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Marketing metrics' usage: Its predictors and implications for customer relationship management

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ABSTRACT

This research aims to determine the conditions that foster use of marketing metrics in customer relationship management (CRM) and identify the organizational factors that strengthen/weaken the impact of usage of marketing metrics on CRM performance. Based on the customer value-based theory of the firm and the contingency perspective, a research framework was developed to shed light on the predictor roles of customer value-based organizational culture and processes in determining usage of marketing metrics, and foster an understanding of the moderating roles of marketing-supply chain conflict, and innovative value proposition on the marketing metric-performance relationships. Empirical evidence from a sample of 209 business firms confirmed the main effect that customer value-based organizational culture and processes support a firm's use of marketing metrics that in turn enhance its CRM performance. Notable moderating effects were also identified. Although marketing-supply chain conflict *weakens* the impact of marketing metrics usage in achieving superior CRM performance, innovative value proposition *strengthens* the conversion of marketing-metric-related knowledge into superior CRM performance.

1. Introduction

Marketing metrics have received substantial attention from both managers and scholars in recent years. From a managerial perspective, top management increasingly calls for “marketing accountability” pressuring marketers to produce metrics that document marketing's ROI. From an academic perspective, the growing interest in marketing metrics can be attributable to five theoretical angles (Ambler, 2003). First, in line with control theory which suggests the need for *ex-post* information on marketing programs as an essential part of the cycle of analysis, planning, implementation and control (Jaworski, 1988; Kotler, 2003), marketing metrics are used to evaluate past performance to improve future strategy and execution. Second, in keeping with agency theory that focuses on contract between a principle and an agent and the need for *ex-post* data on the extent to which the principal's objectives have been met (Jensen & Meckling, 1976), marketing metrics could be used to document enforcement of the contract between corporate and functional (e.g. marketing) management (Ambler, Barwise, & Higson, 2001). Third, reinforcing the wider quest for a balanced scorecard of performance (Kaplan & Norton, 1996) which puts emphasis on such intangible assets as brand equity that account for a large and increasing proportion of shareholder value, marketing metrics are used to measure its various dimensions. Fourth, consistent with the literature on market orientation (Jaworski & Kohli, 1993; Narver & Slater, 1990) that argues for the need of market sensing and appropriate cross-functional responsiveness to the resulting data, marketing metrics are part of ‘marketing sensing’. Finally, as marketing metrics become more widespread among firms, institutional theory (Meyer & Rowan, 1977) suggests that their use will become an institutional norm. Nonetheless, despite the growing recognition of the strategic importance of marketing metrics, most marketing metrics have yet to be shown to be associated with current and future financial performance (Lehmann, 2002).

Marketing metrics, which is the focus of this study, refers to gathering of data on marketing campaigns, channels, treatments and customer responses in order to track the effectiveness of customer relationship management (CRM) activities (Hirschowitz, 2001).

Operationally, the present study focused on how firms used marketing metrics as tools for customer relationship management in the trade show context. The rationale for selecting trade shows as its research context rested firmly on the nature of trade shows, and can be traced back to the various roles and activities played by trade shows over managing key customer relationships. By nature, “trade shows are market events of a specific duration, held at intervals, at which a large number of companies present the main product range of one or more industry sectors and mainly sell it on the basis of samples” (UFI, 2008). At a system level, the success of a trade show demands the support of a whole industry, whose players must be willing to accept the show as a valid forum for establishing and cultivating business relationships. At an interaction level, since the true value of trade shows stems from its aid to relationship

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development between buyers and sellers (Rice, 1992), the present study sees individual trade shows as good venues for carrying out research about firms' activities tasked with the objectives of developing and maintaining customer relationships.

Apart from the nature of trade shows as platforms for buyer–seller interactions, its various roles and functions in managing customer relationships also make it an appropriate context for studying the practice of marketing metrics in aid of CRM. Fundamentally, trade shows are important relationship learning programs (Li, 2006; Rosson & Seringhaus, 1995), whereby exhibitors deliberately develop learning relationships with visitors to collect, disseminate and use the newly obtained customer information from trade shows in order to meet the customers' changing needs over time, and increase the return on trade show information (Bettis-Outland, Cromartie, Johnston, & Borders, 2010). Procedurally, effective participation in trade show counts not only on the preceding stages of establishing show objectives, pre-show planning, at-show implementation, and post-show follow up activities, but also hinges on the evaluation stage (Tanner, 2002). The feedback from evaluation should inform the next event participation process staring from the setting of show objectives (Fu, Yang, & Qi, 2007). The upgraded role of the evaluation stage over the whole trade show participation planning process reinforces the view of using various indices and marketing metrics when addressing marketing accountability. More specifically, as a form of live communication, trade shows play a major role over integrative marketing communication in real time. By giving the target group a personal encounter, a hands-on experience of the company and its brands in a stage-managed and emotional setting, trade shows are particularly instrumental in engendering unique lasting memories and better suited to fostering and sustaining customer loyalty (Kirchgeorg, Springer, & Kastner, 2010). Finally, functioning as a major element of key account management (KAM), trade shows have a pivotal role to play in solving specific problems that arise at different stages of relationship development between firms in a dyadic KAM scenario (Blythe, 2002). In view of the nature and various functions of trade shows over development of customer relationships, the current study takes advantage of the research opportunities offered by trade shows to examine the practice of marketing metrics and its impact on CRM.

