different across countries" (e.g., Farley & Lehmann, 1994; Tung & Stahl, 2018). Thus, it was unknown prior to this study whether variation in metric use by managers residing in different countries could be explained by cross-country cultural variation, by within-country cross-organizational cultural variation, or by a mixture of the two. Since, we, as scholars seek to improve the worldwide accountability of managerial decisions and performance of firms, it is crucial as a first step to determine whether there is variation in metric use by managers residing in different countries, and if so, subsequently try to determine where such variation originates or how it can be explained.

Based on the results of our empirical test, we find that variation in metric use by managers residing in different countries is a function of both variation in country and organizational cultures, so communications and efforts aimed at increasing metric use will need to be sensitive to differences in both country and organizational cultures, and not just one or the other. Consequently, the key managerial contribution of this work based on the empirical results is that our results offer evidence of local managerial tendencies for using metrics and to this end may help global and large international firms (MNCs) to adjust their control policy "communications" (process) with managers in nations and cultures that tend to use fewer metrics. One of our main results is that 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, employ fewer metrics in their marketing decisions. Thus, when executives at international firms are attempting to communicate the need for greater metric use by their managers, 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). Additionally, organizations should consider the variables that reflect the organization culture (internal maintenance and organic processes) in which the downstream manager operates. For example, we find uncertainty avoidance to have the most positive impact on metric use and power distance to have the most negative impact. This should help executives to encourage managers in multiple countries to employ more metrics in their decision-making as it enables a reduction in ambiguity, particularly in countries like Russia, Japan, and France where managers highly value ambiguity reduction. In high power distance societies such as Mexico and China, an obstacle toward the adoption of metric use is convincing superiors that having their lower-level managers employ metrics in their decisions does not affect their subordinate relationship, but rather is intended to improve the overall decision quality.

Executives can combine our full set of results accounting for different levels of abstraction to increase metric use in these cultures, i.e., by increasing the market orientation of the firm, hiring a CMO, positioning the organizational culture more toward an internal or organic focus, and facilitating data collection for metric computation. However, a remaining question is whether and how these recommendations can encourage greater metric use in the national and organizational cultural settings that hinder it? This is an important question for future research considering that we find substantial variation in metric use by managers residing in different parts of the world, which as a result produces worse marketing-mix decision performance outcomes. To answer this, future researchers can conduct field experiments at international companies with an objective to develop best practices in encouraging metric use in settings that hinder it, and attempt to establish direct causality of methods to improve these

practices. Future research employing such field experiments have potential large-scale implications to help improve the performance of firms in certain countries, like Japan and France, which report lower managerial metric use, and compete in industries like consumer electronics and luxury goods that respectively play a major role in those economies.

Limitations of this research enable future research opportunities. First, we conducted primary research in 16 countries, but this cross-sectional data may not be fully representative of national samples, as is common with survey methodologies. Second, although we attempt to be comprehensive in our list of variables by accounting for 21 controls, there are always additional variables such as managerial education, industry reporting standards, etc. that could be included. In addition, the impact of the regulatory environment and changes to this environment may cause more managerial uncertainty, which could impact managerial decision-making processes and their use of metrics for marketing-mix decisions. Third, we did not collect information on the importance of a particular metric in a specific marketing-mix decision, because during our pre-test it appeared that we could not accurately assess this information, so this measure was subsequently dropped. Further, we did not attempt to evaluate how important each individual decision was to managers making such decisions. Both of these limitations offer interesting research opportunities. Fourth, due to survey length constraints, we were unable to assess perceived characteristics of individual metrics employed or not employed, such as their accuracy, short or long-term time horizon, etc. Fifth, our data do not capture whether responding firms were units of MNCs. Such firms are expected to have relatively uniform internal cultures and policy-driven marketing metrics use; however, it is possible that other influences might lead local affiliates to use additional metrics beyond those required by their headquarters. Hence, future research could compare metric use by managers working in multinational corporations, multidomestic corporations, and purely domestic firms. This would be of particular interest because intuitively one would expect greater within-firm cross-national similarity in MNCs since managers across subsidiaries are in frequent touch through both structured meetings (e.g., required training at educational facilities or international conferences and business meetings) as well as leadership that transcends international boundaries and informal intra-corporate

communications (e.g., messaging and phone calls). Sixth, future research could investigate metric use in less developed countries.

Finally, at a broader level, our integration of national and organizational culture into a single framework while accounting for the manager, firm, and industry decision setting should be useful for future research bridging IB, culture, and JDM research. For example, our framework provides a building block for future research on a wide-range of drivers of managerial behavior, such as decision implementation, ex-post decision evaluations, strategy setting, adoption of new technology, crises management, and responses to environmentally forced organizational changes, whose objective is to investigate how potential cross-country and within-country factors drive certain managerial behavior while needing to control for manager, firm, and industry characteristics inherent in the decision setting. Our framework can also provide guidance for how such studies can structure investigations of potential multi-faceted positive and negative consequences of culture in contrast to just its positive or negative effects. In addition, at a firm strategic level, our research framework and empirical findings are potentially equally if not more important for firms interested in acquiring, merging, or entering joint ventures with other firms in different countries. Such firms have to assess, overcome, and manage both national and organizational cultural differences (e.g., Nippa & Reuer, 2019), so they potentially face greater difficulties in integrating their policies into the other firms. Consequently, our findings can provide initial insights into how the national and organizational cultures and characteristics of the firm and industry influence managerial behavior and the use of information by such managers in firms located in different countries.^v Thus, we hope that others will build on our work on metric use and managerial behavior in these potential directions.

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Figure 1. Macro-National and Micro-Organizational Cultural Framework of Drivers of Metric Use by Managers around the World

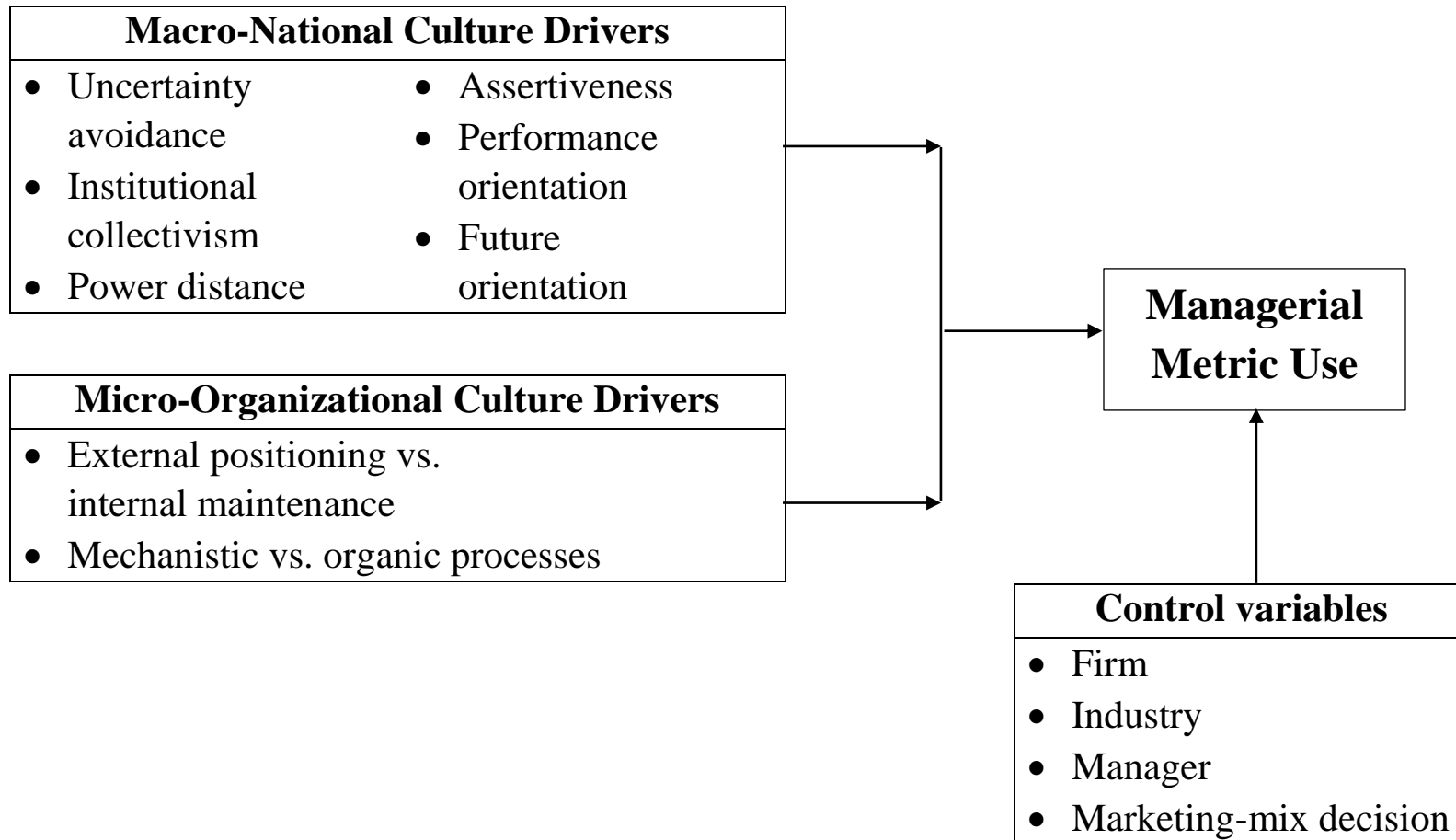


Figure 2. Histograms for Total Number of Metrics Employed by Managers in Each Country across All Decisions

Notes: x-axis = number of metrics; y-axis is % of managers in that country who employed that number of metrics in their marketing-mix decisions; values above 10% were cut-off to enable direct comparisons

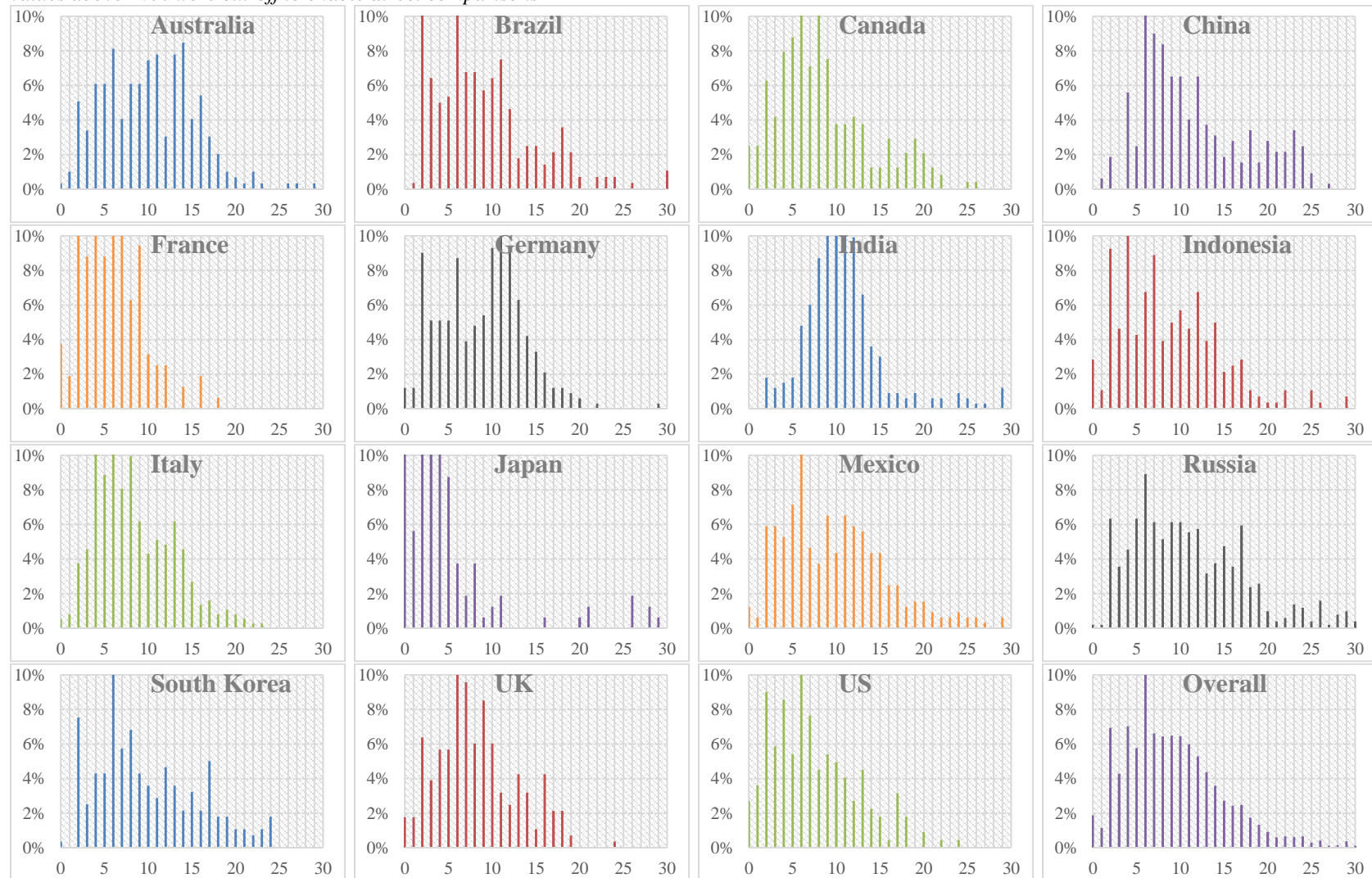


Table 1. Number of Managerial Decisions by Country

Country	Number of decisions in our sample	Percentage of decisions	Number of managers / firms	Percentage of managers / firms	Number of decisions per manager / firm
Australia	295	6.7%	97	5.9%	3.0
Brazil	280	6.4%	101	6.2%	2.8
Canada	239	5.5%	95	5.8%	2.5
China	322	7.3%	105	6.4%	3.1
France	159	3.6%	79	4.8%	2.0
Germany	333	7.6%	123	7.5%	2.7
India	333	7.6%	86	5.3%	3.9
Indonesia	281	6.4%	126	7.7%	2.2
Italy	372	8.5%	111	6.8%	3.4
Japan	160	3.6%	88	5.4%	1.8
Mexico	322	7.3%	118	7.2%	2.7
Russia	260	5.9%	107	6.5%	2.4
South Korea	245	5.6%	107	6.5%	2.3
Turkey	279	6.4%	91	5.6%	3.1
UK	282	6.4%	108	6.6%	2.6
US	222	5.1%	95	5.8%	2.3
<i>Total</i>	<i>4,384</i>	<i>---</i>	<i>1,637</i>	<i>---</i>	<i>2.7</i>

Note: only one manager responded per firm

Table 2. Definitions, Function of Metrics Emphasized, and Hypothesized Effects of Each Cultural Dimension

Culture Dimension	Definition	Function of Metrics Emphasized by Culture Dimension	Hypothesized Effect on Metric Use
Macro-National Cultural Drivers			
Uncertainty Avoidance	Extent members of a society avoid uncertainty by relying on established norms, rules, and practices	<ul style="list-style-type: none"> • Clarifies rules and criteria on which performance will be assessed • Signals desired behaviors 	+
Institutional Collectivism	Degree societal-institutional practices encourage and reward collective action	<ul style="list-style-type: none"> • Decreases individual manager accountability 	-
Power Distance	Degree members of a society expect power should be concentrated at higher levels of an organization	<ul style="list-style-type: none"> • Empowers managers (less) • Signals desired and undesired behaviors 	-
Assertiveness	Extent individuals in a society are confrontational and aggressive in their relationships	<ul style="list-style-type: none"> • Empowers managers • Signals desired and undesired behaviors 	-
Performance Orientation	Degree a society encourages and rewards group members for performance improvement	<ul style="list-style-type: none"> • Improves performance of the firm 	+
Future Orientation	Extent members of a society focus on long vs. short-term by engaging in future-oriented behaviors	<ul style="list-style-type: none"> • Improves performance of the firm • Clarifies rules and criteria on which performance will be assessed • Signals desired behaviors 	-
Micro-Organizational Cultural Drivers			
Internal Maintenance	Degree a firm emphasizes harmonious internal characteristics versus interactions with others outside their boundaries	<ul style="list-style-type: none"> • Empowers managers • Clarifies rules and criteria on which performance will be assessed • Signals desired behaviors 	+
Organic Process	Degree a firm emphasizes flexibility, discretion, and dynamism versus stability, order, and control	<ul style="list-style-type: none"> • Empowers managers • Signals desired behaviors 	+

NOTES, + = a positive hypothesized relationship; - = a negative hypothesized relationship