Two themes in the literature of CRM are of particular relevance to this research: knowledge of the antecedents of CRM effort and the conclusions that have so far been drawn about the impact of CRM effort on performance of CRM programs. With regard to antecedents that may influence level of CRM effort, organizational characteristics consisting of culture, configuration, and strategy have been reported. Taking the organizational culture perspective, previous researchers have identified market orientation as a critical predictor of marketing metrics (Ambler & Wang, 2003; Kokkinaki & Ambler, 1999). Adopting the organizationally embedded view of marketing, some scholars (Jarachandran, Sharma, Kaufman, & Raman, 2005) reported customer-centric management system as a very significant factor affecting use of (relational) information in managing CRM programs. Using an innovation adoption perspective, other investigators (Ko, Kim, Kim, & Woo, 2008) revealed very powerful impact of such organizational characteristics as prospective strategy and information system maturity on the CRM adoption process. However, a key problem with the existent approach is that firms fail to recognize individual key customers in their own context. Despite the promise and potential benefit of customizing offerings based on knowledge of individual customers, much CRM remains focused on market segmentation (Mitussis, O'Malley, & Patterson, 2006) and much of the practices of CRM remains rooted in the mix management paradigm (Gordon, 2000). Given the growing importance of the customer value perspective which argues that customers choose continuing relationships with those suppliers that consistently offer higher value (Wang, Lo, Chi, & Yang, 2004), this study argued for a customer-focused approach to engage strategically important key accounts in value-creating CRM activities. In keeping with a customer value-based theory of the firm (Slater, 1997), this study aims to extend the existent literature by examining the relationship between marketing metrics and two key factors namely: customer value-based organizational culture and processes.

With respect to the impact of using marketing metrics to keep track of marketing effectiveness, two competing models have emerged: those that suggest a direct relationship and those that propose a moderated relationship. Whereas Ambler and Kokkinaki (1997) have found a significant positive relationship between perceived importance of marketing metrics and business performance in United Kingdom, the UK relationship between use of metrics and business performance was not replicated in China (Ambler & Wang, 2003). Although Jarachandran et al. (2005) reported that technology used for CRM can strengthen the effect of relational information processes on CRM performance, Reinartz, Krafft, and Hoyer (2004) did not detect any moderating effect of CRM technology use on the relationship between CRM processes and CRM performance. These conflicting evidences highlight the need for more research in this area. Accordingly, this study aims to determine whether the relationship between usage of marketing metrics and CRM performance is contingent upon implementation context. In addressing the performance consequences of using marketing metrics, this study proposed that *implementation barrier* in terms of conflicting perspective between supply-chain-management and customer-relationship-management regarding goals and tasks for CRM would hinder the firm's deployment of the acquired marketing metrics information, and lead to mismatch between what is needed by customers and what is offered by the firm. In contrast, *implementation facilitator* in terms of coordinated deployment of the acquired marketing-metrics-information to understand the needs and behavior of customer and develop and offer customer-focused value propositions is needed to actualize the full benefits of CRM.

The first objective of this study is to investigate the direct effect of customer value-based organizational culture and processes on usage of marketing metrics. A second objective is to examine whether some firms are more effective than others in deploying marketing-metrics information to achieve higher levels of CRM performance. The outcomes of these objectives will have important implications for managers who are tasked with identifying the drivers that assist firms to better leverage their capabilities. The remainder of this paper is organized as follows. Section 2 reviews the literature on conceptualizations of marketing metrics. The conceptual model is proposed and described in Section 3. The data collection and analyses are discussed in Sections 4 and 5, and the managerial and research implications are presented in Section 6.

2. Review on conceptualization and measurement of marketing metrics

Research points to a multiplicity of marketing metrics. While Meyer (1998) noted many hundreds of measures tapping into marketing effectiveness, Ambler and Riley (2000) identified a total of 38 measures of marketing effectiveness, Clark (1999) found 20 such measures, and Davidson (1999) proposed 10 key metrics on marketing measurability. Attempts have been made to sort out numerous measures of marketing metrics into some over-arching metrics. Kokkinaki and Ambler (1999), for instance, deduced that marketing metrics can be summarized into six categories: 1) financial measures (i.e. turnover, contribution margins, and profits), 2) measures of competitive market (i.e. market share, advertising share, and promotion share), 3) measures of consumer behavior (i.e. customer penetration, customer loyalty, and new customers gained), 4) measure of consumer intermediate (i.e. brand recognition, satisfaction, and purchase intention), 5) measures of direct customer (i.e. distribution level, profitability of intermediaries, and quality of service), and 6) measures of innovativeness (i.e. new products launched and revenue of these products as a percentage of total turnover). Notably, since marketing performance is a multidimensional construct, different metrics should theoretically be seen as complements rather than substitutes (Barwise & Farley, 2004).

Along with the identification of different types of marketing metrics, the focus of interest gradually shifted from traditional aggregate performance measures (such as market share, sales or profits) to performance indictors measured at the individual customer level (Kotler & Keller, 2006). As an illustration, the relationship marketing domain witnesses a tremendous growth in research investigating customer equity and customer lifetime value predominantly in consumer markets (Rust, Ambler, Carpenter, Kumar, & Srivastava, 2004; Rust, Zeithaml, & Lemon, 2000). Similarly, researchers in business markets argue the effective management of customer relationships requires a thorough understanding of customer profitability starting at the individual account (Bowman & Narayandas, 2004; Eggert & Ulaga, 2006). Given the rising importance of measuring marketing metrics at the individual account level, this study seeks to capture the construct of marketing metrics by examining the actual usage of measures of consumer behavior, consumer intermediate, direct customer, and innovativeness when assessing performance at an individual customer level.

3. Theoretical framework for marketing metrics

Fig. 1 provides an overview of the current research framework outlining relationships between characteristics of customer value-based firms, usage of marketing metrics, and performance of CRM programs. Underlying the current research model is a customer value-based theory of the firm (Slater, 1997) that postulates that superior performance accrues to firms that (1) have a customer value-based organizational culture (i.e. a market orientation complemented by being skilled at learning about customers and their changing needs and at managing the innovation process); and (2) organize themselves around customer value delivery processes.

The customer value-based theory claims that organizations achieve superior performance by strategic use of information about the customers to cut costs, speed up delivery, improve benefits and, in short, come up with innovative value propositions for customers.

Accordingly, such usage of acquired information for value-creation purpose is a function of two key organizational components: a customer value-based organizational culture, and a set of customer value-based organizational processes. The proposed model helps managers to appreciate the critical role of marketing metrics to CRM performance and identify the cultural and organizational factors that support such metrics' usage in practice.

Using the contingency perspective as a foundation, the proposed model departs from existing research that links CRM effort in terms of usage of marketing metrics directly to CRM performance. The rationale for introducing additional intervening variables stems once again from the customer value-based theory of the firm. As noted by Slater (1997) beforehand, "knowledge (collected via marketing metrics) about the market is not enough, the firm needs to come up with innovative value propositions to address emerging market needs". "Knowledge about the market" and "innovative value propositions" are incorporated into Slater's (1997) original research model as feedback loops between the customer value-focused firm and its environment. In this study, it is proposed that usage of resultant data from marketing metrics to improve performance of CRM programs depends on extent to which such customer knowledge facilitate development of customer-centric innovative product/service value propositions in response to changes in customer needs and wants. In short, use of customer information to develop innovative value propositions is a facilitator over the CRM effort-performance relationship.

Furthermore, conflicting perspectives between marketing and supply chain management is proposed in this study as a barrier undermining the effect of marketing metrics on CRM performance. In contrast to the customer value-based theory of the firm that calls for maximizing effectiveness of the firm's customer value creation activities through process alignment that cuts across multiple functions in the organization, the transaction cost economics perspective requires that the decision to perform a process internally or to contract out for its execution be based on cost minimization. Whereas many firms are finding that it is more effective to outsource key value delivery activities to other firms that are expert in that activity than to perform it internally, Slater (1997) points to a critical consideration "whether the effective cross-functional teamwork that is required for rapid response and innovation can be maintained when important expertise is outsourced". It is expected that conflicts between marketing's value maximization approach and supply chain's cost minimization approach would undermine the very much needed cross-functional teamwork that is essential for utilization of marketing metrics information and knowledge for value creation purpose, and hence hampers the latter's impact on CRM performance.

3.1. Antecedents of usage of marketing metrics

Customer Value-based Organizational Culture is a "collective mind" that places the highest priority on the profitable creation and maintenance of superior customer value; and provides norms for behavior regarding organizational development of and responsiveness to market information (Slater, 1997). Such a kind of organizational culture is made manifest by the view that considers key customers as a valuable asset meaning an important source of new product/service ideas, and requires a dedicated focus on key customers in one-to-one marketing efforts. As rooted in a market-oriented management philosophy, a customer value-based organizational culture drives the development of firm skills for acquiring knowledge about key customers'

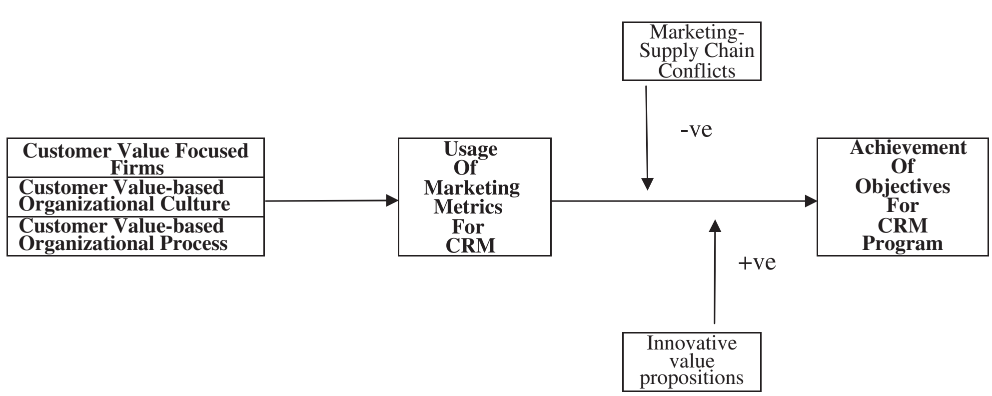

Fig. 1. A theoretical framework for usage of marketing metrics.

needs in future, sharing that knowledge widely throughout the organization, and taking actions to deliver superior customer value (Day, 1994a,b; Kohli & Jaworski, 1990; Slater & Narver, 1995). As an organizational belief system that calls for continuous learning about customers and commitment to customer value-focused innovation, a customer value-based organizational culture is expected to support usage of marketing metrics that evaluate past marketing effectiveness to improve future strategy and execution. Empirically, Ambler and Wang (2003) found that there is a positive and significant relationship between customer orientation and perceived importance accorded to two types of marketing metrics namely customer behavior and customer intermediate metrics. It is therefore hypothesized in this study that:

H1. Customer value-based organizational culture is associated with significantly greater levels of usage of marketing metrics.