Table 3. Average Number of Metrics Used by Managers by Country and Type of Marketing-Mix Decision

Country / Decision	Trad. Adv.	Int. Adv.	D2C	Social Media	Sales Force	Pricing	Price Promos	PR / Spons.	NPD	Dist-ribution	By Country Overall Average Metric Use	By Country Overall Average Metric Use StDev
Australia	8.79	9.74	9.79	10.43	8.94	9.55	9.96	11.78	12.62	12.00	10.09	5.19
Brazil	7.91	7.77	8.96	8.52	10.32	8.69	9.88	9.58	8.69	12.64	8.91	5.68
Canada	8.47	8.97	7.94	7.98	8.85	9.69	7.78	10.00	9.11	8.15	8.52	5.45
China	10.51	10.55	11.41	10.57	13.03	9.25	11.04	12.60	13.00	12.89	11.14	6.00
France	5.39	5.81	6.14	6.67	5.41	5.38	5.65	4.50	6.25	7.25	5.77	3.52
Germany	8.37	8.43	8.91	9.56	10.00	8.56	8.20	8.67	9.57	7.83	8.88	4.68
India	9.60	10.34	10.81	10.90	11.71	11.62	10.83	10.21	11.89	12.30	10.68	4.37
Indonesia	6.97	8.59	6.58	9.03	9.81	7.34	9.50	10.21	7.90	11.14	8.48	5.63
Italy	9.08	8.63	9.16	8.49	8.95	8.23	7.54	8.24	7.44	6.19	8.35	4.46
Japan	3.70	4.31	3.93	2.45	5.33	4.91	4.71	6.50	5.35	2.44	4.29	5.84
Mexico	7.16	8.56	10.28	9.65	12.53	8.88	10.52	10.15	11.32	13.42	9.66	5.85
Russia	10.45	9.35	10.34	9.10	10.08	10.90	10.22	13.11	9.76	11.76	10.19	6.34
South Korea	10.61	11.36	11.96	12.07	12.55	10.56	10.38	12.93	13.68	14.14	11.72	6.43
Turkey	7.53	8.98	8.23	9.08	10.89	10.35	11.38	9.47	11.00	9.00	9.22	5.48
UK	8.53	7.65	7.19	7.64	10.38	7.92	7.03	9.50	8.11	11.63	8.00	4.45
US	7.74	8.53	8.22	6.31	6.21	5.79	8.55	7.85	7.50	4.50	7.33	4.74
By Decision Average Metric Use	8.35	8.91	8.96	8.98	10.11	8.75	9.09	9.88	9.58	9.81	9.08	5.54
By Decision Average Metric Use StDev	5.28	4.97	5.33	5.51	5.93	5.48	5.87	5.52	6.12	6.63	---	---
Total Reported Decisions	560	740	560	631	275	396	415	275	355	177	---	---

Table 4. Three Most Used Metrics by Country Across all Decisions

Country	Metric Used Most	% Used	Metric Used 2nd Most	% Used	Metric Used 3rd Most	% Used
Australia	Satisfaction	58%	ROS	50%	ROI	48%
Brazil	Satisfaction	64%	ROI	46%	Preference	45%
Canada	Satisfaction	50%	ROI	50%	Awareness	47%
China	Target Vol	61%	Satisfaction	60%	Mkt Share	51%
France	Satisfaction	47%	Total Customers	35%	Net Profit	32%
Germany	Satisfaction	56%	ROI	50%	Awareness	46%
India	Awareness	71%	Satisfaction	66%	ROI	59%
Indonesia	Target Vol	61%	Net Profit	57%	Total Customers	53%
Italy	ROI	52%	Likeability <i>(tied)</i>	48%	Satisfaction <i>(tied)</i>	48%
Japan	Awareness	27%	Net Profit <i>(tied)</i>	24%	Target Vol <i>(tied)</i>	24%
Mexico	Satisfaction	55%	Net Profit	53%	Awareness	49%
Russia	Likeability	59%	Net Profit	52%	Awareness	48%
South Korea	Satisfaction	64%	Preference	54%	Likeability	52%
Turkey	Net Profit	67%	Mkt Share	64%	Satisfaction	58%
UK	Satisfaction	51%	Awareness	46%	ROI	45%
US	Awareness	45%	ROI	37%	Satisfaction	36%
<i>Overall</i>	<i>Satisfaction</i>	<i>53%</i>	<i>Awareness</i>	<i>45%</i>	<i>ROI</i>	<i>43%</i>

Table 5. Three Most Used Metrics by Country and Decision

Decision / Rank	Australia	Brazil	Canada	China	France	Germany	India	Indonesia
Trad. Adv	1	Satisf.	Satisf.	Satisf.	Target Vol	Satisf.(t ₁)	Aware.(t)	Target Vol
	2	ROS	Prefs	ROI(t ₂)	Satisf.(t ₂)	Net Prof.(t ₁)	Mkt Shr(t ₂)	Net Prof.(t ₂)
	3	Net Prof. & Mkt Shr(t ₃)	ROI	Aware.(t ₂)	Aware.(t ₂)	Mkt Shr	Cust Seg Profits(t ₂)	Aware.(t ₂)
Internet Adv	1	Loyalty	Satisf.	ROI(t ₁)	ROI	Satisf.	Aware.	Net Prof.
	2	Satisf.	ROI	Aware.(t ₁)	Aware.	Aware.	ROI	CPC
	3	ROI	Total Cust & CPC(t ₃)	Satisf. & 2 others(t ₃)	Brand Exp & 2 others(t ₃)	Visits	Mkt Shr	Total Cust
Direct to Consumer	1	Satisf.	Satisf.	Satisf.	Satisf.	Satisf.	CLV	Target Vol
	2	Mkt Shr	ROI(t ₂)	Loyalty	Target Vol	Aware.(t ₂)	ROI(t ₂)	Net Prof.
	3	Shr of Cust Wallet & Voice(t ₃)	Mkt Shr & 2 others(t ₂)	Net Prof. & 3 others(t ₃)	ROS & Loyalty(t ₃)	Total Cust(t ₂)	Brand Exp(t ₂)	Satisf. & Shr of Voice(t ₂)
Social Media	1	ROS	Satisf.	Satisf.	Aware.	ROMI(t ₁)	Cust Seg Profits	Web Visits
	2	Satisf.(t ₂)	Aware.	Liking	Number of Likes	Total Cust(t ₁)	Aware.(t ₂)	Net Prof.(t ₂)
	3	Lead Gen(t ₂)	ROI	Aware. & ROI(t ₃)	Will to Rec & Web Visits(t ₃)	Prefs & Loyalty(t ₃)	Satisf.(t ₂)	Shr of Voice
Sales Force	1	Satisf.	Sales Potential	Total Cust	Target Vol	Satisf.	Cust Seg Profits(t ₁)	Target Vol(t ₁)
	2	Mkt Shr	ROI	ROI(t ₂)	Total Cust	Total Cust(t ₂)	Sales Potential(t ₁)	Will to Rec(t ₁)
	3	Shr of Cust Wallet & Reach(t ₃)	Total Cust	Sales Prod. & Satisf.(t ₂)	Satisf. & Sales Prod.(t ₃)	Sales Potential(t ₂)	Mkt Shr & 7 others(t ₃)	ROS & Sales Prod(t ₃)
Price Promotions	1	ROI(t ₁)	Satisf.	ROI(t ₁)	Target Vol(t ₁)	Satisf.	Satisf.	Aware.
	2	Shr of Voice(t ₁)	Promo Lift	Mkt Shr(t ₁)	Satisf.(t ₁)	Net Prof.(t ₂)	Net Prof.(t ₂)	ROI
	3	Satisf.	Net Prof. & Prefs.(t ₃)	Aware. & Total Cust(t ₁)	Promo Lift	Mkt Shr & Total Cust(t ₂)	Total Cust & 2 others(t ₂)	Net Prof.
Pricing	1	ROS	Satisf.	Net Prof.(t ₁)	Net Prof.	Total Cust	ROMI	Aware.
	2	Net Prof.(t ₂)	Net Prof.	ROI(t ₁)	Target Vol	ROI(t ₂)	Satisf.	Shr of Voice
	3	Satisf.(t ₂)	ROS	Target Vol	Brand Exp	Satisf. & 2 others(t ₂)	Net Prof.	Satisf.
PR / Sponsor	1	Lead Gen	ROI(t ₁)	Aware.	Satisf.	ROMI(t ₁)	ROMI(t ₁)	Satisf.
	2	Reach	Will to Rec(t ₁)	Cust Seg Profits(t ₂)	ROI(t ₂)	Target Vol(t ₁)	Lead Gen(t ₁)	Lead Gen
	3	ROI & Satisf.(t ₃)	Loyalty & Lead Gen(t ₁)	Reach & Cost per Exposure(t ₂)	Shr of Voice & Aware.(t ₂)	Aware. & 2 others(t ₁)	Cust Seg Profits	Aware.
New Product Development	1	Expected Margs.	Satisf.	ROI(t ₁)	Satisf.(t ₁)	Cust Seg Profits	Satisf.	Aware.
	2	Satisf.	Expected Margs.	Target Vol(t ₁)	Belief in New Prod(t ₁)	Net Prof.(t ₂)	Liking	Satisf.
	3	Net Prof. & 3 others(t ₃)	ROI & 2 others(t ₃)	Liking	ROI & Target Vol(t ₃)	Satisf. & Total Cust(t ₂)	ROMI	ROI
Distribution	1	Satisf.	Satisf.	ROS(t ₁)	ROS(t ₁)	Mkt Shr(t ₁)	Chnl. Rel. (t ₁)	ROS
	2	Loyalty	Prefs(t ₂)	Aware.(t ₁)	Total Cust(t ₁)	Total Invent.(t ₁)	PCV(t ₁)	Total Cust(t ₁)
	3	ROI & 8 others(t ₃)	Channel Margs.(t ₂)	Total Cust & 2 others(t ₁)	Target Vol & 2 others(t ₁)	Channel Margs.(t ₁)	ROS & 3 others(t ₃)	PCV(t ₁)