Customer Value-based Organizational Processes refer to an organization's design of a process-based structure and incentives in support of its creation of customer value (Slater, 1997). Ideally, "a process perspective on a business is the customer's perspective…. (as it) requires that "we starts with customers and what they what from us, and work backward from there" (Hammer, 1996). Structurally, a process-focused organization should be structured around customers, often with customer-focused teams (Sheth & Sisodia, 2002). By organizing their CRM operations around customer groups, companies can measure marketing effectiveness at an individual customer/segment level, keep abreast of changing customer expectations for different segments, obtain early warnings from customers who are on the verge of leaving, and take timely actions to address discontented customers' problems (Yim, Anderson, & Swaminathan, 2004). In addition, a process-focused organization should provide monetary and recognition incentives to keep staff effort focused on developing innovative value-added product/service offerings for its key customers (Day, 2003). Such a kind of organizations that configure themselves around customer value should also offer training and hand-on experience to customers for personalizing inventory management and service support to improve customers' productivity (Day, 2003). Empirical evidences have been reported that process-focused organizations in forms of customer-centric management systems consisting of customer-focused structure, incentive and training tended to support relational information processes for CRM (Jarachandran et al., 2005). It is hence hypothesized here that:

H2. Customer value-based organizational process is associated with significantly greater levels of usage of marketing metrics.

3.2. Effect of marketing metrics usage on CRM performance

Remarkably, those businesses that take the trouble to analyze the origin of their cash flow, i.e. those reflect on their market, are likely to be more profitable than others (Ambler, 2000). In line with the organizationally embedded view of the discipline of marketing (Srivastava, Shervani, & Fahey, 1999), customer relationship management activities drive shareholder value by accelerating cash flow, enhancing cash flow, and reducing vulnerability and volatility of cash flow. A CRM program is regarded as performing well if CRM activities speed up the market acceptance cycle for products to facilitate diffusion of innovation (i.e. accelerated cash flow); if CRM activities leverage the customer base to enhance cross-selling complementary products and services (i.e. enhanced cash flow); and if CRM activities increases switching costs through bundling products/services and leasing programs that contribute to retention and loyalty (i.e. reduced risks of cash flow). Previous study has reported that the perceived importance accorded to measuring marketing effectiveness has a positive impact on attainment of superior business performance (Ambler & Kokkinaki, 1997). More recent empirical evidences further indicated that management of customer knowledge in CRM programmes (Yim et al., 2004) and deployment of relational information for CRM purpose (Jarachandran et al., 2005) have made powerful contribution to both customer satisfaction and retention. Therefore it is hypothesized that:

H3. Use of marketing metrics is associated with significantly greater levels of CRM performance.

3.3. Moderators over the marketing metrics usage-CRM performance relationship

Marketing-Supply Chain Management Conflict is postulated as a contingency variable that moderates the effects of usage of marketing metrics on CRM performance. In accordance with Dougherty's (1992) concept of "interpretative barrier to innovative success", each functional area operates under its own "thought world". A strong marketing-supply chain interface may be difficult to achieve due to the different perspectives of these departments. In contrast to marketing's emphasis on creation and leveraging of linkages and relationships to external marketplace entities (especially channels and end-users) to maximize value, supply chain management puts stress on continual enhancement and acquisition of inputs and their transformation into desired customer outputs through cost minimization. A lack of strong marketing-supply chain interface tends to create internal barriers on strategic implementation of CRM programs. For instance, marketing people perceive that supply functions cannot accommodate dynamic consumption trends when implementing CRM initiatives and supply functions pay too much emphasis on bottom-line and take customer modification requests as a threat to increasing costs. Supply chain people, on the other hand, perceive that marketing functions cannot incorporate supply chain operations' precise requirements when implementing CRM programs and marketing functions pay too much emphasis on monthly commissions that leads to over-optimistic sales forecasts and excessive production outputs. These perceptions constitute formidable internal barriers to the smooth implementation of CRM. In short, internal politics and cultural issues between marketing and supply chain functions undermine the very much needed cross-functional teamwork that is essential for utilization of marketing metrics information and knowledge for value creation purpose. It is hence hypothesized here that:

H4. Marketing-supply chain conflict *weakens* the impact of marketing metrics usage in achieving superior CRM performance.

Innovative Value Propositions refers to utilization of the acquired customer information to create new value propositions for key customers/segments (Slater, 1997). As marketing information use has been classified into two forms: knowledge-enhancing use and action-oriented use (Menon & Varadarajan, 1992), this implies that firms should use the marketing information to understand the needs and behavior of their customers (i.e. knowledge-enhancing use) and develop and offer customer-centric products and services (i.e. action-oriented use). In keeping with the relationship marketing suggestion that customer should be treated differently and in accordance with the value they offer to the firm (Venkatesan & Kumar, 2004), the use of marketing metrics serves not only to identify high-lifetime-value customers, but also to develop action-oriented retention and loyalty programs to build and sustain customer relationship. Here, innovative value proposition is postulated as a contingent factor in the usage of marketing metrics-CRM performance relationship. As Slater (1997) argues that knowledge (collected via marketing metrics) about the market is not enough to satisfy customers' needs and wants, the firm needs to come up with innovative value propositions to address such market needs, it is thus hypothesized in this study that:

H5. Innovative value proposition *strengthens* the impact of marketing metrics usage in achieving superior CRM performance.