(t₁)=tied for most used; (t₂)=tied for 2nd most used; (t₃)=tied for 3rd most;

Table 5. Cont'd

Decision / Rank	Italy	Japan	Mexico	Russia	South Korea	Turkey	UK	US	
Trad. Adv	1	ROI	Aware.	Satisf.(t ₁)	Liking	Satisf.	Mkt Shr	Satisf.	ROI(t ₁)
	2	Satisf.	Cust Seg Profits(t ₂)	Net Prof.(t ₁)	Aware.	Mkt Shr	Net Prof.	ROI(t ₂)	Aware.(t ₁)
	3	Net Prof. & Liking(t ₃)	Mkt Shr(t ₂)	Mkt Shr	Reach	ROI	Satisf.	Aware.(t ₂)	ROMI
Internet Adv	1	ROI	Aware.	Satisf.(t ₁)	Liking	Satisf.	Mkt Shr	ROI(t ₁)	Aware.(t ₁)
	2	Satisf.	ROI	Liking(t ₁)	CPC	ROMI	Net Prof.	Aware.(t ₁)	Visits(t ₁)
	3	Liking	Satisf.	Total Cust(t ₁)	Web Visits & Conv. Rate(t ₃)	ROI & 3 others(t ₃)	Satisf.	Satisf.(t ₁)	ROI
Direct to Consumer	1	Aware.	Brand Exp	Loyalty	Conv. Rate	Satisf.(t ₁)	Net Prof.	Satisf.	Aware.
	2	Net Prof.	Target Vol(t ₂)	Net Prof.(t ₂)	Reach(t ₂)	Liking(t ₁)	ROS	ROS	ROI
	3	Satisf.	Aware. & 2 others(t ₂)	Total Cust & Acq Cost(t ₂)	Lead Gen(t ₂)	Prefs.	Mkt Shr & Satisf.(t ₃)	Aware. & Liking(t ₃)	Reach & # of Responses (t ₃)
Social Media	1	ROI	Aware.	Aware.	Lead Gen	Liking	Satisf.	Aware.	Web Visits
	2	Satisf.	Net Prof.(t ₂)	Satisf.	Number of Likes	ROMI	Net Prof.(t ₂)	Satisf.	Aware.
	3	Liking	CLV & 7 others(t ₂)	Number of Likes	Will to Rec	Web Visits	Mkt Shr & ROS(t ₂)	Liking	Satisf.
Sales Force	1	Satisf.	Net Prof.(t ₁)	Sales Prod.	Reach (t ₁)	ROS	Mkt Shr	ROS(t ₁)	Sales Prod.
	2	ROI(t ₂)	Target Vol(t ₁)	Satisf.	Sales Potential(t ₁)	Satisf.(t ₂)	Net Prof.(t ₂)	Satisf.(t ₁)	Sales Potential
	3	Will to Rec(t ₂)	NPV & 3 others(t ₁)	Net Prof.	Net Prof. & 3 others(t ₃)	Sales Potential(t ₂)	Sales Prod.(t ₂)	Mkt Shr & 2 others(t ₁)	ROS & 3 others(t ₃)
Price Promotions	1	Target Vol	Shr of Cust Wallet	Net Prof.	Net Prof.	Mkt Shr(t ₁)	Net Prof.	Net Prof.	Target Vol
	2	ROS(t ₂)	Net Prof.(t ₂)	Satisf.(t ₂)	Aware.(t ₂)	Aware.(t ₁)	Mkt Shr(t ₂)	Shr of Voice	Aware.
	3	Total Cust(t ₂)	Cust Seg Profits(t ₂)	Total Cust(t ₂)	Satisf.(t ₂)	Prefs.	Total Cust(t ₂)	ROI & 5 others (t ₃)	ROS
Pricing	1	Net Prof.(t ₁)	Optimal Price	Net Prof.	Net Prof.	Satisf.	Net Prof.(t ₁)	Satisf.	Liking(t ₁)
	2	Price Elas.(t ₁)	Relative Price	Prefs.	Optimal Price	Relative Price(t ₂)	Total Cust(t ₁)	Cust Seg Profits	Unit Margs.(t ₁)
	3	ROI & Total Cust(t ₃)	Net Prof. & Total Cust(t ₃)	Cust Seg Profits & Price Elas.(t ₃)	ROS & Liking(t ₃)	Optimal Price & Price Elas.(t ₂)	ROS & 4 others(t ₃)	ROS	Net Prof. & 3 others(t ₃)
PR / Sponsor	1	Liking	Cust Seg Profits	Prefs.	Net Prof.(t ₁)	ROI(t ₁)	Satisf.	ROI	Aware.
	2	ROI	Aware.(t ₂)	Loyalty(t ₂)	Reach(t ₁)	Satisf.(t ₁)	Aware.	Aware.	Satisf.(t ₂)
	3	Satisf.	Satisf.(t ₂)	Lead Gen(t ₂)	Aware. & 2 others(t ₃)	EVA & 2 others(t ₁)	Prefs & Lead Gen(t ₃)	Satisf.	CLV & 2 others(t ₂)
New Product Development	1	Prod Qual	Mkt Shr(t ₁)	Satisf.	Liking	Satisf.	ROI(t ₁)	ROI	CLV(t ₁)
	2	ROI(t ₂)	Belief in New Prod(t ₁)	Prefs.	Satisf.	Attitude to New Prod	Liking(t ₁)	Liking(t ₂)	Belief in New Prod(t ₁)
	3	Loyalty(t ₂)	Attitude to New Prod(t ₁)	Aware.	ROS & Attitude to New Prod(t ₃)	Prod Qual	Net Prof.	ROS & 2 others(t ₂)	Aware. & 4 others(t ₃)
Distribution	1	Net Prof.(t ₁)	Target Vol	ROS(t ₁)	Net Prof.	Prefs.	Satisf.	Aware.(t ₁)	Satisf.
	2	Target Vol(t ₁)	Net Prof.	Target Vol(t ₁)	Will to Rec(t ₂)	EVA	Mkt Shr(t ₂)	Liking (t ₁)	Target Vol(t ₂)
	3	CLV & Liking(t ₁)	Mkt Shr & Total Cust(t ₃)	ROI & 3 others(t ₃)	ROS & 2 others(t ₂)	ROI & 4 others(t ₃)	ROI & 2 others(t ₂)	Prod Qual & 2 others(t ₁)	ROMI & Prefs.(t ₂)

(t₁)=tied for most used; (t₂)=tied for 2nd most used; (t₃)=tied for 3rd most;