4. Research methodology

4.1. Sampling procedures and sample characteristics

This study has defined its population as manufacturing firms that have production facilities set up in Hong Kong/China, and that participate in international trade shows to manage customer relationships. This study has focused on a major trade show held in Hong Kong namely: Summer Sourcing Fair of Gifts, Houseware and Toys, and used this trade show's *2007 Directory of Fair Exhibitors* as its sampling frame. A randomized sample of 350 subjects was selected out of a total of 700 exhibiting manufacturers, and data were collected personally from the exhibitor manager who was stationed at the company booth and primarily responsible for managing international customer accounts.

Initially, each respondent exhibitor was asked to identify a major international trade show that his/her firm has participated in the past three years (i.e. X trade show). Next, after being informed of an operational definition of CRM as "organizational activities for identifying customers, creating customer knowledge, building customer relationships, and shaping their perceptions of the organization and its products so as to create value-added products/services for customers and profitable value creation for the firm", the exhibitor was asked to indicate whether or not his/her firm had carried out any kind of CRM activities when planning and implementing the X trade show. Then, only for those respondent exhibitors that found organizational activities underlying the CRM concept as applicable and vivid descriptions of their firms' operational processes undertaken for the X trade show, they would be invited to complete the rest of the questionnaire with reference to the experience of the specified trade show in mind.

Technically, the questionnaire was divided into three parts. In Part I, each respondent was asked to assess the firm's culture, organization, and usage of marketing metrics when carrying out CRM activities for X trade show. In Part II, each respondent was required to reflect upon organizational barriers and facilitators over the implementation of the firm's CRM strategy. Specifically, this second part measured the extent to which conflicting perspectives between marketing and supply chain management impeded the implementation of CRM for X trade show, and the extent to which innovative value propositions coming out of relational information use enhanced the execution of CRM for X trade show. In Part III, each respondent was asked to rate the achievement of CRM programme objectives set for X trade show. As a result, information from 209 subjects was successfully collected for a response rate of 59.7%."

As shown in Table 1, the majority of respondent firms were small and medium sized enterprises that hired less than 450 employees (80.4%). Besides, the big majority of firms in this sample attributed over 45% of total sales to export earnings (79.2%). In order to determine whether the characteristics of the respondent firms differ from those of non-respondents, a sample of 50 non-respondents were contacted by phone to obtain the structural characteristics of their firms. The analysis of data (at 5% significance level) showed that the characteristics of non-respondents concerning firm size and export intensity did not differ significantly from those of respondents.

Table 1
General profile of respondent firms.

Type of industry	*N*	%
Electronic and electrical appliances	20	9.6
Plastic household items	28	13.4
Art and craft	56	26.8
Toys and sports equipment	34	16.3
Others	71	34
Number of full-time employees		
Less than 19	63	30.1
20 to 99	45	21.6
100 to 450	60	28.7
451 to 3000	38	18.2
Over 3,000	3	1.4
Export intensity		
Up to 45%	43	20.8
46 to 90%	73	35.2
Over 90%	91	44
Total	209	100%

4.2. Measurements

This study began by combining fieldwork and literature-based insights to specify the domain of each of the construct dimensions under investigation and to develop items that could serve as indicators of each construct. Table 2 summarizes the measurement statistics for the study constructs, and Table 3 provides inter-correlations. All measures have acceptable reliabilities and psychometric properties.

Customer Value-based Organizational Culture refers to the company's shared belief that considers customer relationship an asset and makes it an organizational value of openness in sharing information about customers and doing everything possible to cater to their needs (Slater, 1997). To reflect upon the cultural propensity of an organization to undertake CRM, this study developed a scale that focused on the extent to which an organization made it a company value to view channel buyers as an important source of new product/service ideas and to share information openly in order to cater to buyers' future needs (e.g. having personal meetings with buyers, spending discussion time with buyers regarding cross products/services group issues, and realigning IT capabilities to support value creation activities for buyers).

Customer Value-based Organizational Process refers to incentives, structure, and accountabilities that align an organization toward building customer relationships (Slater, 1997). In developing this scale, this study tapped into the extent to which the organization structure its activities around customers (e.g. use of cross-functional teams to spot quality improvement opportunities, and use of problem-solving task forces to handle customer complaints) and provide specific incentives that enable the organization to focus on CRM (Day, 2003; Jarachandran et al., 2005).

Marketing metrics for CRM refers to gathering of data on marketing campaign, channels, treatments and customer responses in order to track the effectiveness of CRM activities (Hirschowitz, 2001). This study assessed usage of marketing metrics under the context of CRM by measuring the frequency over which the organization capture the information concerning responses to its CRM activities in terms of *consumer behavior responses* (e.g. explicit buy, order higher-value categories, order different product lines, and increased size of order), *consumer intermediate responses* (e.g. customer satisfaction, ratings over our company as a reliable partner, opinions over our company as a long-term partner, and customer acceptance of value-added offerings), *direct customer responses* (e.g. more frequent communication, improved relationship quality, and increased usage of customer information services and product manuals), and *innovativeness responses* (e.g. greater involvement in new product development, usage of formal channel to reflect opinions on new products, provision of responses before and after new product launches, and reaction towards improvements over existing products/services).

Performance of CRM refers to achievement of objectives set for CRM program. This variable was measured by asking respondents to evaluate the extent to which the organization has achieved objectives set for the specific CRM program under investigation on a seven-point scale ranging from "achieved a little" to "achieved completely". As advocated by Narver and Slater (1990), relative performance was used to control for performance differences among firms. Subjective measures of performance are frequently used in business research and previous studies (Dess & Robertson, 1984; Pearce, Robbins, & Robinson, 1987) had demonstrated a strong correlation between subjective assessments and their objective counterparts Essentially, respondents were asked to rate the organization's CRM performance in terms of: behavior-based

Table 2
Measurement definitions, scales description, illustrative sources, and measurement statistics for the key constructs.