Table 6. Results of Drivers of Metric Use

Dependent Variable	Total Metrics
Hypothesized Variables	
<i>National Culture</i>	
Uncertainty Avoidance	0.36***
Institutional Collectivism	-0.40***
Power Distance	-0.47***
Assertiveness	-0.30**
Performance Orientation	0.15
Future Orientation	-0.39**
<i>Organizational Culture</i>	
Internal Maintenance	0.12***
Organic Process	0.15*
Control Variables	
<i>Firm Characteristics</i>	
Market Orientation	0.19**
Marketing's Influence in the Firm	0.28***
CMO Presence	0.22**
Whether CEO has a Marketing Background	0.05
Ln(Firm Size)	0.37***
<i>Industry Characteristics</i>	
Mature/Decl. Life Cycle (vs. Intro/Growth)	0.05
Industry Concentration	0.05
Industry Growth	0.13**
Industry Turbulence	0.07
<i>Managerial Characteristics</i>	
Top-level Manager	0.01
Work Experience	-0.02
Quantitative Orientation	0.09
<i>Marketing-mix Decision</i>	
Internet Advertising ¹	0.09***
Direct to Consumer ¹	0.09***
Social Media ¹	0.12***
Sales Force ¹	0.19***
Price Promotions ¹	0.06
Pricing ¹	0.12**
PR/Sponsorships ¹	0.13***
New Product Development ¹	0.14***
Distribution ¹	0.12*
Model Diagnostics	
α (Dispersion Parameter)	0.21
Log Likelihood	-12952
BIC	26165
Sample-Size Adjusted BIC	26066

*p<.1; **p<.05; ***p<.01; Coefficients are standardized to allow comparison of effect sizes;

¹ in comparison to Traditional Advertising decisions

Table 7. Summary of Proposed and Found Effects of Cultural Drivers of Marketing Metric Use

Variable	Expected sign	Supported for Total Metric Use	Supported for Marketing Metric Use	Supported for Financial Metric Use
Macro-National Cultural Drivers				
Uncertainty Avoidance	+	Yes	Yes	Yes
Institutional Collectivism	-	Yes	Yes	Yes
Power Distance	-	Yes	Yes	Yes
Assertiveness	-	Yes	Yes	Yes
Performance Orientation	+	No	No	No
Future Orientation	-	Yes	Yes	Yes
Micro-Organizational Cultural Drivers				
Internal Maintenance	+	Yes	Yes	Yes
Organic Process	+	Yes	No	Yes

NOTES, + = a positive hypothesized relationship; - = a negative hypothesized relationship

Web Appendix for “Managerial Metric Use in Marketing Decisions across 16 Countries: A Cultural Perspective”

WEB APPENDIX A: ADDITIONAL DETAILS ON THE MODEL

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 in the data collection section, there are 30 metrics that respondents could indicate they employed for each decision (see Web Appendix Table 2). Thus:

$$(11) \quad MU_{ijd} = \sum_{t=1}^{30} Y_{ijdt},$$

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), 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 $g(MU_{ijd} | \phi_{ijd})$ with mean ϕ_{ijd} and a random intercept ε_{ij} in the mean ϕ_{ijd} can be written as:

$$(12) \quad g(MU_{ijd}; \phi_{ijd}) = \frac{\exp(-\phi_{ijd}) \phi_{ijd}^{MU_{ijd}}}{MU_{ijd}!}$$

$$(13) \quad \phi_{ijd} = \exp(\beta' X_{ij} + \gamma W_j + \varepsilon_{ij}) = v_{ij} \exp(\beta' X_{ij} + \gamma W_j) = v_{ij} \eta_{ij}$$

Here, the term η_{ij} is the log-link between the Poisson mean and the covariates that represent the latent metric usage rate, v_{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 $v_{ij} \sim \text{Gamma}(\alpha_1, \alpha_2)$

$$(14) \quad f(MU_{ijd} | \eta_{ij}) = \int g(MU_{ijd} | \eta_{ij}) h(v_{ij}) dv_{ij}$$

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:

$$(15) \quad E(MU_{ijd}) = \eta_{ij}$$

$$(16) V(MU_{ijd}) = \eta_{ij} + \eta_{ij}^2 / \alpha_1$$

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 and macro cultural antecedents in addition to our control variables:

$$(17) \eta_{ijd} = \exp(\beta_0 + \beta_1 UA_j + \beta_2 InstCol_j + \beta_3 PD_j + \beta_4 Assert_j + \beta_5 PO_j + \beta_6 FO_j + \beta_7 IntMain_{ij} + \beta_8 Organic_{ij} + \beta_9 MarkOr_{ij} + \beta_{10} MarkInf_{ij} + \beta_{11} CMO_{ij} + \beta_{12} CEO_{ij} + \beta_{13} FirmSize_{ij} + \beta_{14} PLCycle_{ij} + \beta_{15} Mconc_{ij} + \beta_{16} Mgrowth_{ij} + \beta_{17} Mturb_{ij} + \beta_{18} ManLevel_{ij} + \beta_{19} Experience_{ij} + \beta_{20} QuantOr_{ij} + \sum_{k=0}^9 \beta_{21+k} DecisionType_{ijd})$$

where UA, InstCol, PD, Assert, PO, and FO indicate the national cultural dimensions uncertainty avoidance, institutional collectivism, power distance, assertiveness, performance orientation, and future orientation, respectively. IntMain and Organic are 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. Mconc is whether the top 4 firms in an industry control more than 50% of the market (=1) or not. Mgrowth and Mturb denote market growth and turbulence. ManLevel, Experience, and QuantOr are three individual-level control variables, viz., the rank of the manager in the organization (CEO/CMO/(S)VP =1), 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. This approach allows us test for macro-national and micro-organizational cultural effects while controlling for the country, firm, manager, industry, and decision setting in a converging model (Beugelsdijk, Kostova, & Roth, 2017; Kirkman, Lowe, & Gibson, 2006). Variance inflation scores are all below 4. 459 of 465 (99%) pairwise correlation coefficients displayed in Web Appendix Table D are $<.4$ and $>-.4$; five of the six 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).

WEB APPENDIX B: ADDITIONAL ANALYSIS

To provide more nuanced insights regarding the relationships between national culture, organizational culture, and metric use by managers residing in different countries, we estimate over 60 additional models. These models are grouped into the following six categories: (i) the relationship between metric use and marketing-mix performance; (ii) drivers of two types of metrics, marketing and financial; (iii) interactions between national and organizational culture variables; (iv) potential moderation based on the type of marketing-mix decision being made by a manager; (v) potential moderation based on firm size, work experience, and industry growth; and (vi) potential moderation of the relationship between organizational culture and metric use per individual country.

Relationship between Metric Use and Performance. In our questionnaire, we asked managers to assess the performance outcomes of the same decision in which they indicated their metric use, based on the decision's stated marketing (customer satisfaction, loyalty, market share), financial (sales, profitability, ROI), and overall outcomes, relative to a firm's stated objectives and to similar prior decisions. We employed measures from previous published works (Jaworski & Kohli, 1993; Mintz & Currim, 2013; Moorman & Rust, 1999; Verhoef & Leeflang, 2009 as noted in Web Appendix Table 3). This enabled us to investigate whether there is variation in the relationship between metric use for a particular marketing-mix decision and that decision's performance outcomes for each of 16 countries. To empirically test this relationship, we first account for the endogeneity of what causes metric use and the discrete and nonnegative nature of our dependent variable by estimating our original negative binomial model and obtaining a predicted total metric use for each observation. Subsequently, for each of 16 countries, we run a two-stage least squares estimation, where in the first stage total metric use is a function of predicted total metric use for that observation, an intercept, and an error term, and in the second stage, the marketing-mix decision performance is a function of the predicted value from the first stage, an intercept, and an error term (Wooldridge,

2016).¹ For each of the 16 countries in our sample, we find a significant and positive relationship between total metric use and marketing-mix performance (each $p < .05$). These results provide robust support to prior research showing that an increasing use of metrics is beneficial to decision outcomes, and research to identify the causes of variation of metric use is important to IB practice.

Marketing and Financial Metric Use. While the focus of our work is on total metric use, national and organizational culture could affect the managerial use of certain types of metrics over others. For example, managers residing in countries with lower future orientation, who are more likely judged by present “bottom-line” results, could be more motivated to employ financial metrics in their decisions. Consequently, we report on the analysis from two additional models with differing dependent variables; first with marketing metrics and second with financial metrics. We employ Mintz and Currim’s (2013) classification to define which metrics are marketing and financial.