Measures	Scale description	Source	Items	Alpha	Mean	S.D.
Customer value-based organizational culture refers to the company's shared belief that considers customer relationship an asset and makes it an organizational value of openness in sharing information about customers and doing everything possible to cater to their needs in terms of: – We view channel buyers as an important source of new product/service ideas; – We have personal meetings with channel buyers to determine what product/services they will need in future; – Personnel across product/service groups spend time discussing channel buyers' future needs; and – We realign IT capabilities to support value creation activities for channel buyers.	This variable was measured by asking the respondent to rate the extent to which s/he agrees or disagrees with statements describing the firm's shared beliefs concerning customer relationship management on a seven-point scale (where 1 = strongly disagree and 7 = strongly agree).	Slater (1997)	4	.74	4.75	0.76
Customer value-based organizational process refers to incentives, structure, and accountabilities that align an organization toward building customer relationships, involving: – Our management uses attractive incentives and rewards as means of keeping staff focused on developing new value-added products/services for customers; – Our company organizes cross-functional teams to analyze produce/service quality and discover improvement opportunities; – Our company sets up problem-solving task forces to improve our ability in handling customer complaints; – Our employees have been empowered to select appropriate means for achieving objectives; – Our employees take updated customer relationship training for strengthening customer-centric philosophy; and – Our management continuously advocates the importance of instituting a learning culture for CRM.	This variable was measured by asking the respondent to rate the extent to which s/he agrees or disagrees with statements describing the firm's alignment of activities for building customer relationships on a seven-point scale (where 1 = strongly disagree and 7 = strongly agree).	Slater (1997)	6	.88	4.59	0.89
Performance of Customer Relationship Management refers to achievement of objectives set for CRM program consisting of: – get new customers; – keep old customers – Increase repeat purchases; – Cross-selling to existing customers – Increase customer satisfaction; – Increase customer loyalty – More efficient promotion; – More efficient sales distribution – Low-cost customer services; – Higher share of profitable customers	This variable was measured by asking the respondent to rate the extent to which the CRM program has achieved its objectives o n a seven-point scale (where 1 = achieved a little, and 7 = completely achieved).	Srivastava et al. (1999)	10	.93	4.38	1.15
Marketing Metrics for Customer Relationship Management refers to the gathering of data on marketing campaign, channels, treatments and customer responses in order to track the effectiveness of CRM activities in terms of: – Direct acceptance; – Higher-value order – Select different lines; – Increase order size – Improved relationship quality; – Communication frequency – Involvement in new product development; – Use formal channel to air product opinion – Market responses before and after new product campaigns; – Usage of product Manuel and customer information service – Ratings over customer satisfaction; – Product/service improvement – Customer opinions on our company as a reliable partner; – Customer opinions on our company as a long-term partner – Customer buy-in of our value-added offerings	This variable was measured by asking the respondent to rate the degree of frequency of using various metrics to monitor customer responses to various CRM activities on a seven-point scale (where 1 = never used, 2 = seldom, 3 = occasionally,4 = sometimes, 5 = often 6 = always, and 7 = used as a matter of business routine).	Hirschowitz (2001)	15	.98	3.86	1.40
CRM Implementation Barrier from Marketing-Supply Chain Conflict refers to dissimilarity of domain or perspective between marketing and supply functions regarding goals and tasks for CRM that leads to mismatch between what is needed by customers and what is offered by the firm in terms of: – Supply functions cannot accommodate dynamic consumption trends when implementing CRM initiatives; – Marketing functions cannot incorporate supply chain operations' precise requirements when implementing CRM programs; – Supply functions pay too much emphasis on bottom-line and take customer modification requests as a threat to increasing costs; – Marketing functions pay too much emphasis on monthly commissions that leads too over-optimistic sales forecasts and excessive production outputs; – As a result of incompatible information systems between the two departments, supply and marketing functions cannot make integrated decisions when implementing CRM programs; and – It is exceedingly difficult to satisfy customers as customer expectations escalate over time: increasing faster, cheaper and better qualities.	This variable was measured by asking the respondent to rate the extent to which the dissimilarity of perspective between supply and marketing functions has impeded the implementation of CRM on a seven-point scale (where 1 = little barrier, and 7 = absolute barrier).	Kothandaraman and Wilson (2000)	6	.87	3.63	1.19

Table 2 (*continued*)

Measures	Scale description	Source	Items	Alpha	Mean	S.D.
CRM Implementation Facilitator via Innovative Value Proposition refers to utilization of the acquired customer information in forms of knowledge-enhancing use and action-oriented use that is consistent with the philosophy of relationship management and can takes the forms of: – We carry out formal customer research to identify the most important product/service attributes in customers' buying decisions; – We collect behavioral data to identify the most important elements of customer experience; – We collect behavioral data to identify channels matter most to the customer; and – We collect operational data to determine acquisition costs required to serve targeted customers.	This variable was measured by asking the respondent to rate the extent to which s/he agrees or disagrees with statements describing the firm's deployment of acquired information for building customer relationships on a seven-point scale (where 1 = strongly disagree and 7 = strongly agree).	Slater (1997)	4	.84	4.51	0.87

CRM performance such as repeat purchase from old customers, and cross selling to existing customer (Wang et al., 2004), relationship-quality-based CRM performance such as customer satisfaction, and customer loyalty (Yim et al., 2004), efficiency-based CRM performance such as more efficient promotion and sales distribution, and low-cost customer services, and value-based CRM performance such as higher share of profitable customers (Hirschowitz, 2001).