Regarding the national culture variables, we find similar effects on marketing and financial metric use as we did for our earlier results on overall metric use. Consequently, it appears that national culture affects managerial metric use in aggregate, so when national culture is in alignment (misalignment) with the functions performed by metrics, managers are employing more (less) metrics overall and not just by a certain type of metric. Regarding organizational culture, we find internal-focused firms are likely to employ more marketing *and* financial metrics (each $p < .05$), mirroring our earlier result, while organic-focused firms only employ more financial metrics ($p < .05$). In summary, for seven of eight hypothesized variables, we find similar results with type of metric used to overall use of metrics, so it appears that culture affects managerial metric use in aggregate and not just by type of metric (see Table 7).

Interactions between National and Organizational Culture. Prior research has found conflicting evidence on whether national culture impacts organizational culture or whether each level of culture operates independently of the other (e.g., see Naor et al, 2010 for a review). For example, managers may experience compatibilities and conflicts between their own organizational and national

¹ We follow Mintz and Currim (2013) for the specification of the second-stage equation. Further, we do not include the effect of other drivers of metric use in the marketing-mix performance equation since the effects of these drivers should be already encapsulated in the metric use variable, which already appears in this equation.

cultural priorities (Hofstede, Hofstede, & Minkov, 2010). In our managerial metric use context, this could suggest that when functions performed by metrics are in alignment (misalignment) with national *and* organizational culture characteristics that emphasize such functions, managers should employing more (less) metrics overall. Hence, as an exploratory analysis, we tested for interaction effects between the two levels of culture via two approaches.

First, due to the large number of potential interactions and the exploratory nature of this analysis, we employ an inductive reasoning approach and include all interaction terms between the two levels of culture in our negative binomial model (Bass, 1995). The results of this analysis do not provide much support for interaction effects between national and organization culture on metric use. There are a few exceptions. For total and marketing metric use, we find four significant interactions; internal-focused and future orientation, internal-focused and power distance, organic-focused and performance orientation, and organic-focused and future orientation. Each of the first three interactions are associated with an increase in metric use, while the fourth interaction is associated with a decrease in metric use. For financial metrics, we only find one significant interaction, between organic-focused and power distance, which is associated with an increase in financial metric use. The remaining 11 interactions are non-significant.

Second, as a follow-up, we investigate the potential moderation effect of each of the six national and two organizational culture variables by splitting the sample into higher and lower than median sub-samples, and estimating a model for each of such 16 different sub-samples. This permits us to perform moderation analysis based on a grouping of countries, depending on the type of culture variable. To accomplish this, for each sub-sample, we re-estimated our focal model with the only difference being that we no longer included the type of culture variable in which the sub-sample was based upon. For simplicity, we only examine total metric use. Interestingly, when we analyze the results of the national culture sub-samples, we find that both organizational culture variables are significant for one sub-sample but both are non-significant for the other sub-sample for four national culture variables: uncertainty avoidance, power distance, performance orientation, and future orientation. In addition, we find that organizational culture does not appear to significantly affect metric use for either sub-segments of assertiveness. For the organizational culture sub-sample

analysis, the main finding is that in the high organic sub-sample, all six national culture variables have significant coefficients demonstrating their important impact on managerial metric use; but for the low organic sub-sample, we find that only institutional collectivism has a significant effect. Consequently, it appears that moderation between organic organizational culture and national culture occurs only in firms with higher and equal to the median organic cultures.

Moderation by Type of Marketing-Mix Decision. Different types of marketing-mix efforts have divergent goals and objectives, which may influence the amount of metrics employed for a given decision (Mintz, Gilbride, Currim, & Lenk, 2017). Thus, we conducted exploratory analysis by estimating our total managerial metric use model for each of the 10 different types of marketing-mix decisions, instead of just controlling for the type of decision in one overall model. Although such per marketing-mix decision estimation greatly reduces sample size (min $n=177$ and max $n=740$ vs. $n=4,384$ in the focal model), this analysis permits preliminary examination of the impact of culture per marketing-mix decision. Most importantly, we find the signs of the coefficients for uncertainty avoidance, institutional collectivism, and assertiveness are exactly the same as hypothesized for each of the 10 types of decisions, while the signs of the remainder of our national and organizational culture variables vary only slightly (i.e., same signs for 7-9 decisions, depending on the variable). Thus, we find consistency in the direction of impact of our cultural variables on the use of metrics by managers across 10 different types of marketing-mix decisions, similar to our expectations, which strengthens the empirical support for our conceptual framework. In addition, in terms of individual results of the impact of our cultural variables on metric use, our main robust findings are (i) greater institutional collectivism negatively affects metric use for each type of marketing-mix decision except for distribution decisions (traditional advertising [$p<.01$], internet advertising [$p<.01$], direct to consumer [$p<.01$], social media [$p<.05$], sales force [$p<.1$], price promotions [$p<.01$], pricing [$p<.05$], PR/sponsorships [$p<.01$], and new product development [$p<.05$]); and (ii) performance orientation does not significantly affect metric use for each type of marketing-mix decision except for distribution decisions ($p<.05$). Hence, institutional collectivism appears as an important driver of metric use, regardless of the type of marketing-mix decision, while performance orientation does not.

Further, we identify the types of marketing-mix decisions for which national and organizational culture matter more or less to managerial use of metrics. We find that (i) both national and organizational culture impact overall use of metrics for managers making traditional advertising, direct to consumer, social media, price promotion, and distribution decisions, (ii) national culture matters but organizational culture does not appear to matter for sales force, pricing, PR/sponsorships, and new product development decisions, and (iii) neither national or organizational culture appear to matter for internet advertising decisions. The latter result makes sense, because for internet advertising decisions, there are a plethora of readily available metrics via services provided from, e.g., Google, which should lead to a diminished impact of culture on metric use.

Moderators based on Control Variables. In addition, we examine potential moderation of the effect of national and organizational culture variables on metric use, based on firm size, work experience, and industry growth sub-segments (higher versus lower than median). As indicated earlier, these three moderators are selected based on resource, decision maker, and institutional theories. For firm size, we find both national and organizational culture variables matter for each sub-sample, but the main differences between larger and smaller firms are (i) performance orientation has a significant positive effect on metric use for larger firms but is a non-significant factor for smaller firms, and (ii) assertiveness and future orientation both have significant negative effects on metric use for smaller firms but no significant effect for larger firms.² For work experience and industry growth, we find that while national culture variables affect metric use by managers in each sub-sample, organizational culture variables affect metric use in just the high sub-samples.

Analysis by Country. Finally, to assess the impact of organizational culture on metric use in each country, we re-estimate our focal model without the national culture variables for each of the 16 countries in our sample. Although such re-estimation reduces our sample size per model (min n=160 and max n=372 vs. n=4,384 in focal model), it permits us to conduct a preliminary exploratory examination of moderation effects by country. We find the signs of the significant coefficients in 12

² We also estimate an additional model where we only analyze firms in our sample which have <1,000 employees. In this analysis of smaller firms, we find similar effects of national and organizational culture as in the analysis of <median firm size sub-segment (<498 employees).

of the 16 countries are consistent with our proposed expectations. In addition, we find that (i) both types of organizational culture variables significantly impact managerial metrics use in Australia, Brazil, Canada, Russia, and the United Kingdom; (ii) neither type of organizational culture impacts the use of metrics by managers residing in China, France, Germany, Japan, South Korea, and the USA; and (iii) one type of organizational culture impacts the use of metrics by managers residing in India, Indonesia, Italy, Mexico, and Turkey. These results indicate there is variation *across* countries on what are the specific drivers of overall metric use, which provides evidence for the inclusion of national culture variables to help explain and account for such variation.