Implementation barrier from marketing-supply chain conflicts refers to dissimilarity of domain or perspective between marketing and supply functions regarding goals and tasks for CRM that leads to mismatch between what is needed by customers and what is offered by the firm (Juttner, Christopher, & Baker, 2007). This study assessed an implementation barrier on CRM by asking respondents to rate the extent to which dissimilarity of perspective between supply and marketing functions has impeded the implementation of CRM on a seven-point scale ranging from “little barrier” to “absolute barrier”.

Implementation facilitator from innovative value propositions refers to use of acquired customer information to develop innovative products/services offerings (Jarachandran et al., 2005). The current study assessed an implementation facilitator on CRM by asking respondents to rate the extent to which innovative value propositions coming out of relational information use (i.e. use of customer information to identify the most important purchase criteria, the most important elements of customer experience, and the channels most matter to customers) has facilitated the implementation of CRM on a seven-point scale ranging from “strongly disagree” to “strongly agree”.

All measures have acceptable reliabilities as the coefficient alphas of all the factor-based scales used in the subsequent analyses were above 0.7 indicating satisfactory internal consistency (Hair, Bush, & Ortinau, 2000). Furthermore, Table 3 shows the zero-order correlations among the constructs and provides a general picture of their interrelationships. The confidence interval around the correlation estimate between any two constructs never includes 1.0 which indicates that there is discriminant validity in the factor-based scales.

5. Statistical analysis

The statistical analysis was divided into two stages. First, multiple regression analyses were carried out to test the hypotheses (H1, H2, and H3) concerning effect of the two antecedent variables on usage of marketing metrics, and the effect of marketing metrics on CRM performance. Next, the hypotheses concerning the moderating effect (H4 and H5) were tested by hierarchical regression analyses (HMR). The basic principle underlying this analysis is the entry of predictor variables in some pre-specified hierarchy where R^2 is determined at this stage. The significance of the hypothesized relationships was tested based on an F-test for the increase in R^2 at each stage as described by Cohen and Cohen (1983).

Table 3
Inter-correlation for key study constructs.

Construct	X1	X2	X3	X4	X5
X1 Customer value-based organizational culture					
X2 Customer value-based organizational process	.45				
X3 Marketing metrics	.37	.47			
X4 CRM performance	.37	.48	.45		
X5 Marketing-supply chain conflict	−.11	−.13	.05	.11	
X6 Innovative value proposition	.53	.56	.52	.29	−.09

5.1. Multiple regression analyses results

Multiple regression analyses were run to examine the impact of customer value-based organizational culture and process on usage of marketing metrics. Table 4 shows that the independent constructs together accounted for 22.4% of the variance in usage of marketing metrics, with individual *beta* coefficients supporting H1 (B = .21) at a significance level of 0.01 and H2 (B = .35) at a significance level of 0.001. As hypothesized, customer value-based organizational culture and customer value-based organizational process contribute to usage of marketing metrics. Regression analysis was also performed to examine the effect of usage of marketing metrics on CRM performance. Table 4 shows that usage of marketing metrics accounted for 18.6% of the total variance in CRM performance, and hence H3 is supported.

5.2. Hierarchical regression analyses results

When the predictor variables were entered into the regression equation in the first step, they accounted for 33.6% of the total variance in CRM performance. There was a significant increase in explained variance in the CRM performance (R square change = 38.2; p < .001) when the interaction variables were entered into the equation in the final step. Table 5 shows the HMR results. In terms of the moderating influence of conflict between marketing and supply

Table 4
Results of regression analyses for usage of marketing metrics and crm performance as dependent variables.

Variables	Marketing metrics	CRM performance
Customer value-based organizational culture	.21 **	
Customer value-based organizational process	.35 ***	
Usage of marketing metrics		.43 ***
R^2	.236	.194
Adjusted R^2	.224	.186
F-change (sig.)	28.789 ***	44.72 ***
N	209	209

** Significant at the 0.01 level; *** significant at the 0.001 level.

Table 5
Results of hierarchical regression analysis – testing the interaction effect of marketing metrics against "marketing-supply chain conflict" and "innovative value proposition" on CRM performance.

Variables	Direct effect on CRM performance	Direct & interaction effect on CRM performance
Independent variables		
Customer value-based organizational culture	.17 *	.12 #
Customer value-based organizational process	.41 ***	.44 ***
Information collection via marketing metrics	.28 ***	.23 **
Marketing-supply chain conflict	.19 **	.23 ***
Innovative value proposition	−.18 *	−.10
Interaction variables		
Marketing metrics*marketing-supply chain conflict		−.20 **
Marketing metrics*innovative value proposition	.	.14 *
R^2	.353	.405
Adjusted R^2	.336	.382
F-change (sig.)	20.108 ***	17.712 ***
N	209	209

Significant at the 0.10 level; * significant at the 0.05 level; ** significant at the 0.01 level; *** significant at the 0.001 level.

chain functions, the effect of usage of marketing metrics on CRM performance is *reduced* ($B=-.20$, $p<.01$) when marketing-supply chain management conflict is high than when it is low, and thus H4 is supported. Table 5 also shows that in terms of the moderating influence of innovative value propositions, the effect of marketing metrics on CRM performance is *strengthened* ($B=.14$, $p<.05$) when innovative value proposition is high than when it is low, and thus H5 is supported.

6. Conclusion

This study provides a two-stage framework. In the first stage, a customer value-based theory of the firm (Slater, 1997) is applied to build a systematic research model that relates customer value-based organizational culture, customer value-based organizational process, and usage of marketing metrics to CRM performance. Empirical analysis across a sample of 209 manufacturing organizations confirms that customer value-based culture and process lead to greater usage of marketing metrics, which in turn enhance the achievement of objectives set for CRM programs. In the second stage, the contingency perspective is used as a basis for the introduction of additional intervening variables into the model. It is argued that both barrier and facilitator variables have critical and distinct roles over CRM implementation when firms exploiting their cultural, organizational and informational processes to attain superior CRM performance. The empirical findings confirm that although conflicts between marketing and supply chain functions *weaken* the impact of marketing metrics usage in achieving superior CRM performance, innovative value propositions *strengthen* the conversion of marketing-metric-related knowledge into superior CRM performance.

6.1. Implications for managers

A number of practical lessons can be drawn from the current findings. Since customer value-based organizational culture is positively associated with usage of marketing metrics, a key implication of this study is that business managers should assess whether the firm's values, beliefs and philosophical orientation underlying its CRM program is consistent with the demands of using marketing metrics. The firm's employees should be motivated to develop and maintain a customer value-based orientation. Specifically, internal marketing efforts in terms of market training and education, internal communication, reward systems, and employee involvement should be used to promote a customer value-based orientation among salespeople and other frontline staff that are the firm's key interface with its customers (Yim, 2002; Zikmund, McLeod, & Gilbert, 2003). With the foundation of a customer value-based orientation that focused on key customers, employees can make use of marketing metrics to provide customized goods and services and maximize customers' lifetime values.

Given customer value-based organizational process is positively associated with usage of marketing metrics, another major insight here is that organizational processes and activities underlying CRM should be designed carefully. Structurally, the firm should be organized around customer groups to ensure alignment of all involved organizational resources for fulfillment of customer needs (Yim et al., 2004). Besides, the incentives system should be designed to provide rewards for retention of key customers through CRM activities (Rigby, Reichheld, & Schefter, 2002) so as to reinforce CRM-oriented conduct and behaviors (Johnson, 2004).

The present results, however, suggest that use of marketing metrics for CRM is recommendable only when marketing-supply chain conflicts have been minimized. Hence, business managers should recognize that generation of market knowledge via marketing metrics in itself is not enough since an intense level of coordination is called for when firms seek to build up business relationships with key accounts (Wengler, Ehret, & Saab, 2006). On a constructive light, the firm should develop and maintain effective coordination between marketing and supply chain functions that is required for proper usage of relational information when developing innovative value propositions to address dynamic market needs (Slater, 1997).

Furthermore, in keeping with Blythe's suggestion (2002) of using trade shows for key accounts management, the current findings have important implications for business managers who use trade shows to further develop relationships with key customers. In general the effectiveness of trade fairs and exhibitions in managing key accounts will depend on the institutionalization of an organizational culture of focusing on value creation for key customers through one-on-one marketing efforts, and the design of an organizational structure and incentive system that support its implementation. In particular, the effectiveness of using trade shows to manage key accounts will also depend on the alignment between marketing and supply chain functions whereby senior management's commitment for CRM will be enforced through the integration of demand and supply processes, and the information captured by marketing metrics will be used for developing innovative value offerings to address dynamic market needs.

6.2. Limitations and directions for future research

The implications of this study should be seen within the context of its limitations that could also provide the basis for directing future research. First, in this study, the customer value-based theory of the firm is applied to identify some broadly measured cultural and organizational antecedents of marketing metrics, and it is empirically confirmed that different characteristics of a customer value-focused firm affect usage of marketing metrics. Future research could expand the predictor set by following different theoretical perspectives that shed further light on the antecedents of marketing metrics (Ambler et al., 2004). For instance, agency theory might be extended from corporate management to marketing management to enable formal hypothesis testing in the context of marketing metrics (Barwise & Farley, 2004).

Second, based on the contingency perspective, this study identifies and empirically confirms the moderating role of certain implementation barrier and facilitator factors in the marketing metrics-CRM performance relationship. In line with the contingency perspective, future research could use other variables to define the implementation context in which the effect of marketing metrics takes place. An internal marketing perspective suggests that implementation barriers range from operational/analytical barriers in terms of shortage of resources, costs and expertise, to behavioral/organizational barriers in terms of politics and culture of the organization relating to customers as a kind of asset (Piercy, 1995). Future research should consider investigating the relative adverse effect of operational barriers versus political barriers over linkage between marketing metrics and CRM performance.

Finally, a third limitation of this study concerns with its measurement approach. The use of cross-sectional survey method in this study only provided a snapshot of the cultural, organizational, and informational processes when the firm used marketing metrics for managing its key customer accounts. This measurement approach did not consider the specific problems of specific key customer accounts, and hence failed to address how collection and deployment of marketing metrics at an individual account level serve to come up with innovative value propositions for the account under investigation. Perhaps, a quasi-longitudinal study is useful whereby future research can examine specific problems that arise at different stages of relationship development between supplier and buyer firms in a dyadic KAM scenario. By measuring an individual key customer's responses to specific value propositions, marketing metrics might establish “product need” for those accounts at the pre-KAM stage; identify “process-related problems” for those customers at the early KAM stage; and facilitate “value creation” for those key accounts on partnership KAM stage via strategic alignment of objectives, systems and processes with the buyer partner firm. Additional study is very much encouraged to examine the role of relationship stage played in research modeling impact of marketing metrics on CRM performance.

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