Web Appendix Table 1. Related Literature on Metric and Information Use by Marketing Managers

Authors	Whether Research Includes								Summary
	Cross-Country Sample (# of countries)	Nat. Culture	Org. Culture	Firm Char.	Ind. Char.	Mgr. Char.	Multiple Mktg. Decisions	Tested Empirically	
Ambler (2003)	---	---	---	---	---	---	√	√	Reports on use of metrics
Ambler, Kokkinaki, and Puntoni (2004)	---	---	---	√	√	---	---	√	Explores the usage of metrics in the U.K.
Barwise and Farley (2004)	5	---	---	---	---	---	---	√	Documents how often marketers reported six metrics to the board in five countries
Deshpande and Zaltman (1982)	---	---	√	√	---	---	---	√	Investigates what makes managers more likely to use market researcher supplied information
Deshpande and Zaltman (1984)	---	---	√	√	---	---	---	√	Investigates what affects marketing research suppliers' perception of managerial use of information
Farley et al. (2008)	---	---	---	√	√	---	---	√	Examines the use of metrics by managers in Vietnam and whether such use varies by firm and industry characteristics
Farris et al. (2010)	---	---	---	---	---	---	√	√	Reports on use of metrics for different types of decisions
Glazer and Weiss (1993)	---	---	---	---	√	---	---	√	Investigates whether industry turbulence affects amount of information employed in a marketing simulation game
Henri (2006)	---	---	√	√	√	---	---	√	Examines how a firm's culture of flexibility and control affects managerial use of information in performance measurement systems
Lee, Acito, and Day (1987)	---	---	---	---	---	√	---	√	Uses experiments to examine what makes managers more likely to use market researcher supplied information, based on decision maker's own characteristics
Lehmann and Reibstein (2006)	---	---	---	√	√	√	√	---	Suggests which types of metrics managers should employ

Menon et al. (1999)	---	---	√	√	√	---	---	√	Investigates how firm resources and culture affect use of information for marketing strategy performance measurement systems
Menon and Varadarajan (1992)	---	---	√	√	√	√	√	---	Proposes a theoretical model suggesting environment, task, firm, and individual manager characteristics affect knowledge utilization
Mintz and Currim (2013)	---	---	---	√	√	√	√	√	Develops model on drivers of metric use by U.S. managers
Moenaert and Souder (1996)	---	---	---	√	---	√	---	√	Examines how managerial and firm characteristics influence perceived utility of information
Moorman (1995)	---	---	√	---	√	---	---	√	Investigates how a firm's culture affects its market information processes
Morgan, Anderson, and Mittal (2005)	---	---	---	√	√	---	---	√	Examines drivers of the use of customer satisfaction data
Perkins and Rao (1990)	---	---	---	---	---	√	√	√	Investigates role of experience on information use
Sinkula (1994)	---	---	---	√	√	---	---	---	Proposes a theoretical model on how organizations process market information
Tse et al. (1988)	3	√	---	---	---	---	√	√	Uses experiments to examine whether a manager's home culture influences international marketing decision styles
This Paper	16	√	√	√	√	√	√	√	Investigates drivers of metric use by managers around the world, focusing on role of national and organizational culture

This is a review on papers on metric or information use by managers making marketing decisions. It does not include papers which link use of information to decision outcomes (e.g., Abramson, Currim, and Sarin 2005; Atuahene-Gima and Murray 2004; Frösén et al. 2016; Homburg, Artz, and Wieseke 2012; Mintz and Currim 2015; O'Sullivan and Abela 2007) or papers that link marketing-mix activities with financial metric outcomes (e.g., see Edeling and Fischer 2016; Gupta and Zeithaml 2006; Srinivasan and Hanssens 2009 for reviews), which are related but separate streams of literature.

Web Appendix Table 2. Table of Metrics

Marketing-mix Activity	Metrics (in Alphabetical Order)	
General Metrics	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Cost per Customer Acquired / Cost per Thousand Impressions (CPM) • Impressions • Internal Rate of Return (IRR) 	<ul style="list-style-type: none"> • Lead Generation • Reach • Recall
Internet Advertising	<ul style="list-style-type: none"> • Click-through Rate • Conversion Rate • Cost per Click 	<ul style="list-style-type: none"> • Hits/Visits/Page Views • Impressions • Internal Rate of Return (IRR)
Direct to Consumer	<ul style="list-style-type: none"> • Conversion Rate • Cost per Customer Acquired • Lead Generation 	<ul style="list-style-type: none"> • New Customer Retention Rate • Number of Responses by Campaign • Reach
Social Media	<ul style="list-style-type: none"> • Cost per Exposure • Hits/Visits/Page Views • Lead Generation 	<ul style="list-style-type: none"> • Number of Followers / Tags • Total Costs • Volume of Coverage by Media
Price Promotions	<ul style="list-style-type: none"> • Impressions • Internal Rate of Return (IRR) • Promotional Sales / Incremental Lift 	<ul style="list-style-type: none"> • Reach • Redemption Rates (coupons, etc.) • Trial / Repeat Volume (or Ratio)
Pricing	<ul style="list-style-type: none"> • Optimal Price • Price Elasticity • Price Premium 	<ul style="list-style-type: none"> • Relative Price • Reservation Price • Unit Margin / Margin %
New Product Development	<ul style="list-style-type: none"> • Attitude toward Product / Brand • Belief in New Product Concept • Expected Annual Growth Rate 	<ul style="list-style-type: none"> • Expected Margin % • Internal Rate of Return (IRR) • Level of Cannibalization / Cannibalization Rate
Sales Force	<ul style="list-style-type: none"> • New Customer Retention Rate • Number of Responses by Campaign • Reach 	<ul style="list-style-type: none"> • Sales Force Productivity • Sales Funnel / Sales Pipeline • Sales Potential Forecast
Distribution	<ul style="list-style-type: none"> • Channel Margins • Out of Stock % / Availability • Product Category Volume (PCV) 	<ul style="list-style-type: none"> • Sales per Store / Stock-keeping units (SKUS) • Strength of Channel Relationships • Total Inventory / Total Distributors
PR / Sponsorship	<ul style="list-style-type: none"> • Cost per Exposure • Lead Generation • Reach 	<ul style="list-style-type: none"> • Recall • Total Costs • Volume of Coverage by Media

Note: the 24 general metrics listed were the same for every type of decision while the 6 specific to a marketing-mix decision metrics differed by decision.

The metrics we selected to be employed for this study were based on the following 11 works: (Ambler, 2003; Ambler et al., 2004; Barwise & Farley, 2004; Du, Kamakura, & Mela, 2007; Farris et al., 2010; Hoffman & Fodor, 2010; Lehmann & Reibstein, 2006; Mintz & Currim, 2013; Mintz & Currim, 2015; Pauwels et al., 2009; Srinivasan, Vanhuele, & Pauwels, 2010)

Web Appendix Table 3. Primary Survey Data Operational Measures

Construct Basis	Definition and Operational Measures
<p>Organizational Culture</p> <p>External Positioning vs. Internal Maintenance; & Mechanistic vs. Organic Processes (Cameron & Quinn 2011)</p>	<p>Organizational Culture Assessment Instrument:</p> <ul style="list-style-type: none"> • 6 Questions, each requiring the manager to allocate 100 points between the 4 items <ul style="list-style-type: none"> ○ The 1st item in each question is associated with clan organizations ○ The 2nd item in each question is associated with adhocracy organizations ○ The 3rd item in each question is associated with hierarchy organizations ○ The 4th item in each question is associated with market organizations ○ Internal = (clan + hierarchy) – (adhocracy + market) ○ Organic = (clan + adhocracy) – (hierarchy + market) <p>Dominant Characteristics:</p> <ul style="list-style-type: none"> • 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. <p>Organizational Leadership:</p> <ul style="list-style-type: none"> • 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. <p>Management of Employees:</p> <ul style="list-style-type: none"> • 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. <p>Organizational Cohesiveness:</p> <ul style="list-style-type: none"> • 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. <p>Strategic Emphasis:</p> <ul style="list-style-type: none"> • 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. <p>Criteria of Success:</p> <ul style="list-style-type: none"> • My organization defines success on the basis of the development of human resources, teamwork, employee commitment, and concern for people.

	<ul style="list-style-type: none"> • 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.
Control Variables	
Firm Characteristics	
Market Orientation (Deshpande & Farley 1998; Verhoef & Leeflang 2009)	<p>How strongly do you agree or disagree with each of the following statements: (1 = strongly disagree, 7 = strongly agree)</p> <ul style="list-style-type: none"> • 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 & Wierenga 2005; Verhoef & Leeflang 2009)	<p>How strongly do you agree or disagree with the following statement: (1 = strongly disagree, 7 = strongly agree)</p> <ul style="list-style-type: none"> • 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, & Krohmer 1999; & Verhoef & Leeflang 2009)	<p>What is the primary background of the CEO within your firm?</p> <ul style="list-style-type: none"> • General management, finance, technical, marketing, law, or other
Firm Size	Approximately how many full-time employees does your firm have?
Industry Characteristics	
Product Life Cycle (Deshpandé & Zaltman, 1982)	<p>At which one of the following stages would you place your product?</p> <ul style="list-style-type: none"> • Introductory, growth, maturity, or decline
Industry Concentration (Kuester, Homburg, & Robertson 1999)	<p>Approximately what percentage of sales does the largest 4 competing businesses in your market control?</p> <ul style="list-style-type: none"> • 0-50%, 51-100%
Market Growth (Homburg, Workman, & Krohmer 1999)	<p>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%)</p>
Market Turbulence (Miller, Burke, & Glick 1998)	<p>How strongly do you agree or disagree with each of the following statements (1 = strongly disagree, 7 = strongly agree): ® = reverse scored</p> <ul style="list-style-type: none"> • 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 ®
Managerial Characteristics	
Top Level Manager Level (Mintz & Currim 2013)	<p>Please indicate your job title (<i>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):</i> 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,</p>

	Director of Sales, Brand Manager, Marketing Manager, Product Manager, Sales Manager, Other (Please list)
Work Experience (Mintz & Currim 2013)	How many years of managerial experience do you have?
Quantitative Background (Mintz & Currim 2013)	Please rate your overall qualitative/quantitative orientation: (1 = entirely qualitative, 7 = entirely quantitative)
<i>Type of Marketing-mix Decision</i>	
Type of 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: <ul style="list-style-type: none"> • 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, LinkedIn, etc.) • Price Promotions • Pricing • New Product Development • Sales Force • Distribution • PR/Sponsorships
Macro Drivers (National Culture)	
Uncertainty Avoidance (House, Hanges, Javidan, Dorfman, & Gupta, 2004)	GLOBE national culture value scores matched based on country of residence of respondent (see Table 2 for definitions)
Institutional Collectivism (House et al., 2004)	
Power Distance (House et al., 2004)	
Assertiveness (House et al., 2004)	
Performance Orientation (House et al., 2004)	
Future Orientation (House et al., 2004)	

Web Appendix Table 4. Correlation Matrix

	<i>Mean</i>	<i>St Dev</i>	UA	IC	PDI	Assert	PO	FO	IntMn	Org	MkOr	MkInf	CMO	CEOm	Lnsize	PLC	MkCon	MGrw	Mturb	ManLvl	Exp	Quant	TrAd	IntAd	D2C	SM	SF	PP	PRI	PR	NPD	Dist	Muse		
UA	4.16	.53	1																																
IC	4.26	.41	-.22	1																															
PDI	5.26	.29	-.17	-.08	1																														
Assert	4.16	.32	.31	-.45	.33	1																													
PO	4.13	.28	.52	.43	-.37	.14	1																												
FO	3.85	.34	.55	.14	-.35	.24	.71	1																											
IntMn	.00	.48	.00	-.12	.03	.04	-.07	-.08	1																										
Org	.05	.74	.01	.03	-.04	-.02	.05	.02	-.01	1																									
MkOr	5.61	.78	-.06	-.17	-.11	-.08	-.11	-.06	.02	-.08	1																								
MkInf	5.92	.98	-.06	-.16	-.09	-.04	-.11	-.08	.00	-.02	.55	1																							
CMO	.67	.47	-.01	-.14	.06	.08	-.04	.01	.06	.08	.24	.21	1																						
CEOm	.30	.46	.09	-.08	-.04	.02	.07	.09	.08	.13	.14	.12	.19	1																					
Lnsize	6.12	2.19	.18	-.14	-.03	.07	.04	.04	.11	.10	.14	.14	.33	.10	1																				
PLC	.38	.49	.09	.07	.05	.03	.02	.02	-.07	-.09	-.14	-.09	-.08	-.05	.06	1																			
MkCon	.27	.45	.01	.02	-.04	.00	.06	.05	.01	.01	.01	.06	-.03	-.03	-.02	.04	1																		
MGrw	6.04	1.67	-.02	-.04	.00	-.06	.00	-.04	.01	.01	.23	.16	.16	.09	.13	-.06	-.02	1																	
Mturb	3.87	1.48	.02	.13	-.03	-.23	.02	.01	.04	.01	.10	.07	.01	.01	.00	-.04	.02	.08	1																
ManLvl	.43	.49	.06	-.14	.15	.15	-.14	-.01	.00	.00	-.01	.02	.06	.00	.04	.03	.00	-.04	-.13	1															
Exp	9.44	6.30	.15	.03	.05	.09	.12	.18	.01	-.03	.00	-.03	.00	-.05	.11	.11	.05	-.08	-.07	.13	1														
Quant	4.58	1.41	.03	-.07	.00	.05	-.01	.02	.01	.07	.25	.15	.19	.18	.19	.02	-.03	.11	.06	.08	.02	1													
TrAd	.13	.33	-.02	.01	-.01	.02	.00	.00	.00	-.01	-.02	-.02	.01	-.01	.02	.00	.00	.01	-.03	.02	.01	.02	1												
IntAd	.17	.37	.02	-.02	.04	.01	-.02	-.02	.03	.00	.01	.00	.04	.01	.00	-.02	-.02	.02	.01	.01	-.04	.01	-.17	1											
D2C	.13	.33	.05	-.03	.03	.03	.00	.05	-.01	-.01	.01	.01	.00	.03	.00	.01	-.01	.00	-.01	.01	.04	.02	-.15	-.17	1										
SM	.14	.35	.03	-.06	-.03	.06	.01	.02	.01	.00	-.01	.01	-.03	.01	-.01	.00	-.01	-.02	.02	-.05	-.01	-.16	-.18	-.16	1										
SF	.06	.24	-.01	.05	-.01	.00	.05	.00	-.03	.02	.01	.00	-.01	-.04	-.02	.01	.03	.00	.01	-.04	.05	-.02	-.10	-.12	-.10	-.11	1								
PP	.09	.29	-.03	.00	.00	-.02	-.03	-.07	.00	.02	-.02	.00	-.03	-.03	-.01	.00	.01	-.01	.01	-.01	.00	-.01	-.12	-.14	-.12	-.13	-.08	1							
PRI	.09	.29	-.03	.05	-.02	-.05	.02	.03	-.01	-.02	-.01	-.03	-.01	-.01	-.03	-.01	-.01	-.02	.04	-.02	.01	.00	-.12	-.15	-.12	-.13	-.08	-.10	1						
PR	.06	.24	.00	.00	-.01	-.03	.01	.01	-.01	.01	.04	.03	.03	.05	.02	-.02	.00	.03	.03	-.02	.00	.01	-.10	-.12	-.10	-.11	-.07	-.08	-.08	1					
NPD	.08	.27	.01	.00	.00	-.01	.00	-.01	.02	.01	-.01	.01	-.01	-.02	.04	.00	.01	.01	-.02	.00	.00	-.02	-.11	-.13	-.11	-.12	-.08	-.09	-.10	-.08	1				
Dist	.04	.20	-.04	.03	-.01	-.06	-.02	-.02	-.02	-.03	-.01	-.02	-.01	-.02	-.01	.04	.00	-.03	-.02	.01	.01	-.01	-.08	-.09	-.08	-.08	-.05	-.06	-.07	-.05	-.06	1			
MuseT	9.08	5.54	-.05	.04	.01	-.03	.00	-.07	.06	.08	.20	.22	.20	.10	.22	.00	.02	.15	.08	-.01	-.01	.14	-.05	-.01	-.01	-.01	.05	-.02	.00	.04	.03	.03	1		

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Endnotes

ⁱ We employ the terms culture theory, cultural theory, etc., synonymously. In general, cultural classification tools have accommodated much research involving culture across nations, and these constitute “theory” in an interpretive sense.

ⁱⁱ While also plausible, we do not consider specific causes of managerial variation in metric use based on regional differences within a country. In addition, we are interested in the effect of national and organizational culture on all firms, not just multinational corporations (MNCs). Based on culture theory, we expect national and organizational culture to drive across and within country variation in managerial metric use, whether the firm is a MNC or not.

ⁱⁱⁱ Managers were required to describe their metric use for at least one type of recent marketing-mix decision and were notified that “while selecting multiple types of marketing decisions will help us greatly in our research, if you are short on time we suggest for you to select only one type of marketing decision. Each additional decision will increase your survey length by approximately 5 minutes.” On average, managers reported their metric use for 2.7 types of marketing-mix decisions (see Table 1 for details).

^{iv} We also estimate an additional model where we only analyze firms in our sample which have <1,000 employees. In this analysis of smaller firms, we find similar effects of national and organizational culture as in the analysis of <median firm size sub-segment (<498 employees).

^v We thank the Editor for these ideas.